

Watten Wind Farm

Caithness, Scottish Highlands

Environmental Impact Assessment Volume 3A of 4: Technical Appendices (A3)

August 2023



Prepared by Natural Power
on behalf of EDF Energy
Renewables Limited.

Volume 3: Technical Appendices

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A1.1. Watten Wind Farm Scoping Report



Watten Wind Farm

Scoping Report

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EDF Renewables

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1. Introduction

This Scoping Report has been prepared by Natural Power Consultants Limited (Natural Power) on behalf of EDF Energy Renewables Limited (EDF Renewables) in anticipation of an application under Section 36 of the Electricity Act 1989 for Watten Wind Farm, a development located in Caithness, in The Highland Council (THC) area (herein referred to as the Proposed Development).

Under the statutory procedures set out in the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations) it is proposed that any such application is accompanied by an Environmental Impact Assessment Report (EIAR). Under regulation 12 of the EIA Regulations, a formal opinion of the information to be supplied in the EIAR is sought from Scottish Ministers.

The purpose of this Scoping Report is to provide sufficient information to consultees to agree the scope of the EIAR. Where EDF Renewables (herein referred to as the Applicant) is proposing to 'scope out' particular elements from the EIAR, sufficient information and justification has been provided in this report. The intention is to ensure the focus in the EIAR is on any receptors impacted by the Proposed Development that may experience significant effects.

Consultees will note that the Scoping Report contains a number of questions, for which it would be useful to receive feedback on. Not all questions will be relevant to all consultees, therefore we request that consultees provide feedback only on those questions appropriate to them. The questions should not be considered an exhaustive list, and consequently feedback is welcome on any issue considered relevant to the Proposed Development. If consultees elect not to respond, EDF Renewables will assume that consultees are satisfied with the approach adopted/proposed. Further consultation will take place with relevant stakeholders throughout the Environmental Impact Assessment (EIA) process, including with local communities as necessary.

The design of the Proposed Development to date is a result of maximising the potential wind resource on site whilst recognising site-specific and broader constraints as they are understood at the date of submitting this Scoping Report. The layout of the Proposed Development presented in the Scoping Report is expected to be further refined during the EIA process and through further consultation as required. Therefore, it should be noted that any amendments to the design are unlikely to increase the likelihood of a significant effect. However, should any changes occur that are likely to result in a significant or unknown effect on an important feature or impact previously scoped out, then this will be scoped back into the EIA process. Changes of this nature will be discussed with the relevant consultees to ensure that they too are in agreement with EDF Renewable's understanding and before altering the inclusion or exclusion of features from the EIA.

1.1. Purpose of this Scoping Report

For this application we propose to begin stakeholder consultation at the scoping stage in order to introduce the project and provide some information on the Proposed Development Area's baseline conditions and the possible impacts from the development. Therefore, this report utilises existing information and data gathered to date to focus on key areas and likely significant effects in agreement with consultees. Potential **minor and non-significant issues are proposed to be scoped out**, and therefore will not be included within the final submission in the EIAR.

The eventual EIAR submitted will be more streamlined **and focus on only likely significant effects**. This approach is very much supported by the EIA Regulations and by determining authorities such as the Energy Consent Unit (ECU). The Applicant will ensure that regular and continued liaisons with key stakeholders (including the community) are carried out and documented to agree the assessment baseline, methodology, therefore ensuring the EIA process and final EIAR documents will be more efficient and streamlined.

This Scoping Report is a request to the Scottish Ministers to adopt a Scoping Opinion and is submitted in accordance with the EIA Regulations.

Question 1: Do the consultees have any comments about the proposed approach to scoping and the purpose of the Scoping Report?

2. The Applicant

EDF Renewables 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).

EDF Renewables 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, EDF Renewables develop, build, operate and maintain renewable technologies throughout their lifetime and have over 25 years' experience in delivering renewable energy generation.

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

EDF Renewables believe 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.

3. The Proposed Development

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 in construction Halsary Wind Farm and approximately 3 km to the south-west of Watten. 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.

Figure 3.1 shows the regional context of the Proposed Development. Figure 3.2 illustrates the current proposed turbine layout, which is subject to change on the basis of environmental survey and stakeholder feedback. Figure 3.3 presents the site location plan.

Figure 7.2.1 show the Zone of Theoretical Visibility (ZTV) for the current site layout. The Proposed Development presented in this Scoping Report is considered by EDF Renewables to comprise the largest extent of land for the tallest and greatest number of turbines expected to be put forward for permission. It therefore represents the greatest benefit in terms of electricity generation and climate mitigation.

The Proposed Development will continue to evolve as the EIA progresses. In its current form, the Proposed Development is summarised as follows:

- Up to 8 wind turbines up to 220 m to tip height (candidate turbine model specifications have hub heights of 139 m and rotor diameters of 162 m);
- Turbine foundations and hardstandings;
- Onsite substation;
- Battery storage;
- External transformer housing;
- Crane pads;

- Access tracks;
- Underground electricity cables;
- Permanent anemometry mast;
- Borrow pits;
- Temporary construction and storage compounds and ancillary infrastructure;
- Site signage;
- Temporary construction gatehouse; and
- Waste water and surface water drainage.

The Proposed Development location has a good wind resource and consequently a project located here will significantly contribute to the UK and Scottish Government's renewable energy targets. Wind farm design with turbines up to 220 m tip height is considered reflective of Scottish Government aspirations for demonstrably better energy yields from sites optimised with higher tip heights. As far as possible, the Proposed Development will also utilise and upgrade existing tracks which will further minimise potential effects on the local environment.

The lifespan of the Proposed Development is proposed to be 35 years, after this time the project will be decommissioned.

Table 3.1: Current Proposed Turbine Coordinates (Indicative)

Turbine	Easting	Northing
1	320987	952728
2	321126	952090
3	321537	951859
4	320921	951062
5	320470	951529
6	320410	952101
7	319849	951479
8	319953	950803

Source: EDF Renewables (181021_Bt_A)

3.1. Project Design

During the review process for the area, assessment has been carried out on the wind resource at the site and the key landscape and visual constraints. Key considerations to the scheme are as follows:

- A viable development in terms of energy yield;
- Relationship to the surrounding landscape; and
- Technical and environmental constraints.

The layout presented for scoping is considered, at this point, to be the most optimal following an iterative design process which has taken all known constraints (at the time) and wind yield analysis into consideration. The layout design will continue to evolve throughout the assessment period.

3.2. Wind Turbines, Foundations, Transformers & Crane Pads

The specific turbine model has not yet been selected but it is expected to be a horizontal axis machine with three rotor blades. Current models have approximately 6 – 7 megawatt (MW) generating capacity and by the time the project is constructed, such wind turbine models may be capable of generating more. Any turbines selected are also likely to have external transformers placed adjacent to each turbine. The candidate turbine model for assessment only is the Vestas V162.

The turbines will be fixed to reinforced concrete foundations. The foundations will be formed in excavations approximately 3.5 m deep, depending upon ground conditions. Detailed design specifications for each foundation would depend on site-specific factors such as ground conditions, the specific turbine used and various other engineering considerations.

Crane pads would be left in-situ following erection of turbines to allow for maintenance and replacement of parts as necessary during the lifetime of the project.

3.3. Access Tracks

Existing access routes will be utilised where possible, but additional site routes would also be required. The routes for the tracks will be chosen to minimise potential impacts on the environment, while taking account of other site-specific constraints. The EIAR will include a rationale for their final location.

The construction of the site tracks falls under two main categories, which can be categorised as follows:

- 'Cut' track – superficial layers are removed, along with soft subsoils until reaching a competent bearing layer, which can be used as a formation level using methods including blasting of rock.
- 'Floating' track – superficial layers and subsoils are left in-situ with the track built off the existing ground level, utilising geotextiles and geogrids to reinforce the track materials. This technique is generally used where there are deep soft underlying materials e.g., peat or soft clays.

Watercourse crossings will be minimised as far as possible and where these cannot be avoided then suitable water crossings will be identified and assessed.

3.4. Substation, External Transformer and Grid Connection

The wind turbines would produce electricity at 690 – 1,000 Volts. The electricity would then be transformed to 33,000 Volts (33 kV) via a transformer which is likely to be immediately adjacent to the tower of each turbine. The transformers would be linked to the onsite substation via high voltage underground cables placed in trenches which would generally follow the route of the onsite tracks (dimensions to be determined by the ground conditions but typically 0.5 m x 1 m deep). Where trenching alongside onsite tracks are not feasible, the transformers would connect to the substation via underground cables across open ground with electrical marker posts used to identify their locations.

The exact location of the transformer may differ depending on the final turbine model used.

The underground 33 kV cables routed from the turbines would be brought together via the existing substation at Mybster. The detailed construction methods, layout of cables and contents of the onsite substation compound would be provided within the Proposed Development Construction Environmental Management Plan (CEMP).

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

3.5. Borrow Pits

The Proposed Development would require crushed stone to construct the new tracks, improve the existing tracks if necessary, create hard standing areas for the cranes and lay the foundations. It is the intention that suitable stone

and aggregate would be sourced from on-site borrow pits. Borrow pits on site may be used to reduce the potential effects on the environment and transport network, associated with transporting stone to the site. Borrow pit areas of search will be identified within the EIAR.

3.6. Temporary Construction and Storage Compounds and Ancillary Infrastructure

To facilitate construction, temporary compounds may be required, located strategically across the site. Infrastructure ancillary to the construction and operation of the Proposed Development will be required. These would be constructed in accordance with best practice and relevant guidelines, to minimise environmental impact.

3.7. Battery Storage

A battery energy storage facility, primarily consisting of a container(s) with external ancillary equipment, may be proposed to store excess electricity generated by the Proposed Development and support its export when required. It is likely to be similar in size and shape to a small shipping container with lithium-ion battery cells inside. The location of this facility will be identified within the EIAR.

3.8. Construction Environment Management Plan

A CEMP would be created and agreed with THC prior to construction commencing through an appropriately worded suspensive condition in order to ensure the impacts from construction are kept to a practical minimum. The CEMP would set out the method statements for constructing site infrastructure, measures that would be undertaken by contractors to ensure good site practice with regards to construction practices and environmental management. Such measures would include for the transport and storage of potentially polluting substances such as oils and lubricants as well as waste management, for example.

Should the Proposed Development be consented, best practice guidelines and method statements will be adopted to ensure that the development does not impact negatively on the local environment. No development shall take place (including demolition, ground works, vegetation clearance) until a CEMP, incorporating a Construction Method Statement (CMS), has been submitted to and approved in writing by the local planning authority.

No development shall commence until the role and responsibilities and operations to be overseen by an appropriately competent Ecological Clerk of Works (ECoW) have been submitted to and approved in writing by the local planning authority. The appointed person shall undertake all activities, and works shall be carried out, in accordance with the approved details. The ECoW will ensure that during construction impacts to ecological features are minimised through best practice, including ensuring water quality is maintained and the potential for disturbance or risk of injury/death is minimised for protected species which may be using the site on an occasional basis.

4. Approach to Environmental Impact Assessment

The EIA is a statutory procedure which draws together in a systematic way an assessment of the likely significant environmental effects arising from a Proposed Development.

As the process has numerous steps as set out below, it allows for the opportunity to 'design out' adverse environmental effects at an early stage through the design of the project. This of course is preferable to mitigation or remedy at a later stage.

An iterative design approach is already in process for this project and will continue to be adopted throughout the EIA process, which will allow the Proposed Development to have adopted a design that works well for both the local

environment and environmental resources within the area as well as being an economically viable scheme, with the ability to deliver on Scottish, UK and international renewable energy targets.

The steps taken for informing and developing the EIA process are identified in the flow diagram below (Figure 4.1).

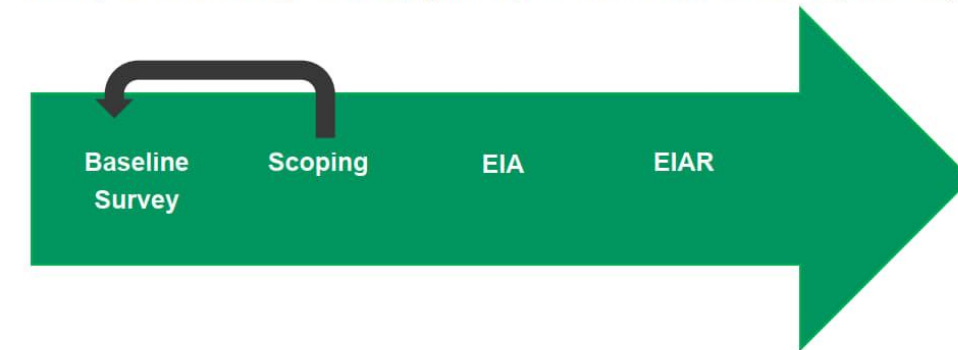


Figure 4.1: EIA Process

Feasibility studies have been undertaken and some baseline surveys have commenced, details of which are provided in Section 7 below.

Consultees are requested to respond where possible to scope in those features and topics that are likely to experience a significant impact, and therefore scope out the rest. In doing so the impact assessment will be focussed on those effects that will influence the determination.

The impact assessment will determine what the impact may be for the assessed receptors from the inclusion of the Proposed Development, either directly or indirectly. This will be done by comparing the baseline conditions with the conditions that would prevail should the Proposed Development be constructed, operated and subsequently, decommissioned. The environmental effects of the Proposed Development will be predicted in relation to environmental receptors (i.e., people), built resources and natural resources.

A distinction will be made in the assessments between impacts and effects, where:

- Impacts are defined as the predicted change to the baseline environment attributable to the scheme; and
- Effects are the consequence of impacts on environmental resources or receptors.

4.1. What will the EIA Assess?

The EIA will address the construction phase of the wind farm, the operational phase which would last approximately 35 years, and the decommissioning phase. The geographical coverage of the EIA will take account of the following:

- The physical extent of the proposed works;
- The nature of the baseline environment and the manner in which effects are propagated; and
- National and Local planning and policy context for the scheme.

4.2. Gathering Baseline Information

Baseline data is being collected for this project and the assessment team will ensure that sufficient data is obtained to enable a robust assessment, appropriate to the nature and scale of the Proposed Development. The extent of the baseline assessment will be determined using both professional judgement and industry best practice. The EIA will also identify areas where the baseline may change, prior to the construction and operational phases of the Proposed Development from current conditions (for example, maturation of landscaping).

The collection of baseline data will be achieved through desk study (including the use of data gathered for the previous developments in the area), consultation, field survey and monitoring, and will be clearly reported in the subsequent sections, or within the EIAR (should there be an expected significant impact from the development). In line with the EIA Regulations, the EIAR will also indicate any difficulties encountered in compiling environmental baseline conditions, such as not being granted permission to access areas where surveys were required.

4.3. Prediction and Evaluation of Impacts and Effects

The prediction of impacts examines the change to the baseline environment that could result from the construction and operation of the Proposed Development. The effects will be classified into one or more of the following:

- Positive effects that have a beneficial influence, negative effects that have an adverse influence;
- Temporary effects that persist for a limited period only, due for example to particular construction activities;
- Permanent effects that result from an irreversible change to the baseline environment or which persist for the foreseeable future;
- Direct effects that arise from activities that form an integral part of the Proposed Development;
- Indirect effects that arise from activities not explicitly forming part of the Proposed Development;
- Secondary effects that arise as a result of an initial effect of the scheme; and
- Cumulative effects that arise from the combination of different impacts at a specific location, the recurrence of impacts of the same type at different locations, the interaction of different impacts over time, or the interaction of impacts arising from the scheme in conjunction with other development projects.

There is no statutory definition of what constitutes a significant effect although each EIA discipline aims to provide its own guidance. A significant effect may be broadly defined as an effect which, either in isolation or combination with others, should be taken into account in the decision-making process. This general definition will be used as the basis against which the significance criteria for environmental disciplines will be developed. The threshold of significance for predicted effects tends to vary between the environmental topics. The assessment team will ensure that the approach taken for each discipline is clearly explained.

4.4. Mitigation of Environmental Effects

Mitigation measures will be considered for each significantly adverse effect. The EIAR will include a description of the measures envisaged to prevent, reduce and where possible remedy any significant adverse effects. In line with the regulations, when identifying mitigation measures, the Proposed Development will take into account the practicability and cost effectiveness of the proposals and their efficiency in reducing environmental impacts.

Where practical, mitigation measures will be set out as commitments which will ensure they are implemented. Where the effects of the impact are significant, and where there is uncertainty in the mitigation proposed, monitoring may be proposed to ensure that the mitigation is both required and effective. Monitoring will allow for adaptation of the mitigation measures to ensure that they are fit for purpose. Monitoring will be proportionate to the level of significance experienced and not simply proposed as monitoring for monitoring sake.

Once the final design has been adopted and account has been taken of any mitigation measures, residual effects will be listed. The significance of a residual effect will be determined by correlating the magnitude of the change arising from the scheme with the sensitivity of the particular attribute under consideration. The magnitude of change will be evaluated in accordance with the following table, Table 4.1, unless a specific magnitude of change table is presented for that discipline in this Scoping Report.

Table 4.1: Magnitude of Change

Magnitude	Description
High	Total loss or major alteration to key elements/features of the baseline conditions
Medium	Partial loss or alteration to one or more key elements/features of the baseline conditions
Low	Minor shift away from the baseline conditions
Negligible	Very slight change from baseline conditions

Where applicable in carrying out individual assessments, a scale of increasing sensitivity of the resource or receptor will be defined. This may be defined in terms of quality, value, rarity or importance and can be classed as 'Low', 'Medium' or 'High'. For certain assessment areas, guidance will be taken from the value attributed to elements through designation or protection under law. Where assessment of this nature takes place the correlation of magnitude against sensitivity will determine a qualitative expression for the significance of the residual adverse effect. This is demonstrated in the matrix below in Table 4.2:

Table 4.2: Significance of Effect

Sensitivity of Resource / Receptor	Low	Medium	High
Magnitude of Impact			
High	Moderate	Moderate / Major	Major
Medium	Low / Moderate	Moderate	Moderate / Major
Low	Low	Low / Moderate	Moderate
Negligible	Negligible / Low	Low	Low / Moderate

Those residual adverse effects indicated as Major and Moderate/Major will be regarded as being significant effects in terms of the relevant legislation. However, other factors may have to be considered, including the duration and the reversibility of the effect.

As per the aim of the Scoping Report, we intend to focus the EIAR on the significant effects and will therefore seek agreement that non-significant effects can be scoped out.

4.4.1. Securing Commitments and Mitigation Through Planning Conditions

Where commitments and mitigation have been discussed within this Scoping Report, they will form part of the EIAR and therefore ensure that they are secured if the proposal receives consent through specific planning conditions.

4.4.2. Questions to Consultees

Question 2: Do consultees agree with the approach to the EIA and the associated mitigation and monitoring?

5. Consultation

5.1. Community Consultation

Natural Power and EDF Renewables considers consultation with the community to be a crucial part of the development process and will engage with the local community throughout the application process. As this is a

Section 36 application there is no formal requirement to follow the procedures for major developments under the Planning etc. (Scotland) Act 2006, however this application will follow the processes and standards set by the legislation and best practice guidelines (PAN 3/2010 - Community Engagement)¹. A Pre-application Consultation Report (PAC Report) will be submitted with the application.

As part of the iterative planning process and best practice, EDF Renewables is keen to engage with local communities close to the Proposed Development to gather their views, so these can, where possible, inform the planning information required for any forthcoming application.

Proposed consultation events include:

- A public exhibition at Spittal Village Hall on the 20th June 2022 from 2pm to 7pm;
- A public exhibition at Watten Village Hall on the 21st June 2022 from 2pm – 7pm;
- Second round of two public exhibitions (location and dates to be confirmed); and
- Online exhibition (date to be confirmed).

The public exhibitions will be advertised in local newspapers when final dates are confirmed.

The views of local communities will be continually sought throughout the planning process and there will be other opportunities for key stakeholders and community members to share their views on the project as it progresses throughout the planning process.

5.2. Other Stakeholder Consultation

Natural Power and EDF Renewables consider consultation with statutory and non-statutory consultees as an integral part of the iterative EIA process and recognise the benefits in carrying out early consultation with all relevant parties. Relevant consultees include but are not limited to:

- NatureScot;
- Scottish Environmental Protection Agency (SEPA);
- Historic Environment Scotland (HES);
- THC;
- Watten Community Council
- Halkirk Community Council
- Bower Community Council
- Castletown Community Council
- Sinclair's Bay Community Council
- Tannach & District Community Council
- Latheron, Lybster and Clyth Community Council
- Berriedale and Dunbeath Community Council

The Applicant has already begun pre-application advice consultation with THC. All other consultation will progress with the circulation of this Scoping Report and will continue for the duration of EIA process.

5.2.1. Questions to Consultees

Question 3: Do consultees agree with the proposed approach set out for consultation?

¹ Scottish Government (2010), *Planning Advice Note (PAN) 3/2010 on community engagement* [Online] Available at: [Planning Advice Note 3/2010: community engagement - gov.scot \(www.gov.scot\)](https://www.gov.scot/Information/OtherPublications/PlanningAdvice/PlanningAdviceNote32010communityengagement). [Accessed 20/05/2022]

6. Legal, Policy Climate Change Context

The application will conform to the statutory requirements legislated by Section 36 of the Electricity Act 1989 and the EIA Regulations. Deemed planning permission will be sought by the Scottish Ministers under section 57(2) of the Town and Country Planning (Scotland) Act 1997 as amended.

A Planning Statement will accompany the application for consent and assess the Proposed Development in a legal and policy context against the relevant legislation and planning policies in force. The Planning Statement would also consider such documents at international, national, regional and local levels, where applicable, including but not limited to:

- Paris Agreement (effective of November 2016);
- Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, which amends the Climate Change (Scotland) Act 2009;
- British Energy Security Strategy (2022);
- Scottish Energy Strategy: The future of energy in Scotland 2017;
- Onshore Wind Policy Statement (2017 and draft 2021 refresh);
- National Planning Framework for Scotland 3 (NPF3) (2014);
- Scottish Planning Policy 2014 (SPP);
- Draft National Planning Framework for Scotland 4 (2021).
- Highland Council Local Development Plan (2012); and
- Caithness and Sutherland Local Development Plan (2018).

The current Supplementary Planning Guidance will also be accounted for in the submitted EIAR with the appropriate weighting given relative to established policies.

7. Environmental Impact Assessment Report

The EIA process will result in the production of an EIAR. The EIAR will identify the features/receptors that have been agreed with the competent authority and their advisers as features that are likely to be affected by a significant effect from the Proposed Development and will make an influence on their decision process.

It will focus on each of the broad topics identified within this Scoping Report, plus any others that develop through the progression of the EIA process, until submission.

Where features are considered, the assessment methodology, results, effects and mitigation proposed (if any) will be included. This will allow for the residual effect from the Proposed Development to be identified to allow the competent authority sufficient information to determine the application.

The EIAR will supplement the application and will also be accompanied by a Carbon Balance Assessment, a Non-Technical Summary (NTS), a PAC Report and a Planning, Design and Access Statement (PDAS).

The EIAR is likely to follow the structure below:

Background Information

Chapter 1: Introduction

Chapter 2: Legal and Policy Context

Chapter 3: Approach to EIA

Chapter 4: Site Selection and Design Evolution

Chapter 5: Project Description

Biological and Physical Environment

Chapter 6: Landscape and Visual

Chapter 7: Ecology

Chapter 8: Ornithology

Chapter 9: Hydrology, Geology and Hydrogeology

Chapter 10: Cultural Heritage

Chapter 11: Forestry

Population and Human Health

Chapter 12: Traffic and Transport

Chapter 13: Aviation and Existing Infrastructure

Chapter 14: Noise

Chapter 15: Socio-economics, Recreation and Tourism

Chapter 16: Other Issues

Summary of Assessment

Chapter 17: Residual, Synergist Effects & Mitigation and Conclusions

The EIAR can be produced both in a hard copy print and electronically. For the majority of consultees, unless otherwise requested, the EIAR will be provided electronically. Upon submission of the application, these documents will be made available for public inspection at appropriate locations to be agreed with THC and the ECU, and will be distributed to the relevant consultees. An NTS will be submitted alongside the EIAR, which will provide a summary of the main findings and will be written in a non-technical language to help enable a better understanding and overview of the assessments.

Question 4: Do consultees agree with the proposed chapters to be included in the EIAR?

7.1. Embedded Mitigation and Further Layout Iterations

The design of the Proposed Development has generally avoided environmental and physical constraints, which have been identified during initial feasibility studies (embedded mitigation). These will be refined as the EIA progresses.

The layout and design of the development will be amended through the remainder of the EIA process, until just before the submission of the EIAR and application when the design will be 'frozen' to allow final assessment. As stated previously the layout and design provided at scoping are considered to be the optimum from an energy generation perspective. Any amendments to the design will retain or preferably decrease the likelihood of a significant effect.

Should any changes occur that are likely to have a significant effect on receptors these will be included within the EIA. If subsequent changes to the design remove the likelihood of significant effects sufficient to scope out receptors from assessment, this will be discussed with relevant consultees before excluding them from the EIAR.

In the following sections the subject areas to be covered in the Scoping Report and EIAR are provided. Where it is considered that certain subjects or particular aspects within subjects can be scoped out of the EIAR, evidence and a rationale is provided.

7.2. Landscape and Visual

7.2.1. Introduction

This section of the Scoping Report sets out the proposed methodology and approach to be applied to the Landscape and Visual Impact Assessment (LVIA) of the Proposed Development. The aim of the LVIA is to identify, predict and evaluate potential effects arising from the addition of the Proposed Development on the following:

- Physical elements of the landscape;
- Landscape character;
- Special qualities of protected and designated landscapes;
- Views from sensitive locations, for example residential properties, settlements, hill tops, and routes; and
- Cumulative effects that may arise from other wind farm developments.

The LVIA will be undertaken by Chartered Members of the Landscape Institute (CMLI) experienced in undertaking siting, design and assessment of onshore wind energy developments in accordance with best practice guidance.

7.2.2. Methodology

The LVIA will be prepared in accordance with the principles contained within the *Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3)*.² In addition, the LVIA will take account of the following guidance documents:

- GLVIA3 Statement of Clarification 1/13 10-06-13 (Landscape Institute, 2013);³
- Assessing Impacts on Wild Land Areas – Technical Guidance (NatureScot, September 2020);⁴
- Assessing the Cumulative Impact of Onshore Developments (Scottish Natural Heritage (SNH), 2012);⁵
- Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland. (Scottish Natural Heritage, Historic Environment Scotland, April 2018);⁶
- General pre-application and scoping advice for onshore wind farms, Guidance (NatureScot, September 2020);⁷
- Good Practice during Wind Farm Construction, 4th Edition 2019 (Scottish Renewables, SNH, SEPA, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science, AECOW);⁸

² Landscape Institute, Institute of Environmental Management. (2013) *Guidelines for Landscape and Visual Impact Assessment, Third Edition*. Abingdon. Routledge

³ Landscape Institute. (2013) *GLVIA3 Statement of Clarification 1/13 10-06-13* [Online] Available from - <https://www.landscapeinstitute.org/technical/glvia3-panel/glvia3-clarifications/>. [Accessed: April 2022]

⁴ NatureScot. (2020) *Assessing impacts on Wild Land Areas – technical guidance* [Online] Available from - <https://www.nature.scot/doc/assessing-impacts-wild-land-areas-technical-guidance>. [Accessed: April 2022]

⁵ Scottish Natural Heritage. (2012) *Assessing the Cumulative Impact of Onshore Developments* [Online] Available from - <https://www.nature.scot/doc/assessing-impacts-wild-land-areas-technical-guidance>. [Accessed: April 2022]

⁶ Scottish Natural Heritage., Historic Environment Scotland. (2018) *Environmental Impact Assessment Handbook* [Online] Available from - <https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf>. [Accessed: April 2022]

⁷ NatureScot. (2020) *General pre-application and scoping advice for onshore wind farms* [Online] Available from - <https://www.nature.scot/doc/general-pre-application-and-scoping-advice-onshore-wind-farms>. [Accessed: April 2022]

⁸ Scottish Renewables, SNH, SEPA, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science, AECOW. (2019) *Good Practice during Wind Farm Construction, 4th Edition 2019* [Online] Available from - <https://www.nature.scot/sites/default/files/2020-12/Good%20Practice%20during%20wind%20farm%20construction%20-%204th%20Ed.pdf>. [Accessed: April 2022]

- Guidance on Undertaking Environmental Lighting Impact Assessments (Institution of Lighting Professionals, 2013);⁹
- Guidance Note 01/20 Guidance note for the reduction of obtrusive light (Institution of Lighting Professionals, 2020);¹⁰
- Landscape Character Assessment, Guidance for England and Scotland, (The Countryside Agency and SNH 2002 Edition);¹¹
- Landscape Sensitivity Assessment – Guidance for Scotland, Consultation draft (NatureScot, July 2020);¹²
- Siting and Designing Wind Farms in the Landscape, Guidance, Version 3a (SNH, August 2017);¹³
- Technical Guidance Note 2/19, Residential Visual Amenity Assessment (RVAA) (Landscape Institute, 2019);¹⁴
- Technical Guidance Note 02/21, Assessing landscape value outside national designations (Landscape Institute, February 2021);¹⁵
- Technical Guidance Note 06/19, Visual Representation of Development Proposals (Landscape Institute, 2019);¹⁶
- Technical Information Note 01/2017 (Revised), Tranquillity – An overview (Landscape Institute, 2017);¹⁷ and
- Visual Representation of Wind Farms, Version 2.2, (SNH, February 2017).¹⁸

The assessment will also take cognisance of relevant national and local landscape planning policy and other such material that may be published during the preparation of the LVIA.

A methodology including detailed criteria for assessing landscape and visual effects will be included as an appendix document to the main LVIA EIAR chapter.

9 Institution of Lighting Professionals. (2013) *Professional Lighting Guide 04: Guidance on undertaking Environmental Lighting Impact Assessments*. Institution of Lighting Professionals. Rugby.

10 Institution of Lighting Professionals. (2021) *Guidance Note GN01/21 The Reduction of Obtrusive Light*. Institution of Lighting Professionals. Rugby.

11 Land Use Consultants., Swanwick. C. (2002) *Landscape Character Assessment Guidance for England and Scotland*. The Countryside Agency, Scottish Natural Heritage. Cheltenham.

12 NatureScot. (2020) *Landscape Sensitivity Assessment – Guidance for Scotland, Consultation draft* [Online] Available from - https://www.nature.scot/sites/default/files/2020-07/Consultation%20-%20Landscape%20Sensitivity%20Assessment%20guidance_1.pdf. [Accessed: April 2022]

13 Scottish Natural Heritage. (2017) *Siting and Designing Wind Farms in the Landscape, Guidance* [Online] Available from - <https://www.nature.scot/sites/default/files/2017-11/Siting%20and%20designing%20windfarms%20in%20the%20landscape%20-%20version%203a.pdf>. [Accessed: April 2022]

14 Landscape Institute. (2019) *Residential Visual Amenity Assessment (RVAA)* [Online] Available from - <https://landscapeinstitute.org/2019/03/tqn-02-2019-rvaa.pdf>. [Accessed: April 2022]

15 Landscape Institute. (2021) *Technical Guidance Note 02/21 Assessing landscape value outside national designations* [Online] Available from - <https://landscapeinstitute.org/2021/05/tqn-02-21-assessing-landscape-value-outside-national-designations.pdf>. [Accessed: April 2022]

16 Landscape Institute. (2019) *Technical Guidance Note 06/19 Visual Representation of Development Proposals* [Online] Available from - https://landscapeinstitute.org/2019/09/LI_TGN-06-19_Visual_Representation.pdf. [Accessed: April 2022]

17 Landscape Institute. (2017) *Technical Information Note 01/2017 (Revised) Tranquillity – An overview* [Online] Available from - <https://landscapeinstitute.org/2017/02/Tranquillity-An-Overview-1-DH.pdf> (Accessed April 2022)

18 Scottish Natural Heritage. (2017) *Visual Representation of Wind Farms, Guidance*. [Online] Available from - <https://www.nature.scot/sites/default/files/2019-09/Guidance%20-%20Visual%20representation%20of%20wind%20farms%20-%20Feb%202017.pdf>. [Accessed: April 2022]

7.2.3. LVIA Study Area

The first step of the LVIA is to establish the extent of study area. In accordance with NatureScot guidance (2017), for turbines in excess of 150 m in tip height, a 45 km study area is recommended. This will be offset from the outermost turbines of the Proposed Development.

7.2.4. Landscape and Visual Baseline

A review of the landscape and visual receptors located within the study area will be undertaken through a combination of desk study and site work. Operational and sites under construction will be assessed as baseline.

Landscape Baseline

The landscape baseline will be identified through review of the following information:

- Landscape Character Types and Map Descriptions (NatureScot, 2019);¹⁹
- Landscape Character Assessment: Caithness and Sutherland – Landscape Evolution and Influences (NatureScot, 2019);²⁰
- Caithness and Sutherland landscape character assessment (SNH, 1998);²¹
- Onshore Wind Energy Supplementary Guidance (THC, 2016);²²
- Landscape Sensitivity Appraisal: Black Isle, Surrounding Hills and Moray Firth Coast Caithness (THC, 2017);²³
- Onshore wind energy: supplementary guidance, Framework Map – Caithness and Sutherland (THC, 2020);²⁴
- The special qualities of the National Scenic Areas (SNH, 2010);²⁵
- Inventory of Gardens and Designed Landscapes (Historic Environment Scotland, 2021);²⁶
- Wild Land Area Descriptions and Maps (SNH, 2017);²⁷ and

19 NatureScot. (2019) *Landscape Character Types* [Online] Available from - <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>. [Accessed: April 2022]

20 NatureScot. (2019) *Landscape Character Assessment: Caithness and Sutherland – Landscape Evolution* [Online] Available from - <https://www.nature.scot/doc/landscape-character-assessment-caithness-and-sutherland-landscape-evolution-and-influences>. [Accessed: April 2022]

21 Stanton, C. (1998) Scottish Natural Heritage Review No. 103 *Caithness and Sutherland landscape character assessment*. Scottish Natural Heritage. Battleby.

22 The Highland Council. (2016) *Onshore Wind Energy Supplementary Guidance* [Online] Available from - <https://www.highland.gov.uk/downloads/file/18793/onshore-wind-energy-supplementary-guidance-november-2016>. [Accessed: April 2022]

23 The Highland Council. (2017) *Landscape Sensitivity Appraisal: Black Isle, Surrounding Hills and Moray Firth Coast Caithness* [Online] Available from - <https://www.highland.gov.uk/downloads/file/18753/addendum-supplementary-guidance-part-2b-december-2017>. [Accessed: April 2022]

24 The Highland Council. (2020) *Onshore wind energy: supplementary guidance, Framework Map – Caithness and Sutherland* [Online] Available from - <https://www.highland.gov.uk/downloads/file/22787/framework-map-caithness-and-sutherland>. [Accessed: April 2022]

25 Scottish Natural Heritage. (2010) *Scottish Natural Heritage Commissioned Report 374: The Special Qualities of the National Scenic Areas*. Scottish Natural Heritage. Battleby.

26 Historic Environment Scotland (2021) *Inventory of Gardens and Designed Landscapes*. [Online] Available from - <https://www.historicenvironment.scot/advice-and-support/listing-scheduling-and-designations/gardens-and-designed-landscapes/what-is-the-inventory-of-gardens-and-designed-landscapes/>. [Accessed: April 2022]

27 Scottish Natural Heritage. (2017) *Wild Land Areas map and descriptions* [Online] Available from - <https://www.nature.scot/doc/wild-land-areas-map-and-descriptions-2014>. [Accessed: April 2022]

- Assessment of Highland Special Landscape Areas (THC, 2011).²⁸

Visual Baseline

The following will be considered in the visual baseline:

- Residential properties within 3 km of the Proposed Development;
- Settlements;
- Roads including A, B and minor roads;
- Walking routes including Scottish Hill Tracks, Public Rights of Way and Core Paths;
- Hill tops; and
- Promoted visitor attractions.

7.2.5. Viewpoints

In addition, a selection of viewpoints has been proposed in Table 7.2.1 taken from Figure 7.2.1 to represent the views experienced towards the Proposed Development within the study area by various groups of people.

Table 7.2.1: Proposed Viewpoint Locations

Viewpoint		Easting	Northing	Distance	Direction of view	Reason for selection
VP1	Thurso	310637	967019	17.6 km	S - E	Viewpoint leading out of Thurso. Representative of local road users.
VP2	North of Hoy on B876	321653	964992	12.2 km	S	Viewpoint heading south on the B876, north of Hoy. Representative of local road users.
VP3	Georgemas	315582	959159	8.3 km	S - E	Viewpoint heading south on the A9. Representative of road users.
VP4	North Watten	324424	958036	6.3 km	S - W	Viewpoint representative of local road users, offering more open views.

²⁸ The Highland Council. (2011) Assessment of Highland Special Landscape Areas. [Online] Available from - https://www.highland.gov.uk/downloads/file/2937/assessment_of_highland_special_landscape_areas. [Accessed: April 2022]

Viewpoint		Easting	Northing	Distance	Direction of view	Reason for selection
VP5	Scotscalder	309646	956020	11.2 km	S - E	Viewpoint heading south on the B870. Representative of local road users.
VP6	Ben Dorrery	306304	955053	14.0 km	S - E	Viewpoint on the top of Ben Dorrery. Representative of walkers' views on this hill and to consider nearby elevated views including ground level elements.
VP7	Harpsdale Cross Roads	313291	954664	7.2 km	E	Viewpoint on Harpsdale Cross Roads to consider sequential views and cumulative effects.
VP8	Watten	323857	954413	3.2 km	S - W	Viewpoint representative of residents living within the local community of Watten.
VP9	A882, east of Watten	326868	953618	5.6 km	W	Viewpoint representative of local road users on their approach to Watten.
VP10	Spittal	316882	953355	3.5 km	S - E	Viewpoint representative of local road users heading south from the

Viewpoint		Easting	Northing	Distance	Direction of view	Reason for selection
VP11	North Wick, A99 Road	335974	951939	14.4 km	W	community of Spittal. Viewpoint representative of road users heading south on the approach to Wick.
VP12	Westerdale	313050	951798	6.8 km	E	Viewpoint representative of local road users of the B870 and residents living within the small settlement of Westerdale.
VP13	Minor road north of Grey Cairns of Camster	324210	948422	4.1 km	N - W	Viewpoint to consider sequential views and cumulative effects.
VP14	Loch More Cottage	308396	946103	12.4 km	N - E	Viewpoint representative of views from the Wild Land Area of Causeymire/ Knockfin Flows.
VP15	Loch of Yarrows Trail	330434	943227	12.3 km	N - W	Viewpoint representative of views from Designated Site.
VP16	A9 Loch Rangag Parking	317991	942270	8.7 km	N - E	Viewpoint representative of road users, tourists and views from Designated Site.

Viewpoint		Easting	Northing	Distance	Direction of view	Reason for selection
VP17	Coire na Beinne	315109	940170	11.6 km	N - E	Viewpoint representative of views from the Wild Land Area of Causeymire/ Knockfin Flows.
VP18	Ben Alisky	304603	938657	19.5 km	N - E	Viewpoint representative of views from the Wild Land Area of Causeymire/ Knockfin Flows and representative of hill walkers using Ben Alisky.
VP19	Scaraben Peak	306608	926826	27.4 km	N - E	Viewpoint representative of hill walkers and also to consider sequential views and cumulative effects.

Source: Figure 7.2.1

Viewpoints have been selected to take account of the viewing experience (such as static views from settlements and sequential views from routes) and cumulative views of other wind farm developments. The viewpoints are, as far as possible, representative of the range of key visual receptors and view types (including panoramas, vistas, glimpsed views), as well as being located at varying distances, elevations, and orientations from the Proposed Development.

Question 5: Do consultees agree with the suggested viewpoint locations detailed in Table 7.2.1?

7.2.6. Field Survey

Site visits will be undertaken periodically during periods of clear visibility and include visits to the Proposed Development Area, and the wider study area from publicly accessible locations in order to aid the assessment.

7.2.7. Zone of Theoretical Visibility Mapping

A ZTV map has been produced to illustrate the potential extent of visibility of the Proposed Development based on the current layout at both hub and tip height (Figures 7.2.1 – 7.2.3). The ZTV assumes a bare earth surface, i.e. no trees or buildings etc. that might otherwise obscure the view of the turbines and therefore is a worst-case illustration. The ZTV has been produced with an extent of 45 km based on NatureScot guidance for ZTV production in relation to turbines greater than 150 m in height. ZTVs will be used throughout the design evolution of the Proposed Development and will be presented in the LVIA.

7.2.8. Landscape Assessment

Assessing effects of the Proposed Development on the landscape requires a number of steps broadly summarised as identifying the sensitivity of the landscape receptor, establishing the magnitude or scale of the change likely as a result of the Proposed Development, and ultimately forming a judgement with respect to the significance of the effect in the context of the EIA Regulations. The identification of significant effects is important because those are the effects that are likely to carry more weight in the decision-making process (or often referred to as the planning balance). This does not however mean that non-significant effects are not considered in the LVIA.

Sensitivity of Landscape Receptors

The sensitivity of the landscape will be defined by analysing the susceptibility of the landscape receptor to the proposed change (the Proposed Development) and the value of the landscape receptor. Having established both the susceptibility and the value of the landscape (receptor), these will be combined to determine the overall sensitivity of the landscape receptor to the Proposed Development.

Landscape Magnitude of Change

Judgements of magnitude of change will be assessed in terms of the size and scale, geographical extent, duration and reversibility of the change to the landscape likely to result from the Proposed Development. These will be considered in combination to determine the overall magnitude of the change resulting from the introduction of the Proposed Development.

Judging the Levels of Significance of Landscape Effects

Having established the sensitivity of the landscape receptor and the magnitude of change predicted, the assessment will conclude by identifying the significance of the landscape effect in EIA terms.

7.2.9. Visual Assessment

Assessing the significance of visual effects of the Proposed Development requires several steps including identifying the sensitivity of the visual receptor and identifying the magnitude or scale of the change to the receptors view, prior to forming a judgement with respect to the significance of the effect in the context of the EIA Regulations.

Sensitivity of the Visual Receptor

The sensitivity (or nature) of visual receptors will be assessed in terms of susceptibility of the visual receptor (of the viewer not the view) to the particular form of change likely to result from the Proposed Development, and the value attached to the visual receptor.

Visual Magnitude of Change

Judgements of magnitude of change will be assessed in terms of the size and scale, geographical extent, duration and reversibility of the change of the view likely to result from the Proposed Development. These will be considered in combination to determine the overall magnitude of the change resulting from the introduction of the Proposed Development.

Judging the Levels of Significance of Visual Effects

Having established the sensitivity of the visual receptor and the magnitude of change predicted, the assessment will conclude by identifying the significance of the visual effect in EIA terms.

7.2.10. Cumulative Assessment

For the cumulative assessment, an initial study area of 60 km will be identified in accordance with the relevant guidance (SNH, 2012). Following a review, this will be refined to 45 km from the outermost turbines and data collected for sites currently in operation/under construction, consented and submitted applications which would likely be experienced in conjunction with the Proposed Development.

The aim of the Cumulative Landscape and Visual Impact Assessment (CLVIA) is to identify, predict and evaluate potential key effects arising from the addition of the Proposed Development to a theoretical baseline which includes the existing baseline situation of operational wind farms and those under construction, and additionally wind farms that have been consented or are currently being considered within the planning system that may or may not be present in the landscape in the future.

For clarity, the LVIA and CLVIA will identify the following cumulative baseline scenarios:

LVIA Baseline

- Scenario 1: comprises the existing baseline of operational wind farms and those under construction.

CLVIA Baseline

- 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: considers the addition of the Proposed Development in the context of operational, under construction, consented, undetermined planning applications and wind farm developments currently at appeal, i.e. a less certain future scenario.

The cumulative assessment will follow the methodology set out for the LVIA described above for each cumulative baseline scenario.

Question 6: Do the consultees agree with the LVIA and CLVIA methodologies proposed?

7.2.11. Visualisations

Baseline photography will be undertaken by a professional photographer from viewpoint locations used in the LVIA and Cultural Heritage assessment. Wirelines and photomontages will be generated for the same viewpoint locations and comply with both NatureScot guidance²⁹ and THC guidance³⁰.

29 Scottish Natural Heritage. (2017) *Visual Representation of Wind Farms, Guidance* [Online] Available from - <https://www.nature.scot/sites/default/files/2019-09/Guidance%20-%20Visual%20representation%20of%20wind%20farms%20-%20Feb%202017.pdf>. [Accessed: April 2022]

30 The Highland Council. (2016) *Visualisation Standards for Wind Energy Developments* [Online] Available from - https://www.highland.gov.uk/downloads/file/12880/visualisation_standards_for_wind_energy_developments. [Accessed: April 2022]

7.2.12. Wild Land Assessment

According to the new NatureScot guidance³¹ a Wild Land Assessment is only required if the development is located within or on the periphery of a Wild Land Area. As there are no Wild Land Areas within or on the periphery (closest is approximately 5.4 km away) of the Proposed Development it is proposed to scope out a Wild Land Assessment.

Question 8: Do consultees agree that a Wild Land Assessment be scoped out of the EIA?

7.2.13. Supporting Assessments

Two further assessments will be undertaken to support the LVIA as follows:

Aviation Lighting

At time of writing, the Civil Aviation Authority (CAA) requires visible red aviation warning lighting at up to 2,000 candela (ca) for any structure at and greater than 150 m in height. The worst-case scenario lighting scheme would require a 2,000 candela light to be positioned on the nacelle and 32 candela lights on the tower of each turbine.

At time of writing, the CAA guidance for lighting onshore wind turbines allows for the lighting intensity to be reduced to 10% in good visibility conditions and furthermore that the lighting be omni-directional and therefore dim in intensity outside of a 0° - 3° viewing angle. The current guidance is that the lighting would be static and only be operating during night-time hours. The above methods mitigate the potential effects of the lighting.

As a precautionary measure, it is proposed a description of any lighting proposals visible from each selected viewpoint will be included in the viewpoint assessment. A limited number of viewpoints may be illustrated in additional photomontages using photographs taken at dusk to be agreed through consultation with statutory consultees.

Question 7: Do consultees agree with the approach suggested for aviation lighting?

Residential Visual Amenity Assessment

The Residential Visual Amenity Assessment (RVAA) consists of a detailed study of the visibility from individual properties within a 3 km radius of the outer turbine of the Proposed Development. In the absence of published guidance on the distance from the Proposed Development that should be adopted for a detailed study of visual amenity from residential properties, a 3 km study area is considered appropriate.

Question 8: Do consultees agree with the study area suggested for the RVAA?

7.2.14. Future Consultation

It is the intention to undertake further consultation with statutory consultees regarding the landscape and visual receptors to be scoped into the assessment, establish the viewpoint locations (including those to support the night-time aviation lighting assessment), and cumulative baseline once the Proposed Development is at an advanced stage. This will be supported with ZTVs and wireline projections.

³¹ NatureScot. (2020) *Assessing impacts on Wild Land Areas, Technical Guidance* [Online] Available from - <https://www.nature.scot/doc/assessing-impacts-wild-land-areas-technical-guidance>. [Accessed: May 2022]

7.3. Ecology

7.3.1. Introduction

This section of the Scoping Report describes the baseline conditions, relevant guidance and legislation, proposed scope of assessment and methodology, mitigation and identified potential impacts of the Proposed Development in relation to ecological features. Potential effects on birds are considered separately in Section 7.4: Ornithology.

7.3.2. Baseline Description

Baseline ecological conditions have been established from the following sources:

- Results of ecology field surveys carried out in 2015 and 2020 (see Figure 7.3.1 for survey areas);
- Information from the National Biodiversity Network (NBN) Atlas³² on ecological records within 5 km of the Proposed Development Area in the last 15 years (since 2006);
- Information from the Carbon and Peatland Map 2016;³³
- Information from the Deer Distribution Survey by the British Deer Society;³⁴
- A desk study to confirm the location and qualifying features of designated sites within potential zones of influence of the Proposed Development; and
- Information from the EIA reports from other nearby consented wind farm developments.

The baseline conditions, as established from the existing information, can be summarised as follows:

- Four small patches of ancient woodland lie 2.77 km east of the Proposed Development (Figure 7.3.2).
- Seven designated sites are within 5 km of the Proposed Development (Figure 7.3.2):
 - Caithness and Sutherland Peatlands Special Areas of Conservation (SAC) (0 km): blanket bog, depressions on peat substrates, acid peat-stained lakes and ponds and clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels;
 - Shielton Peatlands Site of Special Scientific Interest (SSSI) (0 km): blanket bog;
 - Loch Watten SAC (2.52 km): naturally nutrient-rich lakes or lochs which are often dominated by pondweed;
 - Loch Watten SSSI (2.52 km): base-rich loch and open water transition fen;
 - River Thurso SAC (4.14 km): Atlantic salmon; and
 - Blar nam Faioileag SSSI (4.22 km): blanket bog.
- The Deer Distribution Survey showed that red deer and roe deer were both confirmed in 2007 and/or 2011 and reconfirmed in 2016.
- A search of the NBN Atlas returned records of the following protected or notable species within 5 km of the Proposed Development in the last 15 years:
 - Common lizard (*Zootoca vivipara*);
 - Otter (*Lutra lutra*);
 - Water vole (*Arvicola amphibius*);
 - Mountain hare (*Lepus timidus*);
 - Palmate newt (*Lissotriton helveticus*);

³² NBN Atlas Scotland. (2022) *NBN Atlas*. [Online] Available from - <https://scotland.nbnatlas.org/>. [Accessed: April 2022]

³³ Scotland's Soils. (2017) *Carbon and peatland 2016 map*. [Online] Available from - <https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/>. [Accessed: April 2022]

³⁴ British Deer Society. (2022) *Deer Distribution Survey*. [Online] Available from - <https://bds.org.uk/>. [Accessed: April 2022]

- Pine marten (*Martes martes*);
 - Common pipistrelle (*Pipistrellus pipistrellus*);
 - Red deer (*Cervus elaphus*);
 - Roe deer (*Capreolus capreolus*); and
 - Wild cat hybrid (*Felis sylvestris x catus*).
- The Proposed Development lies on areas of Class 1³⁵, Class 3³⁶, Class 4³⁷ and Class 5³⁸ peatland (Figure 7.5.2).
 - Phase 1 habitat surveys carried out in 2015 and 2020 showed that the Proposed Development is primarily composed of Blanket Bog, Acid Neutral Flush, Unimproved Acid Grassland, Semi-Improved Acid Grassland and Coniferous Plantation Woodland. There were also smaller pockets of Marsh/Marshy Grassland recorded.
 - The Blanket Bog identified in the habitat surveys consisted of M19a (*Calluna vulgaris-Eriophorum vaginatum* blanket mire, *Erica tetralix* sub-community), M17a (*Scirpus cespitosus-Eriophorum vaginatum* blanket mire, *Drosera rotundifolia-Sphagnum* spp. sub-community), M17c (*Scirpus cespitosus-Eriophorum vaginatum* blanket mire, *Cladonia* spp. sub-community) and M20 (*Eriophorum vaginatum* blanket and raised mire). The Acid Neutral Flush recorded consisted mostly of M4 (*Carex rostrata-Sphagnum recurvum* mire), with some M6a/M25a (*Carex echinata-Sphagnum recurvum/auriculatum* mire, *Carex echinata* sub-community/*Molinia caerulea-Potentilla erecta* mire, *Erica tetralix* sub-community) mosaic. Areas of Wet Modified Bog, contained to small pockets across the area, were all M25a.
 - Areas of potential Groundwater Dependent Terrestrial Ecosystem (GWDTE) were inferred from the National Vegetation Classification (NVC) habitat surveys, with the classifications ranging from Highly Dominant to Moderately Sub-dominant.
 - Field surveys carried out in 2020 identified numerous signs of otter within the survey area, with spraints recorded along Loch Burn and Black Burn. A potential couch was also recorded. The 2015 surveys also recorded a spraint.
 - A potential water vole burrow was identified in 2020 near Loch Burn. Protected species surveys undertaken in 2015 also identified some potential water vole burrows, but with no evidence of current use.
 - Structures and trees which were assessed as having potential features for roosting bat were recorded at Shielton Farmhouse and surrounding area, with the farmhouse, surrounding buildings and wall assessed as offering moderate potential for roosting bats. Other structures and trees within the survey area were assessed as offering low potential for roosting bats.
 - Static bat detector surveys were carried out in 2015 and 2020. The results were analysed using the Ecobat³⁹ tool in line with NatureScot guidance⁴⁰. Nathusius' pipistrelle (*Pipistrellus nathusii*), soprano pipistrelle (*Pipistrellus pygmaeus*), common pipistrelle and *Myotis* sp. were recorded in 2020. In 2015, only common and soprano pipistrelles were recorded. Analysis of the timing of bat passes in 2020 suggested that there was at least one roost for common pipistrelle close to the Proposed Development.

35 Class 1 – Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value.

36 Class 3 – Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat.

37 Class 4 – Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils.

38 Class 5 – Soil information take precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peat.

39 Ecobat. (2017) [Online] Available at: www.ecobat.org.uk. [Accessed: April 2022]

40 NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd., the University of Exeter and the Bat Conservation Trust. (2021) *Bats and onshore wind turbines – survey, assessment and mitigation* [Online] Available from - <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation>. [Accessed: April 2022]

- Electrofishing surveys were carried out in the area in 2015 by the Caithness District Salmon Fishery Board. Sampling was carried out at Black Burn, Burn of Acharole, Loch Burn and The Clow. Both Atlantic salmon (*Salmo salar*) and brown trout (*Salmo trutta*) were observed at each sampling site, with populations composed of mixed age classes. Brown trout were biased towards the upstream sites (Black Burn and Loch Burn). European eel (*Anguilla anguilla*) and stickleback species were noted at all locations sampled.
- Habitat suitability surveys were carried out for freshwater pearl mussel in 2015, with Loch Burn and the Burn of Acharole identified as having some suitable substrate for the species. However, the overall habitat suitability was deemed to be low as a result of a lack of shading from bankside vegetation, extensive filamentous algae in the summer months and accumulations of fine sediment. No direct observations of freshwater pearl mussels were made.

7.3.3. Legislation, Policy and Guidance

The assessment will be undertaken in line with the following European and National legislation:

- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (Habitats Directive);
- The EIA Regulations;
- Environmental Impact Assessment Directive 2014/52/EU;
- Nature Conservation (Scotland) Act 2004 (as amended);
- The Conservation (Natural Habitats & co.) Regulations 1994 (as amended) (the Habitats Regulations);
- The Protection of Badgers Act 1992;
- The Wildlife and Countryside Act 1981 (as amended); and
- The Wildlife and Natural Environment (Scotland) Act 2011 (WANE).

The assessment will be carried out in accordance with the principles contained within the following guidance and policy documents:

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (version 1.1). Chartered Institute of Ecology and Environmental Management, Winchester;
- Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation Trust;
- European Commission (2010) Wind Energy Developments and Natura 2000;
- Highland Environment Forum (2021). Highland Nature Biodiversity Action Plan 2021-2026;
- Joint Nature Conservation Committee (JNCC) (2013) Guidelines for selection of biological SSSIs;
- NatureScot (2012) Assessing the Cumulative Impact of Onshore Wind Energy Developments;
- NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & Bat Conservation Trust (BCT) (2019, with minor updates 2021). Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation;
- NatureScot (2020) General Pre-application and Scoping Advice to Developers of Onshore Wind Farms;
- NatureScot (2021) European Site Casework Guidance: How to consider plans and projects affecting SACs and SPAs.
- Scottish Executive (2000) Nature conservation: implementation in Scotland of EC Directives on the conservation of natural habitats and of wild flora and fauna and the conservation of wild birds ('The Habitats and Birds Directives'). Revised guidance updating Scottish Office Circular no. 6/1995;

- SEPA (2017) Land Use Planning System Guidance Note 4 - Planning guidance on on-shore windfarm developments;
- SEPA (2017) Land Use Planning System Guidance Note 31 - Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems;
- Scottish Government (2010) Management of Carbon-Rich Soils;
- Scottish Government (2013) It's in Your Hands (2004)/2020 Challenge for Scotland's Biodiversity (2013);
- Scottish Government (2016) Draft Peatland and Energy Policy Statement;
- Scottish Government (2017) Planning Advice Note 1/2013 - Environmental Impact Assessment, Revision 1.0;
- Scottish Government (2017) Planning Circular 1/2017: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017;
- Scottish Government (2018) Climate Change Plan: Third Report on Policies and Proposals 2018-2032;
- Scottish Government (2020) Scottish biodiversity strategy post-2020: statement of intent;
- Scottish Government (2020). Scottish Planning Policy;
- Scottish Renewables, SNH, SEPA, Forestry Commission (Scotland), HES, AECOW (2019) Good Practice During Windfarm Construction (4th Edition);
- SNH (2015) Scotland's National Peatland Plan;
- SNH (2016) Planning for Development: What to consider and include in deer assessments and management at development sites (Version 2);
- SNH (2016) Planning for Development: What to consider and include in Habitat Management Plans. Version 2; and
- SNH (2018) Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland.

7.3.4. Proposed Scope of Assessment

The assessment will consider the potential direct, indirect and cumulative impacts that the construction and operation of the Proposed Development could have on Important Ecological Features (IEFs, as per CIEEM 2018 guidance)⁴¹. The assessment will be supported by technical appendices that will include details of survey methodologies and all survey data.

The assessment will be informed by the information currently available, as outlined in Section 7.3.2. The survey areas for the surveys conducted in 2015 and 2020 are shown in Figure 7.3.1.

A further desk study will be undertaken to gather any other relevant information, e.g. from other nearby wind farm EIAs or scientific studies.

The assessment will include the following elements:

- Baseline conditions;
- Scoping in/out of ecological features and impacts;
- Assessment of potential impacts during construction and operational phases;
- Mitigation;
- Residual effects;
- Cumulative effects; and

⁴¹ CIEEM. (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management, Winchester.

- Summary of effects.

Consideration of designated sites will be undertaken within a Habitats Regulations Appraisal (HRA) context⁴² (NatureScot, 2021), with information to inform an appropriate assessment being included, should any likely significant effects to any qualifying features be identified.

7.3.5. Assessment Methodology

Effects on IEFs will be assessed in relation to the species' reference population or habitat extent, conservation status, range, and distribution. The assessment of potential effects will follow guidelines published by CIEEM (2018) and NatureScot (see Section 7.3.3).

The assessment involves the following processes:

- Identifying potential impacts of the Proposed Development;
- Considering the likelihood of occurrence of potential impacts;
- Defining the nature conservation importance and conservation status of relevant populations for each IEF to determine overall sensitivity;
- Establishing the magnitude of the likely impact (both spatial and temporal) on each IEF;
- Based on the above information, making a judgement as to whether or not the consequent effect is significant with respect to the EIA Regulations;
- If a potential effect is determined to be significant, suggesting measures to mitigate or compensate the effect where required;
- Considering opportunities for enhancement where appropriate; and
- Concluding residual effects after mitigation, compensation, or enhancement.

7.3.6. Proposed Mitigation

Significant effects on ecological features will be avoided or minimised where possible within the design process.

Good practice during construction, operation and decommissioning of the Proposed Development will be implemented as standard, including the provision of a suitable Species Protection Plan (SPP) and CEMP or similar, as well as the presence of an ECoW during the construction period. The assessment will be undertaken on the basis that these measures will be in place.

Where likely significant effects on IEFs are identified, measures to prevent, reduce and where possible offset these adverse effects will be proposed, for instance through the development of a Habitat Management Plan (HMP) for peatland habitats which would be developed and agreed with consultees.

Where unmitigated significant effects on IEFs are identified, additional measures to prevent, reduce and where possible offset these adverse effects will be proposed, in order to conclude a non-significant residual effect.

7.3.7. Potential Impacts

The assessment will consider the potential impacts associated with construction and operation of the Proposed Development as detailed below. It is assumed that decommissioning impacts will be the same as those for the construction phase, and as such these are not considered separately.

Construction Impacts:

⁴² NatureScot. (2021) *European Site Casework Guidance: How to consider plans and projects affecting Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)* [Online] Available from - <https://www.nature.scot/doc/natura-casework-guidance-how-consider-plans-and-projects-affecting-special-areas-conservation-sacs>. [Accessed: April 2022]

- Temporary and permanent habitat loss/alteration/fragmentation associated with the Proposed Development infrastructure, including loss of shelter, breeding or foraging habitat for protected species;
- Risk of injury or death to protected species from collisions with increased construction traffic; and
- Visual and noise disturbance to protected species, including bats, associated with construction activities.

Operational Impacts:

- Displacement of protected species, including bats, from shelter, breeding or foraging habitats around operational turbines and other permanent infrastructure, including barrier effects; and
- Risk of bats colliding with or suffering barotrauma from proximity to operations wind turbine blades.

7.3.8. Likely Significant Effect on Designated Sites (Including European Sites)

Due to lack of connectivity, the Proposed Development would have no likely significant effect on the following designated sites:

- Caithness and Sutherland Peatlands SAC (area covers Shielton Peatlands and Blar nam Faioileag SSSIs) – Watercourses to the south of the site create natural hydrological barriers so there is unlikely to be connectivity between the Proposed Development and the SAC;
- Loch Watten SAC – Watercourses connected to the Proposed Development drain away from the SAC, so there is unlikely to be connectivity between the Proposed Development and the SAC; and
- River Thurso SAC – Watercourses connected to the Proposed Development are in a different hydrological catchment to the River Thurso, therefore there is unlikely to be connectivity between the Proposed Development and the SAC.

Because there is no likely significant effect on the SACs, there will also be no significant effect on the SSSIs and as such they can be scoped out of further assessment.

7.3.9. Features Scoped In or Out of Assessment

On the basis of baseline data available, experience from other relevant projects, policy guidance or standards, and the embedded mitigation outlined in Section 7.3.6 **all features will be scoped out of the EIA since significant effects are unlikely, except for the following:**

- Annex I habitats, for example blanket bog, wet heath, dry heath and semi-natural native/ancient woodland, or other habitats considered to be of higher conservation value, e.g. within the contexts of the Local Biodiversity Action Plan (LBAP). Inclusion in the EIA would also be based on whether a non-trivial amount of habitat may be affected;
- Effects on wild deer; and
- Bats, particularly in relation to potential collision effects.

7.3.10. Questions to Consultees

- **Question 9: Do consultees agree that the scope of IEFs to be included in the assessment is appropriate?**
- **Question 10: Do consultees agree that there is no connectivity and therefore no Likely Significant Effects of the Proposed Development on SACs?**
- **Question 11: Do consultees agree that the data obtained in 2015 and 2020 in addition to a desk study is sufficient to inform a robust impact assessment?**
- **Question 12: Do consultees agree that the methodology and scope of assessment is appropriate?**

7.4. Ornithology

7.4.1. Introduction

This section of the Scoping Report describes the baseline conditions, relevant guidance and legislation, proposed scope of assessment and methodology, proposed mitigation, and identified potential impacts of the Proposed Development in relation to ornithological features.

7.4.2. Baseline Description

Baseline ornithology conditions have been established from the results of ornithology field surveys carried out for the Proposed Development from 2013 to 2021. It should be noted that the survey extents covered a wider area than the Proposed Development now encompasses (study areas are detailed on Figure 7.4.1). The surveys include:

- Flight activity (Vantage Point, VP) surveys: two VPs from March 2013 to March 2015 and one VP from April 2019 to March 2021;
- Scarce breeding bird surveys, 2 km study area around Proposed Development Area: March to August 2013, April to August 2014 & 2019 and April to July 2020;
- Upland breeding bird surveys, 500 m study area around Proposed Development Area: May to July 2013 and April to July 2019 & 2020;
- Breeding diver VP surveys, specific breeding location: one VP located approximately 2.7 km south of the Proposed Development Area in 2013 and one VP located within the 2 km study area around Proposed Development Area in 2020;
- Winter Walkover Survey, 500 m study area around Proposed Development Area: December 2013 to February 2014, November 2019 to March 2014 and November 2020 to March 2021; and
- Woodland Point Counts: 10 locations, April to June 2013 (three visits).

A desk study to confirm the location and qualifying features of designated sites within potential zones of influence of the Proposed Development has also informed the baseline surveys and assessment.

The baseline conditions, as established from the existing information, are summarised in the following sections.

Designated Sites

There are no designated sites for ornithological interests within the Proposed Development Area.

There are four SPAs, two Ramsar sites and 12 SSSIs within 20 km of the Proposed Development Area that have ornithological designated features (Figure 7.4.2):

- The Caithness and Sutherland Peatlands SPA is adjacent to the Proposed Development Area; the following breeding birds are qualifying features: black-throated diver (*Gavia arctica*), red-throated diver (*Gavia stellata*), common scoter (*Melanitta nigra*), wigeon (*Anas Penelope*), golden eagle (*Aquila chrysaetos*), hen harrier (*Circus cyaneus*), merlin (*Falco columbarius*), short-eared owl (*Asio flammeus*), dunlin (*Calidris alpina*), golden plover (*Pluvialis apricaria*), greenshank (*Tringa nebularia*) and wood sandpiper (*Tringa glareola*).
- The Caithness and Sutherland Peatlands Ramsar is in the same location as the Caithness and Sutherland Peatlands SPA and is designated for breeding dunlin, breeding greylag geese (*Anser anser*) and a breeding bird assemblage.
- Shielton Peatlands SSSI is adjacent to the Proposed Development Area and is designated for a breeding bird assemblage.
- The Caithness Lochs SPA and associated Ramsar site (underlain by the Loch Calder SSSI, Loch Heilen SSSI, Loch of Wester SSSI, Loch Scarmclate SSSI and Loch Watten SSSI) are located within approximately 3 km to the Proposed Development Area at their closest point. These designated sites include the following non-

breeding birds as qualifying features: Greenland white-fronted goose (*Anser albifrons flavirostris*), greylag goose and whooper swan (*Cygnus cygnus*).

- Strathmore Peatlands SSSI is located approximately 8.5 km from the Proposed Development Area and is designated for the following breeding birds: dunlin, golden plover, greenshank, wigeon, common scoter and a breeding bird assemblage.
- Loch Caluim Flows SSSI, Rumsdale Peatlands SSSI and Dunbeath Peatlands SSSI are all beyond 13.5 km from the Proposed Development Area and are designated for the following breeding birds: dunlin, golden plover, greenshank and a breeding bird assemblage.
- Lamsdale Leans SSSI and Broubster Leans SSSI are both beyond 14 km from the Proposed Development Area and are designated for breeding bird assemblages.
- East Caithness Cliffs SPA and North Caithness Cliffs SPA are both beyond 15 km from the Proposed Development Area and are designated for breeding seabird species (cormorant (*Phalacrocorax carbo*), fulmar (*Fulmarus glacialis*), great black-backed gull (*Larus marinus*), guillemot (*Uria aalge*), herring gull (*Larus argentatus*), kittiwake (*Rissa tridactyla*), peregrine falcon (*Falco peregrinus*), razorbill (*Alca torda*), shag (*Gulosus aristotelis*) and breeding seabird assemblage).

Ornithological qualifying features designated under the Caithness and Sutherland Peatlands SPA and the Caithness Lochs SPA will be assessed under the terms of the HRA process due to potential connectivity between the Proposed Development and these protected sites. The Caithness and Sutherland Peatlands Ramsar, Caithness Lochs Ramsar, Shielton Peatlands SSSI, Loch Calder SSSI, Loch Heilen SSSI, Loch of Wester SSSI, Loch Scarmclate SSSI and Loch Watten SSSI will be considered as part of the EIA process.

All other designated ornithology SPA and SSSI sites within 20 km from the Proposed Development Area will be scoped out of the assessment due to a lack of connectivity for qualifying features between the Proposed Development and these protected sites.

Flight Activity Surveys

Flight activity surveys from 2013 to 2021 have recorded 17 target species⁴³ with flightlines at Potential Collision Height (PCH) and may therefore be included in any collision risk modelling (Table 7.4.1), depending on their location in relation to the final turbine layout and the turbine dimensions selected. The bird seconds are calculated for each observation as the product of flight duration and number of individuals. This is then summed per species to give the total bird seconds recorded across the entire surveyed period.

Table 7.4.1: Target Species Recorded During Flight Activity Surveys from 2013 to 2021

Species	Total number of flights at PCH (Total bird seconds at PCH in parenthesis)*							
	BR 2013	NBR 2013/14	BR 2014	NBR 2014/15	BR 2019	NBR 2019/20	BR 2020	NBR 2020/21
Arctic skua (<i>Stercorarius parasiticus</i>)	1	-	-	-	-	-	-	-
Curlew (<i>Numenius arquata</i>)	48	-	24	-	7	-	3	-
Golden plover (<i>Pluvialis apricaria</i>)	2	3	4	2	-	1	-	1

⁴³ Target species are those species listed as Annex 1 (EU Birds Directive) and/or Schedule 1 (Wildlife and Countryside Act) and/or are Red Listed non-passerines (BOCC, Stanbury et al. 2021).

Species	Total number of flights at PCH (Total bird seconds at PCH in parenthesis)*							
Greylag goose (<i>Anser answer</i>)	2	17	3	9	2	2	2	10
Hen harrier (<i>Circus cyaneus</i>)	2	14	7	12	-	1	1	3
Herring gull (<i>Larus argentatus</i>)	133	12	143	4	32	7	62	4
Lapwing (<i>Vanellus vanellus</i>)	12	4	18	7	-	-	-	-
Merlin (<i>Falco columbarius</i>)	-	-	-	1	-	-	5	-
Osprey (<i>Pandion haliaetus</i>)	7	-	1	-	1	-	5	1
Oystercatcher (<i>Haematopus ostralegus</i>)	1	-	-	-	2	-	-	-
Peregrine falcon (<i>Falco peregrinus</i>)	-	-	-	-	-	1	-	-
Pink-footed goose (<i>Answer brachyrhynchus</i>)	4	5	5	4	-	-	4	2
Red kite (<i>Milvus milvus</i>)	-	-	1	-	-	-	-	-
Red-throated diver (<i>Gavia stellata</i>)	3	-	-	-	-	-	-	-
Sandwich tern (<i>Sterna sandvicensis</i>)	-	-	1	-	-	-	-	-
Snipe (<i>Gallinago gallinago</i>)	7	3	12	-	-	-	2	5
Whimbrel (<i>Numenius phaeopus</i>)	-	-	1	-	-	-	-	-
Whooper swan (<i>Cygnus cygnus</i>)	-	1	-	1	-	-	-	1

*BR: 'Breeding season', NBR: 'Non-breeding season'; -: No recorded birds at PCH

Raptors and Divers

A summary of the results of baseline surveys is presented below:

- A merlin pair was recorded nesting on a pine tree within the Proposed Development Area in 2020, at least one chick likely fledged from the nest. A male merlin was recorded displaying and calling to the south of the Proposed Development Area in May 2014, but no further breeding evidence was observed.

- Barn owls (*Tyto alba*) were present in two derelict buildings within the Proposed Development Area; one building in the eastern area was occupied in 2019 and 2020, another building in the northern area was used in 2020, due to restricted access, breeding was not confirmed at either site. A third derelict building within 2 km of the Proposed Development Area was occupied by barn owls in 2020, breeding was not confirmed.
- Two hen harrier winter roosts were recorded within 500 m of the Proposed Development Area; the most recently recorded roost was occupied by up to four birds during the 2020/21 non-breeding season. Another roost site was recorded during the 2013/14 non-breeding season and was occupied by up to five birds. The 2020/21 roost site is within 1 km of the 2013/14 roost, and it is likely that the 2020/21 roost site replaced the earlier one.
- Hen harrier breeding behaviour was recorded within the Caithness and Sutherland Peatlands SPA within 2 km of the Proposed Development Area in 2020, a nest was likely present in this area, although breeding success was not confirmed. Hen harrier breeding activity was not recorded within the study area in any other year.
- Ospreys were recorded breeding; one pair likely bred within 2 km of the Proposed Development Area in 2013 and 2014, although breeding was not confirmed in either year. A second nest was active in 2019 and 2020 within 2 km of the Proposed Development Area within the Caithness and Sutherland Peatlands SPA, at least one chick likely fledged from the nest in each year.
- In 2020, one pair of red-throated diver potentially bred within 2 km of the Proposed Development Area, breeding was not confirmed. One pair of red-throated diver was recorded breeding (one chick fledged from the nest) more than 2 km south from Proposed Development Area in 2013. Historically, red-throated divers have been known to breed on Loch Rangag and Loch Stemster located more than 2 km south from Proposed Development Area, although no divers were recorded on these lochs during the 2013 surveys.
- A maximum of seven black-throated divers were recorded on Loch Watten in June 2013 which is located more than 2 km from Proposed Development Area, but no evidence of breeding was recorded. Black-throated diver are also known to breed on Loch Ruard, Loch Dubh, Loch Rangag and Loch Stemster which are all located more than 2 km south from Proposed Development Area.

Wildfowl and Waders

- Non-breeding whooper swans and greylag geese were recorded flying over the Proposed Development Area during surveys from 2013 to 2021, but birds did not forage within 2 km of the Proposed Development Area. Non-breeding flock sizes ranged from 1 to 600 greylag geese and 1 to 14 whooper swans.
- Small numbers of greylag geese were recorded during the 2013, 2014, 2019 and 2020 breeding seasons and were potentially breeding within 2 km of the Proposed Development Area.
- Greenland white-fronted geese were not recorded during baseline surveys.
- Breeding activity was recorded for four target wader species within the 500 m study area. Breeding curlew (maximum of 12 territories), lapwing (maximum of 4 territories), snipe (maximum of 8 territories) and oystercatcher (maximum of 1 territory) were recorded in 2013, 2019 and 2020.
- Greenshank (maximum two pairs) were recorded breeding in 2013, 2019 and 2020, but breeding activity was beyond 500 m from the Proposed Development Area.
- Golden plover (maximum three pairs) was recorded breeding beyond 500 m of the Proposed Development Area in 2013. Non-breeding golden plover (flock sizes ranging from 1 to 500 birds) were recorded passing through the Proposed Development Area in 2014 and 2020.
- Small numbers of other non-breeding wader species including dunlin and whimbrel were also recorded passing through the Proposed Development Area from 2013 to 2020.

7.4.3. Legislation, Policy and Guidance

Legislation

The assessment will consider the following European legislation:

- Directive 2009/147/EC on the Conservation of Wild Birds ('Birds Directive')⁴⁴;
- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) ('Habitats Directive')⁴⁵; and
- Environmental Impact Assessment Directive 2014/52/EU (the EIA Directive)⁴⁶.

The following national legislation which has recently been amended because of the EU exit (Scottish Government, 2019⁴⁷; 2020⁴⁸), will also be considered as part of the ornithology assessment:

- The Wildlife and Countryside Act 1981 (as amended)⁴⁹;
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) (the Habitats Regulations)⁵⁰;
- The Nature Conservation (Scotland) Act 2004 (as amended)⁵¹;
- The Wildlife and Natural Environment (Scotland) Act 2011⁵² and
- The EIA Regulations⁵³.

Policy

The following policies will be considered in the assessment:

- Scottish Government (2000⁵⁴). Planning Advice Note 60: Planning for Natural Heritage;
- Scottish Government (2017⁵⁵). Planning Advice Note (PAN) 1/2013 – Environmental Impact Assessment, Revision 1.0;

44 UK Government. (2009) *Directive 2009/147/EC of the European Parliament and of the Council* [Online] Available from - <https://www.legislation.gov.uk/eudr/2009/147>. [Accessed: April 2022]

45 Scottish Government. (1992) *Council Directive 92/43/EEC* [Online] Available from - <https://www.legislation.gov.uk/eudr/1992/43/>. [Accessed: April 2022]

46 Scottish Government. (2014) *Directive 2014/52/EU of the European Parliament and of the Council* [Online] Available from - <https://www.legislation.gov.uk/eudr/2014/52/>. [Accessed: April 2022]

47 Scottish Government. (2019) *The Town and Country Planning and Electricity Works (EU Exit) (Scotland) (Miscellaneous Amendments) Regulations 2019* [Online] Available from - <https://www.legislation.gov.uk/ssi/2019/80/introduction/made>. [Accessed: April 2022]

48 Scottish Government. (2020) *EU Exit: The Habitats Regulations in Scotland* [Online] Available from - <https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/>. [Accessed: April 2022]

49 Scottish Government. (1981) *Wildlife and Countryside Act 1981* [Online] Available from - <https://www.legislation.gov.uk/ukpga/1981/69>. [Accessed: April 2022]

50 Scottish Government. (1994) *The Conservation (Natural Habitats, &c.) Regulations 1994* [Online] Available from - <https://www.legislation.gov.uk/uksi/1994/2716/contents>. [Accessed: April 2022]

51 Scottish Government. (2004) *Nature Conservation (Scotland) Act 2004* [Online] Available from - <https://www.legislation.gov.uk/asp/2004/6/contents>. [Accessed: April 2022]

52 Scottish Government. (2011) *Wildlife and Natural Environment (Scotland) Act 2011* [Online] Available from - <https://www.legislation.gov.uk/asp/2011/6/contents/enacted>. [Accessed: April 2022]

53 Scottish Government. (2017) *The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017* [Online] Available from - <https://www.legislation.gov.uk/ssi/2017/101/contents>. [Accessed: April 2022]

54 The Scottish Government. (2000) *Planning Advice Note 60: Planning for Natural Heritage* [Online] Available from - <https://www.gov.scot/publications/pan-60-natural-heritage/>. [Accessed: April 2022]

55 Scottish Government. (2017) *Planning Advice Note 1/2013 – Environmental Impact Assessment*. Revision 1.0. Scottish Government. Edinburgh.

- UK Post-2010 Biodiversity Framework (2012⁵⁶);
- Scottish Biodiversity Strategy: It's in Your Hands (2004⁵⁷) /2020 Challenge for Scotland's Biodiversity (2013⁵⁸);
- Scotland 2045 – fourth National Planning Framework – draft consultation (November 2021⁵⁹);
- The Scottish Biodiversity List⁶⁰; and
- Highland Nature: Biodiversity Action Plan (LBAP, 2021-2026⁶¹).

Guidance

The assessment will consider the following guidance:

- CIEEM (2018⁶²). Guidelines for Ecological Impact Assessment;
- European Commission (2010⁶³) Natura 2000 Guidance Document 'Wind Energy Developments and Natura 2000';
- NatureScot (2020a⁶⁴). General pre-application and scoping advice for onshore wind farms;
- NatureScot (2020b⁶⁵). The Effect of Aviation Obstruction Lighting on Birds at Wind Turbines, Communication Towers and Other Structures;
- Pearce-Higgins (2021⁶⁶). Climate Change and the UK's Birds;
- SNH (2000⁶⁷). Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action;
- SNH (2019⁶⁸). Good Practice during Wind Farm Construction. 4th Edition;

56 JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). (2012) *UK Post-2010 Biodiversity Framework*. JNCC. Peterborough.

57 Scottish Executive. (2004) *Scottish Biodiversity: It's In Your Hands*. Scottish Executive. Edinburgh.

58 The Scottish Government. (2013) *2020 Challenge for Scotland's Biodiversity*. The Scottish Government. Edinburgh.

59 Scottish Government. (2021) *Scotland 2045 – fourth National Planning Framework – draft: consultation* [Online] Available from - <https://www.gov.scot/publications/scotland-2045-fourth-national-planning-framework-draft/>. [Accessed: April 2022]

60 NatureScot. (2018) *Scottish Biodiversity List* [Online] Available from - <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list>. [Accessed: April 2022]

61 Highland Environment Forum. (2021) *Highland Nature: Biodiversity Action Plan 2021 – 2026* [Online] Available from - <https://www.highlandenvironmentforum.info/biodiversity/action-plan/>. [Accessed: April 2022]

62 CIEEM. (2018) *Guidelines for Ecological Impact Assessment* [Online] Available from - <https://cieem.net/wp-content/uploads/2019/02/Combined-EcIA-guidelines-2018-compressed.pdf>. [Accessed: April 2022]

63 European Commission. (2010) *Natura 2000 Guidance Document 'Wind Energy Developments and Natura 2000'*. European Commission, Brussels [Online] Available at: <https://op.europa.eu/en/publication-detail/-/publication/65364c77-b5b8-4ab6-919d-8f4e3c6eb5c2>. [Accessed: April 2022]

64 NatureScot. (2020a) *General pre-application and scoping advice for onshore wind farms. Guidance* [Online] Available from - <https://www.nature.scot/doc/general-pre-application-and-scoping-advice-onshore-wind-farms>. [Accessed: April 2022]

65 NatureScot. (2020b) *The Effect of Aviation Obstruction Lighting on Birds at Wind Turbines, Communication Towers and Other Structures. NatureScot Information Note* [Online] Available from - <https://www.nature.scot/sites/default/files/2020-10/Wind%20farm%20impacts%20on%20birds%20-%20Turbine%20lighting%20and%20birds%20-%20Information%20Note.pdf>. [Accessed: April 2022]

66 Pearce-Higgins, J.W. (2021) *Climate Change and the UK's Birds. British Trust for Ornithology Report, Thetford, Norfolk* [Online] Available from - <https://www.bto.org/our-science/publications/research-reports/climate-change-and-uks-birds>. [Accessed: April 2022]

67 Scottish Natural Heritage. (2000) *Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action. SNH Guidance Note*. SNH [Online] Available from - <https://www.nature.scot/sites/default/files/2017-09/Guidance%20Note%20-%20Windfarms%20and%20birds%20-%20Calculating%20a%20theoretical%20collision%20risk%20assuming%20no%20avoiding%20action.pdf>. [Accessed: April 2022]

68 Scottish Natural Heritage. (2019) *Good Practice during Wind Farm Construction. 4th Edition* [Online] Available from - <https://www.nature.scot/doc/guidance-good-practice-during-wind-farm-construction>. [Accessed: April 2022]



- SNH (2018a⁶⁹). Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas;
- SNH (2018b⁷⁰). Assessing the cumulative impacts of onshore wind farms on birds;
- SNH (2018c⁷¹). Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland;
- SNH (2017⁷²). Recommended bird survey methods to inform impact assessment of onshore wind farms;
- SNH (2016a⁷³). Assessing connectivity with SPAs;
- SNH (2016b⁷⁴). Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees Version 2;
- SERAD (2000⁷⁵). Habitats and Birds Directives, Nature Conservation; Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna; and
- Stanbury *et al.* (2021⁷⁶). Birds of Conservation Concern 5: the status of all regularly occurring birds in the UK, Channel Islands and the Isle of Man.

7.4.4. Proposed Scope of Assessment

The assessment will consider the potential direct, indirect, and cumulative impacts that the construction, operation and decommissioning of the Proposed Development could have on Important Ornithological Features (IOFs, as per CIEEM, 2018 guidance). The assessment will be supported by a technical appendix that will include details of survey methodologies, all survey data and outputs from any collision risk modelling.

69 Scottish Natural Heritage. (2018a) *Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas* [Online] Available from - <https://www.nature.scot/doc/guidance-assessing-significance-impacts-bird-populations-onshore-wind-farms-do-not-affect-protected>. [Accessed: April 2022]

70 Scottish Natural Heritage. (2018b) *Assessing the cumulative impacts of onshore wind farms on birds. SNH Guidance Note* [Online] Available from - <https://www.nature.scot/doc/guidance-assessing-cumulative-impacts-onshore-wind-farms-birds>. [Accessed: April 2022]

71 Scottish Natural Heritage. (2018c) *Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland* [Online] Available from - <https://www.nature.scot/doc/handbook-environmental-impact-assessment-guidance-competent-authorities-consultees-and-others>. [Accessed: April 2022]

72 Scottish Natural Heritage. (2017) *Recommended bird survey methods to inform impact assessment of onshore wind farms* [Online] Available from - <https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms>. [Accessed: April 2022]

73 Scottish Natural Heritage. (2016a) *Assessing connectivity with Special Protection Areas (SPAs)* [Online] Available from - <https://www.nature.scot/doc/assessing-connectivity-special-protection-areas>. [Accessed: April 2022]

74 Scottish Natural Heritage. (2016b) *Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees Version 2* [Online] Available from - <https://www.nature.scot/sites/default/files/2019-10/Environmental%20Statements%20and%20Annexes%20of%20Environmentally%20Sensitive%20Bird%20Information%20-%20September%202016.pdf>. [Accessed: April 2022]

75 Scottish Executive Rural Affairs Department (SERAD). (2000) *Habitats and Birds Directives, Nature Conservation; Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna* [Online] Available from - <https://www.gov.scot/binaries/content/documents/govscot/publications/foi-eir-release/2020/01/foi-201900008726/documents/foi-201900008726-information-released-a/foi-201900008726-information-released-a/govscot%3Adocument/FOI%2B-%2B201900008726%2B-%2BInformation%2BReleased%2B-%2BCircular%2B6-1995%2BNature%2BConservation%2B-%2B%2527The%2BHabitats%2BAnd%2BBirds%2BDirectives%2527%2B%2528Updated%2BJune%2B2000%2529.PDF>. [Accessed: April 2022]

76 Stanbury, A.J., Eaton, M.A., Aebischer, N.J., Balmer, D., Brown, A.F., Douse, A., Lindley, P., McCulloch, N., Noble, D.G. and Win, I. (2021) *Birds of Conservation Concern 5: the status of all regularly occurring birds in the UK, Channel Islands and the Isle of Man. British Birds 114: 723-747* [Online] Available from - <https://www.bto.org/our-science/publications/birds-conservation-concern/status-our-bird-populations-fifth-birds>. [Accessed: April 2022]



The assessment will be informed by the information currently available, as outlined in Section 7.4.2, as well as additional baseline scarce breeding bird surveys which will be undertaken within 2 km of the Proposed Development from March to August 2022 (Figure 7.4.1).

A further desk study will be undertaken to gather any other relevant information, and the following data sources will be consulted as part of the assessment:

- Scottish Raptor Study Group: provision of historic raptor nest locations; and
- Information from EIAs or scientific studies from other nearby proposed or consented wind farm developments.

The assessment will include the following elements:

- Baseline conditions;
- Scoping in/out of ornithological features and impacts;
- Assessment of potential impacts during construction and operational phases;
- Mitigation;
- Residual effects;
- Cumulative effects assessment; and
- Summary of effects.

Consideration of SPAs will be undertaken within an HRA context, with information to inform an appropriate assessment being included, should any likely significant effects to any qualifying features be identified.

7.4.5. Assessment Methodology

Effects on IOFs will be assessed in relation to the species' reference population, conservation status, range and distribution. The assessment of potential effects will follow guidelines published by CIEEM (2018) and NatureScot (see Section 7.4.3).

The assessment involves the following process:

- Identifying potential impacts of the Proposed Development;
- Considering the likelihood of occurrence of potential impacts;
- Defining the nature conservation importance and conservation status of relevant populations for each IOF to determine overall sensitivity;
- Establishing the magnitude of the likely impact (both spatial and temporal) on each IOF;
- Based on the above information, making a judgement as to whether or not the consequent effect is significant with respect to the EIA Regulations;
- If a potential effect is determined to be significant, suggesting measures to mitigate or compensate the effect where required;
- Considering opportunities for enhancement where appropriate; and
- Concluding residual effects after mitigation, compensation, or enhancement.

Where appropriate, the assessment will take into consideration specific measures of analysis, most likely collision risk modelling using the Band et al. (2007)⁷⁷ model.

⁷⁷ Band, W., Madders, M. and Whitfield, D.P. (2007) *Developing field and analytical methods to assess avian collision risk at Windfarms*. In: de Lucas, M., Janss, G.F.E. and Ferrer, M. (eds.) *Birds and Windfarms: Risk Assessment and Mitigation*. Pp. 259-275. Quercus. Madrid.

7.4.6. Proposed Mitigation

Significant effects on birds will be avoided/minimised where possible during the design layout process, based on the locations of known nest, roost and lek sites, key foraging areas, and likely sensitivities of IOFs. Good practice during construction and operation of the Proposed Development will also be implemented. This would include the following:

- A Bird Disturbance Management Plan (BDMP) would be implemented as part of a CEMP or similar during the construction phase, to ensure that all reasonable precautions are taken to adhere to the relevant wildlife legislation;
- Pre- and during-construction and decommissioning surveys carried out by an ECoW or suitably qualified ornithologist would take place as part of the BDMP; and
- A HMP would be developed and agreed with consultees, to mitigate or enhance habitat for IOFs and to provide wider biodiversity improvements.

Where unmitigated significant effects on IOFs are identified, additional measures to prevent, reduce and where possible offset these adverse effects will be proposed, in order to conclude a non-significant residual effect.

7.4.7. Potential Impacts

The assessment will consider the potential impacts associated with construction, operation and decommissioning of the Proposed Development as detailed below.

Construction Impacts

- Temporary and permanent habitat loss/alteration/fragmentation associated with the Proposed Development infrastructure, including loss of nesting, lekking, roosting or foraging habitat; and
- Visual and noise disturbance associated with construction activities.

Operational Impacts

- Displacement from nesting, roosting or foraging habitats around operational turbines and other permanent infrastructure, including barrier effects;
- Potential risk of collisions with operational wind turbine blades or any other permanent infrastructure; and
- Effects of lighting associated with turbines or other infrastructure on breeding, foraging or migrating birds.

Where required, these construction and operational impacts will also be considered in a cumulative assessment.

7.4.8. Features and Impacts Scoped In or Out of Assessment

Species and Designated Sites Scoped Out

On the basis of baseline data, experience from other relevant projects and policy guidance or standards (e.g. SNH 2018a⁶⁹), **the following species will be 'scoped out'** since significant effects are unlikely:

- Common and/or low conservation species not recognised in statute as requiring special conservation measures (i.e. not listed as Annex 1/Schedule 1 species);
- Common and/or low conservation species not included in non-statutory lists (i.e. not listed as Amber or Red-listed Birds of Conservation Concern (BoCC) species), showing birds whose populations are at some risk either generally or in parts of their range; and
- Passerine species, not generally considered to be at risk from wind farm developments (SNH 2017⁷²), unless being particularly rare or vulnerable at a national level.

Subject to the results of the collision risk modelling, **effects relating to any species not identified to be breeding or roosting within the relevant study area will be scoped out of the assessment.**

On the basis of no likelihood of connectivity with the Proposed Development, **all designated sites apart from those listed below will be scoped out of the assessment.**

Species and Designated Sites Scoped In

At this stage, based on existing information, but subject to further results becoming available, it is anticipated that the range of IOFs will be as follows:

- Merlin, hen harrier and red-throated diver, including within the context of the Caithness and Sutherland Peatlands SPA and Shielton Peatlands SSSI;
- Osprey;
- Barn owl;
- Greylag goose and whooper swan, within the context of the Caithness and Sutherland Peatlands Ramsar, Caithness Lochs SPA and Caithness Lochs Ramsar and associated SSSIs;
- Greenshank and golden plover, including within the context of the Caithness and Sutherland Peatlands SPA and Shielton Peatlands SSSI;
- Any other Schedule 1 species that may be found breeding or regularly foraging on site; and
- Any other wader species that may be of importance at a Natural Heritage Zone population level.

The following designated sites will be scoped into the assessment due to their potential connectivity with the Proposed Development

- Caithness and Sutherland Peatlands SPA;
- Caithness and Sutherland Peatlands Ramsar;
- Caithness Lochs SPA;
- Caithness Lochs Ramsar;
- Shielton Peatlands SSSI;
- Loch Calder SSSI;
- Loch Heilen SSSI;
- Loch of Wester SSSI;
- Loch Scarmclate SSSI; and
- Loch Watten SSSI.

None of the construction or operational phase impacts outlined in Section 7.4.7 are likely to be scoped out of the assessment, but decommissioning phase impacts will be considered to be similar to construction impacts, and as such no detailed assessment will be included.

7.4.9. Questions to Consultees

- **Question 13: Do consultees agree that, subject to further information coming to light from the field surveys and desk study, the scope of IOFs, including designated sites, to be included in the assessment is appropriate?**
- **Question 14: Do consultees agree that North Caithness Cliffs SPA, East Caithness Cliffs SPA, Strathmore Peatlands SSSI, Loch Caluim Flows SSSI, Rumsdale Peatlands SSSI, Dunbeath Peatlands SSSI, Broubster Leans SSSI and Lamsdale Leans SSSI can be scoped out of the assessment?**
- **Question 15: Do consultees agree that the data obtained via field surveys in 2013 to 2015, and 2019 to 2022, as well as a desk study is sufficient to inform a robust impact assessment?**
- **Question 16: Do consultees agree that the methodology and scope of the assessment is appropriate?**

7.5. Hydrology, Geology and Hydrogeology

This section of the Scoping Report describes the baseline conditions, relevant guidance, and legislation, proposed scope of assessment and methodology, mitigation, and identified potential impacts of the Proposed Development in relation to geology, peat, hydrology and hydrogeology features. It identifies features which can be scoped out of further assessment for hydrology, geology and hydrogeology.

7.5.1. Guidance and Legislation

The key guidance and legislation in relation to hydrology, geology and hydrogeology are outlined below:

- The Water Framework Directive (2000/60/EC)⁷⁸;
- Environmental Impact Assessment Directive 2014/52/EU (the EIA Directive)⁷⁹;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011⁸⁰;
- The Water Intended for Human consumption (Private Supplies) (Scotland) Regulations 2017⁸¹;
- The Water Environment and Water Services (Scotland) Act 2003⁸²;
- THC Onshore Wind Energy Supplementary Guidance 2016⁸³;
- Scottish Government Guidance on Development on Peatland⁸⁴;
- Developments on peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste⁸⁵;
- Proposed electricity generation developments: peat landslide hazard best practice guide⁸⁶;
- SEPA LUPS GU 31 Planning Guidance on Groundwater Abstractions and GWDTE⁸⁷; and

78 European Commission. (2000) *The Water Framework Directive (2000/60/EC)*. [Online] Available from - https://ec.europa.eu/environment/water/water-framework/index_en.html [Accessed: April 2022].

79 European Union. (2014) *DIRECTIVE 2014/52/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment*. L 124/1

80 Scottish Government. (2011) *The Water Environment (Controlled Activities) (Scotland) Regulations 2011*. [Online] Available from: <https://www.legislation.gov.uk/ssi/2011/209/contents/made?view=plain> [Accessed: April 2022]

81 Scottish Government. (2017) *The Private and Public Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2017*. [Online] Available from- <http://www.legislation.gov.uk/ssi/2017/321/made>. [Accessed: April 2022]

82 Scottish Government. (2003) *The Water Environment and Water Services (Scotland) Act 2003*. [Online] Available from: <http://www.legislation.gov.uk/asp/2003/3/contents> [Accessed: April 2022]

83 The Highland Council. (2016) *Onshore Wind Energy Supplementary Guidance*. Available online at: <https://www.highland.gov.uk/onshorewind>. [Accessed: April 2022]

84 Scottish Government, Scottish Natural Heritage, SEPA. (2017) *Peatland Survey. Guidance on Developments on Peatland*. [Online] Available from- <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance-2017/govscot%3Adocument/Guidance%2Bon%2Bdevelopments%2Bon%2Bpeatland%2B-%2Bpeatland%2Bsurvey%2B-%2B2017.pdf>. [Accessed: April 2022]

85 Scottish Environmental Protection Agency and Scottish Renewables. (2012) *Developments on peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste*. Version 1.

86 Energy Consents Unit and Scottish Government. (2017) *Proposed electricity generation developments: peat landslide hazard best practice guide*. Edition 2.

87 SEPA. (2017) *Land Use Planning System SEPA Guidance Note 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems*. LUPS-GU31, Version 3.

- NetRegs Guidance for Pollution Prevention (GPP)⁸⁸.

7.5.2. Study Area

The study area for hydrology, geology and hydrogeology will comprise of the Proposed Development Area. A larger study area of 5 km from the Proposed Development will also be assessed for wider potential impacts on the downstream water environment and receptors. The study area is shown in Figure 7.5.1.

7.5.3. Methodology

The following assessment and data collation will be undertaken to inform the hydrology, geology and hydrogeology chapter:

- Desk-based baseline conditions assessment for scoped-in receptors.
- Relevant statutory consultation:
 - SEPA will be consulted to obtain information on registered abstraction (10-50 m³ per day) within a 5 km radius of the Proposed Development;
 - THC will be consulted to obtain up to date information on private water supplies (PWS) within a 5 km radius of the Proposed Development; and
 - Scottish Water will be consulted in relation to public water supply assets where identified as necessary within the scoping response.
- Non-statutory consultation will be undertaken with local residents and landowners in relation to private water supplies as part of a private water supply risk assessment where the Proposed Development is considered to have potential for impact on such identified supplies.
- Surveys:
 - Hydrology site walkover including watercourse crossing assessment;
 - Phase 2 peat assessment; and
 - Peat landslide hazard and risk assessment.

The assessment will consider the potential direct, indirect and cumulative impacts of the construction and operational phases of the Proposed Development on geology, peat, hydrology and hydrogeology receptors and provide a summary of effects. It will outline appropriate mitigation measures and residual effects following implementation of measures.

Existing datasets and information made available from surveys undertaken in 2015, 2020 and 2021 which collectively cover the same area to that of the Proposed Development Area will be utilised and reviewed to inform the assessment.

7.5.4. Baseline Description

Review of the following publicly available data sources has informed the baseline hydrology, geology and hydrogeology desk-based review of the Proposed Development:

- Met Office Climate Averages⁸⁹;

88 NetRegs. (2021) *Guidance for Pollution Prevention (GPPs)*. [Online] Full list Available from - <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/guidance-for-pollution-prevention-gpps-full-list/> [Accessed: April 2022]

89 Met Office. (2022) *Climate Averages* [Online] Available from - <https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/> [Accessed: April 2022]



- River and loch waterbody catchments⁹⁰;
- River Basin Management Plans and Maps⁹¹;
- SEPA Flood Maps and River Inundation map⁹²;
- THC Open Map Data: Private Water Supplies⁹³;
- British Geological Survey (BGS) Hydrogeology 1:625,000 map⁹⁴;
- BGS 1:625,000 and 1:50,000 scale bedrock and superficial deposits map⁹⁵;
- SNH (NatureScot) Soil Maps – Carbon and Peatland 2016 map⁹⁶; and
- NatureScot SiteLink⁹⁷.

An initial desk-based review of the baseline conditions for geology, peat, hydrology and hydrogeology characteristics at the Proposed Development is provided below.

Geology

The underlying geology of the Proposed Development Area is sandstone, siltstone and mudstones of the Berriedale Sandstone and Lybster Flagstone Formations overlain by superficial deposits of till and peat. Superficial alluvium and fluvial deposits (gravel, sand and silt) are present where the main channel of the Burn of Acharole watercourse is located.

The BGS superficial deposits map shows peat deposits as being extensive across the site, located on areas of flatter topography in the north, west and south of the Proposed Development Area. Areas of superficial till deposits and alluvium deposits are more predominant in the centre and east, where the Burn of Acharole becomes more developed.

Peat and Soils

The soils present across the Proposed Development Area are primarily organic peatland soils with an area of mineral drift soils in the south-east.

The SNH Carbon and Peatland Map 2016 records Class 1, 3 and 5 peatland as present across the majority of the Proposed Development Area, with smaller pockets of Class 4, as shown in Figure 7.5.2. Class 1 peatland soils are defined as nationally important carbon-rich soils of deep peat and priority peatland habitat with high to potentially high conservation value, and restoration potential.

90 SEPA. (2022) *Water Environment Hub* [Online] Available from - <https://www.sepa.org.uk/data-visualisation/water-environment-hub> [Accessed: April 2022]

91 SEPA. (2015) *River Basin Management Plan* [Online] Available from - <https://www.sepa.org.uk/data-visualisation/water-environment-hub> [Accessed: April 2022]

92 SEPA. (2022) *Indicative River and Coastal Flood Map* (Scotland). 1:200. [Online] Available from - <https://map.sepa.org.uk/floodmap/map.htm> [Accessed April 2022]

93 The Highland Council. (2022) *Private Water Supplies*. [Online] Available from - <https://map-highland.opendata.arcgis.com/datasets/private-water-supplies/explore?location=58.475225%2C-3.318944%2C11.45> [Accessed April 2022]

94 British Geological Society (BGS). (1988) *Hydrological Map of Scotland*, 1:625 000 Scale Geology Series, Edinburgh.

95 British Geological Society (BGS). (2022). Geotindex 1:625,000 and 1:50,000 scale bedrock and superficial deposits map. [Online] Available from - <https://www.bgs.ac.uk/map-viewers/geotindex-onshore/> (Accessed April 2022).

96 NatureScot. (2022) *Carbon and Peatland Map 2016* [Online] Available from <https://map.environment.gov.scot/sewemap/> [Accessed: April 2022]

97 NatureScot. (2022) *Site Link* [Online] Available from - <https://sitelink.nature.scot/home> [Accessed: April 2022]



Existing datasets from the 2020 surveys were undertaken in line with best practice guidance from Scottish Government, SNH and SEPA guidance (2017). Results show peat depths of ≤1 m in the east and south-west of the Proposed Development Area, with deeper pockets in the centre (up to 5 m depth) and to the west (up to 6 m depth).

Hydrology and Flood Risk

The Proposed Development is located within the wider surface water catchment of the Wick River and within the sub-catchment of the Upper Wick River (source to Loch Watten Burn). The Burn of Acharole flows south-west to north-east across the southern boundary of the Proposed Development Area. The Burn of Acharole is a tributary of Scouthal Burn which drains into Wick River to the north-east. There are multiple smaller tributaries of the Burn of Acharole draining predominantly south towards the main channel of the watercourse.

The Loch of Toftingall is located approximately 400 m to the west of the Proposed Development at its closest point. The loch drains to the south into the Proposed Development Area to join the Burn of Acharole.

The Wick River (source to Loch Watten Burn) (Burn of Acharole) has an overall condition classification of 'Good' under the Water Framework Directive (WFD) Scotland River Basin Management Plans (RBMP). The Loch of Toftingall has an overall condition classification of 'Good'.

The Burn of Acharole and tributaries (Black Burn and Loch Burn) have a high (10% annual probability), medium (0.5% annual probability) and low (0.1% annual probability) likelihood of river flooding for flood extent areas. The extent of flooding is primarily contained to the watercourse channels and established flood plains. The flood plain of the Burn of Acharole extends approximately 100 m from the river channel on either bank in the east of the Proposed Development Area.

Hydrogeology

The groundwater unit underlying the Proposed Development Area is a moderately productive aquifer which will locally yield a small amount of groundwater. The groundwater unit is located within the wider Northern Highlands groundwater body which has an overall condition classification of 'Good' under the WFD RBMP.

Superficial deposits of glacial till, peat and alluvium are found to be present across the Proposed Development Area. Glacial till and saturated peat deposits are largely impermeable promoting overland run-off, and prevent vertical hydraulic connectivity to groundwater. Alluvium deposits are highly permeable and will form shallow groundwater units with hydraulic connectivity to watercourses.

GWDTE are generally found where groundwater is present at surface. The presence of GWDTE are identified using existing Phase 1 NVC surveys conducted in 2015. Habitats with potential to be highly and moderately groundwater dependent are identified primarily in the location of existing watercourses and in the flatter, more well-drained area in the east of the Proposed Development Area. Habitats which have potential of being highly groundwater dependent are acid neutral flush, blanket bog, marsh grassland, improved and unimproved acid grassland. Areas of coniferous plantation in the centre and the west of the site, associated with areas of deeper peatland are not classified as GWDTE potential habitats.

Drinking Water Supplies

The Proposed Development is not located within an area designated as a Drinking Water Protected Area. Drinking Water Protected Areas are bodies of water and their catchments which are used for the abstraction of water intended for human consumption as public water supplies.

THC PWS map shows properties which have registered PWS (<10 m³ per day abstraction rate). The database does not show the location of the source of the supply, nor does it provide an exhaustive list of all private water supplies in the area as those that are not registered will not be shown. The PWS properties have been identified within 5 km of the Proposed Development are shown in Table 7.5.1.

Table 7.5.1: Registered Private Water Supplies (within Hydrology Study Area)

PWS Name	Location (Easting, Northing)	Source Type	Supply Type	Approximate distance from Proposed Development (m)
Achingale Mill	324055, 953483	Not specified	Domestic	2,680
Lower Toftingall	317721, 954004	Not specified	Domestic	2,970

Source: THC Open Map Data: Private Water Supplies (2022)⁹³

SEPA holds information on abstractions greater than 10 m³ per day, and this information will be sought through consultation with SEPA.

Designated Sites

The designated sites as outlined in Table 7.5.2 are within 5 km of the Proposed Development Area and are assessed for hydrological connectivity to the Proposed Development.

Table 7.5.2: Designated Sites Hydrological Connectivity

Designated Site	Designation Qualifying Features	Distance from Proposed Development (m)	Hydrological Connectivity
Shielton Peatlands SSSI	Blanket Bog; Breeding Bird Assemblages	Adjacent (south)	Not connected – hydrologically divided by Burn of Acharole
Caithness and Sutherland Peatlands Ramsar	Blanket Bog; Breeding Bird Assemblages	Adjacent (south)	Not connected – hydrologically divided by Burn of Acharole
Caithness and Sutherland Peatlands SAC	Acid peat-stained lakes and ponds; Blanket bog; Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels; Depressions on peat substrates	Adjacent (south)	Not connected – hydrologically divided by Burn of Acharole
Loch Watten SAC	Naturally nutrient-rich lakes or lochs which are often dominated by pondweed	2.5 km (north-east)	Not connected – hydrologically divided by Loch Watten/ Wick River catchment.
Loch Watten SSSI	Base-rich loch; Greylag goose, non-breeding, open water transition fen	2.5 km (north-east)	Not connected – hydrologically divided by Loch Watten/ Wick River catchment.
Spittal Quarry SSSI	Earth Sciences (Geology) – Silurian – Devonian Chordata	2.9 km (north-west)	Not connected – hydrologically divided by Loch Watten/ Wick River catchment
Leavad SSSI	Earth Sciences (Geology) – Quaternary of Scotland	4.5 km (south-west)	Not connected – hydrologically divided by catchment divide of Wick River and Little River

Source: NatureScot Sitelink (2022)⁹⁸

7.5.5. Potential Impacts

The potential impacts associated with construction and operation of the Proposed Development are as detailed below. It is assumed that decommissioning impacts will be the same as those for the construction phase, and as such these are not considered separately.

- Loss of geological, peatland, riparian or wetland habitat including GWDTE;
- Peat slide risk;
- Temporary or long-term alteration to water quality which will have adverse effects on ecological and human receptors and/or downgrade the overall WFD RBMP condition status of the water course/water body/wetland/groundwater unit;
- An increase in surface water run-off or alterations to groundwater levels which increase the flood risk probability of the site and downstream receptors;
- Temporary or permanent alteration to site drainage and flow regime patterns including catchment hydrology, groundwater recharge and peatland hydrology and any impediments to flow;
- Temporary or permanent impacts to the water quality, yield, and continuity of public and PWS; and/or
- Temporary or permanent impacts to downstream hydrologically connected receptors (e.g. designated sites).

7.5.6. Proposed Mitigation

Impacts on hydrology, geology and hydrogeology will be avoided or minimised during the design layout process. A 50 m construction buffer will be placed around all major watercourses (visible on a 1:50,000 Ordnance Survey (OS) map) as standard to minimise impacts on watercourses during construction and operational phases of the Proposed Development. A 100-250 m buffer will be placed around all confirmed GWDTE and groundwater abstractions.

The site design will minimise the requirements for watercourse crossings where possible.

Good practice guidance and mitigation measures will be implemented as part of a CEMP or similar during the construction phase. Site-specific mitigation measures and monitoring requirements as outlined in the EIA Chapter will also be implemented.

The Contractor will operate under a Pollution Prevention Plan (PPP) and follow Guidance for Pollution Prevention guidelines. The Applicant will employ an ECoW to monitor compliance with the relevant documentation during the construction phase of the Proposed Development.

A Peat Management Plan will be written in accordance with industry guidance⁹⁹.

7.5.7. Scoping

The key receptors identified and scoped-in to the assessment at this stage are outlined below:

- Peatland soils (of all classes) and associated habitats;
- Surface watercourses of the Wick River (Burn of Acharole) and associated tributaries and the downstream catchment of Wick River - Loch Watten to tidal limit;
- Groundwater units and aquifers;

⁹⁸ NatureScot. (2022) *Sitelink* [Online] Available from - <https://sitelink.nature.scot/home>. [Accessed: May 2022]

⁹⁹ Scottish Renewables, SEPA. (2012) *Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste* [Online] Available from - <https://www.gov.scot/publications/assessment-of-peat-volumes-reuse-of-excavated-peat-and-minimisation-of-waste-guidance/>. [Accessed: May 2022]

- GWDTE;
- PWS and public water supply infrastructure (if any); and
- Hydrologically and hydrogeologically connected designated sites.

The following receptors are determined to not be impacted by the Proposed Development and are scoped out of the assessment at this stage:

- Bedrock and superficial geology units.

7.5.8. Questions to Consultees

- **Question 17: Do the consultees agree that, subject to further information coming to light from the field surveys, consultation and desk study, the scope of the assessment is appropriate?**
- **Question 18: Do the consultees have any information not outlined in the Scoping report that would inform the impact assessment for geology, peat, hydrology and hydrogeology?**

7.6. Cultural Heritage

7.6.1. Introduction

The cultural heritage section of the EIA will characterise the historic environment within the Proposed Development Area and in the wider study area. Consultation, desk-based research and walkover surveys, a ZTV and setting visits will be used to define proportionate study areas for the assessment. A baseline of designated and non-designated heritage assets will be assembled to assess the potential direct, indirect, and setting effects of the Proposed Development. Where likely significant effects are identified, mitigation measures will be identified.

The cultural heritage of an area comprises archaeological sites, historic buildings, gardens and designed landscapes, historic battlefields and other sites, features or places in the landscape that have the capacity to provide information about past human activity, or which have cultural relevance due to associations with folklore or historic events. Sites of cultural heritage interest may also derive some, or all, of that interest from their setting within the wider landscape. The cultural heritage section of this Scoping Report is thus intended to identify likely significant effects of the Proposed Development upon the physical fabric and settings of heritage assets within the Proposed Development Area, and likely significant effects on the cultural significance of assets within the wider landscape through development within their setting, which would need detailed consideration through EIA.

Direct physical impacts involve physical alteration or destruction of heritage assets and could result from the construction of turbine and crane bases, new or upgraded access tracks, substations, transformers, cables etc.

Effects on the setting of heritage assets can arise due to the relative scale of turbines, their potential to detract from understanding of key views from/towards an asset, or a change resulting in an adverse experience of a heritage asset.

Cultural significance is a quality that applies to all heritage assets and as defined by HES (NatureScot & HES 2018, Appendix 1 Page 175), relates to the ways in which a heritage asset is valued both by specialists and the general public; it may derive from factors including the asset's fabric, setting, context and associations. Following 'Scottish Planning Policy' Paragraph 137, the analysis of a heritage asset's cultural significance aims to identify its 'special characteristics' which should be protected, conserved or enhanced. Such characteristics may include elements of the asset's setting, which is defined in HES's guidance as "the way in which the surroundings of a historic asset or place contribute to how it is experienced, understood and appreciated" (HES 2016, updated 2020, Section 1).

This use of the word cultural 'significance', referring to the range of cultural values or interest attached to an asset, should not be confused with the unrelated usage in EIA where the 'significance of an effect' reflects the weight that should be attached to it in a planning decision.

Historic landscape is not treated as a heritage asset for the purposes of this assessment except where a defined area of landscape has been designated for its cultural heritage interest (including Conservation Areas and areas included in the Inventory of Gardens and Designed Landscapes). It is recognised that all landscapes have a historic dimension, and this will be considered as part of the assessment of Landscape Character (covered in the LVIA chapter of the EIAR). Further, although any effects on the cultural significance and importance of heritage assets due to change in their setting are likely to be visual in nature, the assessment of these visual effects is distinct from the assessment of visual change in the LVIA. The assessment of effects on setting may be informed by visualisations prepared as part of the LVIA but the conclusions reached regarding visual change in the setting of a heritage asset are distinct.

7.6.2. Legislation, Policy and Guidance

It proposed that the EIA will be carried out with reference to the following legislation, policy and guidance:

Legislation

- The Ancient Monuments and Archaeological Areas Act 1979¹⁰⁰;
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997¹⁰¹; and
- The Historic Environment Scotland Act 2014¹⁰².

Policy

- Scottish Planning Policy 2014¹⁰³;
- Historic Environment Policy Scotland (HEPS) (HES, 2019)¹⁰⁴; and
- Highland Council Local Development Plan (HwLDP, 2012)¹⁰⁵; Policy 57: Natural, Built and Cultural Heritage.

Technical Guidance

- Historic Environment Scotland Circular (HES, 2019)¹⁰⁶;
- Planning Advice Note (PAN) 2/2011: Planning and Archaeology¹⁰⁷;
- IEMA/CIfA/IHBC Principles of Cultural Heritage Impact Assessment in the UK (2021)¹⁰⁸;

100 The UK Government. (1979) *Ancient Monuments and Archaeological Areas Act 1979* [Online] Available from - <https://www.legislation.gov.uk/ukpga/1979/46>. [Accessed: April 2022]

101 The Scottish Government. (1997) *Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997* [Online] Available from - <https://www.legislation.gov.uk/ukpga/1997/19/contents>. [Accessed: April 2022]

102 The Scottish Government. (2014) *Historic Environment Scotland 2014* [Online] Available from - <https://www.legislation.gov.uk/asp/2014/19/contents/enacted>. [Accessed: April 2022]

103 The Scottish Government. (2014) *Scottish Planning Policy* [Online] Available from - <https://www.gov.scot/publications/scottish-planning-policy/>. [Accessed: April 2022]

104 Historic Environment Scotland. (2022) *Historic Environment Policy for Scotland (HEPS)* [Online] Available from - <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/>. [Accessed: April 2022]

105 The Highland Council. (2016) *Highland-wide Local Development Plan* [Online] Available from - https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan. [Accessed: April 2022]

106 Historic Environment Scotland. (2019) *Historic Environment Scotland Circular* [Online] Available from - <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=a768f3cb-eb44-4473-be7b-aa2500e4892b>. [Accessed: April 2022]

107 The Scottish Government. (2011) *Planning Advice Note 2/2011: Planning and archaeology* [Online] Available from - <https://www.gov.scot/publications/pan-2-2011-planning-archaeology/>. [Accessed: April 2022]

108 IEMA, CIfA. (2021) *Principles of Cultural Heritage Impact Assessment in the UK* [Online] Available from - https://www.archaeologists.net/sites/default/files/i30361_iema_principlesofchia_v8.pdf. [Accessed: April 2022]

- Designation Policy and Selection Guidance (DPSG), (HES, 2019)¹⁰⁹;
- Standard and Guidance for Historic Environment Desk-Based Assessment (DBA) (Chartered Institute for Archaeologists (CIfA, 2020)¹¹⁰;
- Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (CIfA, 2020)¹¹¹;
- Managing Change in the Historic Environment: Setting (HES, 2016, updated 2020)¹¹²; and
- Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland (NatureScot and HES, 2018)¹¹³.

7.6.3. Baseline

Study Areas

Overlapping study areas are proposed for the identification of heritage assets that may be affected by the Proposed Development (Figure 7.6.1):

- The Proposed Development Area boundary, to identify potential direct (physical) as well as setting and indirect effects; and
- The Outer Study Area (OSA) based on a bare earth ZTV to identify assets beyond the Proposed Development Area that may be affected through development within their setting.

Within the OSA, assets will be included in the assessment based on the level of importance assigned to the asset so as to ensure that all likely significant effects are recognised:

- Up to 2 km from proposed turbines: Category C Listed Buildings, and all non-designated heritage assets;
- Up to 5 km from proposed turbines: Conservation Areas, and Category B Listed Buildings;
- Up to 10 km from proposed turbines: Scheduled Monuments, and Inventory Historic Battlefields; and
- Beyond 10 km from proposed turbines: World Heritage Sites, Category A Listed Buildings, Inventory Gardens and Designed Landscapes, and any asset with potential visibility of the Proposed Development which is considered exceptionally important, and where long-distance views from or towards the asset are thought to be particularly sensitive, in the opinion of the assessor or relevant consultees.

The baseline will be screened (and agreed with relevant consultees) to identify any assets of particular sensitivity or importance. Criteria for the identification of assets of particular sensitivity or importance will be based on the approach set out in Managing Change in the Historic Environment: Setting (HES, 2016, updated 2020) that sets out a range of factors which might form part of the setting of a heritage asset as follows:

- “Current landscape or townscape context;

109 Historic Environment Scotland. (2020) *Designation Policy and Selection Guidance* [Online] Available from - <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b>. [Accessed: April 2022]

110 Chartered Institute for Archaeologists. (2020) *Standard and guidance for historic environment desk-based assessment* [Online] Available from - https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf. [Accessed: April 2022]

111 Chartered Institute for Archaeologists. (2014) *Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment* [Online] Available from - https://www.archaeologists.net/sites/default/files/CIfAS%26GCommissioning_2.pdf. [Accessed: April 2022]

112 Historic Environment Scotland. (2020) *Managing Change in the Historic Environment: Setting* [Online] Available from - <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=80b7c0a0-584b-4625-b1fd-a60b009c2549>. [Accessed: April 2022]

113 SNH, HES. (2018) *Environment Impact Assessment Handbook* [Online] Available from - <https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf>. [Accessed: April 2022]

- Views to, from and across or beyond the historic asset or place;
- Key vistas: for instance, a 'frame' of trees, buildings or natural features that give the historic asset or place a context, whether intentional or not;
- The prominence of the historic asset or place in views throughout the surrounding area, bearing in mind that sites need not be visually prominent to have a setting;
- Aesthetic qualities;
- Character of the surrounding landscape;
- General and specific views including foregrounds and backdrops;
- Views from within an asset outwards over key elements in the surrounding landscape, such as the view from the principal room of a house, or from a roof terrace;
- Relationships with other features, both built and natural;
- Non-visual factors such as historical, artistic, literary, place name, or scenic associations, intellectual relationships (e.g. to a theory, plan, or design), or sensory factors; and
- A 'sense of place': the overall experience of an asset which may combine some of the above factors."

Preliminary Baseline

The baseline information used for this Scoping Report has been compiled using existing data on the historic environment:

- HES designations data available as Geographical Information Systems (GIS) datasets;
- THC Historic Environment Record (HER) data provided in April 2022; and
- National Record of the Historic Environment (NRHE) comprising the Canmore database.

Known heritage assets are shown to 10 km on Figure 7.6.1

Proposed Development Area

There are no designated heritage assets within the Proposed Development Area. There are three known non-designated heritage assets recorded within the Proposed Development Area on the THC HER. These are all later historic period assets relating to agricultural exploitation. In addition, 19th century OS mapping of the Proposed Development Area identifies 10 possible further later historic period agricultural remains.

Outer Study Area

There are four Scheduled Monuments comprising two brochs (SM13632 & SM13634), a hilltop cairn (SM450) and a chapel (SM721), and 42 non-designated heritage assets (including one possible stone circle) within 2 km of proposed turbines. There are 13 Scheduled Monuments within 5 km of proposed turbines (including six brochs, two chambered cairns, and two standing stones), as well as one Category A Listed Building (LB14976 Achingales Mill), and one Category B Listed Building. Within 10 km of proposed turbines there are 36 Scheduled Monuments (including one Property in Care SM90056 Grey Cairns of Camster, however this is located outwith the ZTV for the scoping layout). Within 20 km there are 16 Category A Listed Buildings. There are no Inventory Gardens and Designed Landscapes, Conservation Areas, Inventory Battlefields or World Heritage Sites within the defined OSA.

7.6.4. Proposed Surveys and Assessment Methodologies

Desk-based Assessment

A baseline DBA will be conducted to establish the baseline condition of the Proposed Development Area. The principal sources of information will be THC HER, supplemented by relevant published documentary and

cartographic material as appropriate. Various sources will be consulted for the collation of data, including but not limited to:

- Designation data downloaded from HES;
- HER data, digital extract from THC;
- The NRHE, including the Canmore database and associated photographs, prints/drawings and manuscripts held by HES;
- Historic Landscape Assessment data;
- The National Collection of Aerial Photography (NCAP);
- Geological data available online from the British Geological Survey;
- Historic maps held by the National Library of Scotland;
- Unpublished maps and plans held by the National Records of Scotland;
- Relevant internet resources, including Google Maps, Google Earth, Bing satellite imagery and PastMap;
- Readily available published sources and unpublished archaeological reports;
- ZTV/cumulative ZTV; and
- Findings of other environmental topics (LVIA, peat depth, ground conditions, noise and vibration).

There is no LIDAR data available on the Scottish Remote Sensing Portal for the Proposed Development Area.

A site visit will be undertaken to 'ground-truth' the results of the DBA, as well as to record site characteristics, any visible archaeology and geographical/geological features which may have a bearing on previous land use and archaeological survival, as well as those which may constrain subsequent archaeological investigation.

Stage 1 Setting Assessment

Likely significant effects on the settings of heritage assets will be identified from an initial desk-based appraisal of data from HES, the HER and consideration of current maps and aerial images available via online sources. The methodology adopted for the identification and assessment of potential effects on setting follows the approach set out in Managing Change in the Historic Environment: Setting (HES, 2016, updated 2020) and the Environmental Impact Assessment Handbook (Version 5, NatureScot & HES, 2018, Appendix 1). The guidance sets out three stages in assessing the impact of development on the setting of a heritage asset or place as follows:

- "Stage 1: identify the historic assets that might be affected by a development;
- Stage 2: define and analyse the setting by establishing how the surroundings contribute to the ways in which the historic asset or place is understood, appreciated and experienced; and
- Stage 3: evaluate the likely significant effect of the proposed changes on the setting, and the extent to which any negative impacts can be mitigated."

The Stage 1 Setting Assessment methodology considers each heritage asset in the OSA in turn, to identify heritage assets in the ZTV that have a wider landscape setting that contributes to their cultural significance and whether it is likely that cultural significance would be harmed by the Proposed Development. Where heritage assets are located outwith the ZTV, third-party viewpoints within the ZTV which may provide a key view towards the heritage asset and the Proposed Development Area are considered.

Visualisations

Where the Stage 1 Setting Assessment identifies the potential for a significant effect, the asset will be visited to define baseline conditions and identify key viewpoints.

Wireframe visualisations will be used in tandem with the ZTV to understand the likely nature of change in the setting of heritage assets.

Consultation with national and regional curators (HES and THC) will be undertaken to agree the viewpoints for the EIAR setting assessment.

7.6.5. Assessment of Potential Effects

To assess the effect of the Proposed Development upon cultural heritage, the significance of any effect is calculated through comparison of the importance of each heritage asset against the potential magnitude of change upon it. Impacts from cumulative developments will also be considered.

Effects on cultural heritage can arise through direct physical effects, indirect effects, or effects on setting.

- Direct physical effects describe those development activities that directly cause damage to the fabric of a heritage asset. Typically, these activities are related to construction works and will only occur within the Proposed Development Area.
- Indirect effects describe secondary processes, triggered by the Proposed Development, that lead to the degradation or preservation of heritage assets. For example, changes to hydrology may affect archaeological preservation; or changes to the setting of a building may affect the viability of its current use and thus lead to dereliction.
- An effect on the setting of a heritage asset occurs when the presence of a development changes the surroundings of a heritage asset in such a way that it affects (positively or negatively) the cultural significance of that asset. Visual effects are most commonly encountered but other environmental factors such as noise, light or air quality can be relevant in some cases. Impacts may be encountered at all stages in the life cycle of a development from construction to decommissioning, but they are only likely to lead to significant effects during the prolonged operational phase of the Proposed Development.

7.6.6. Potential Significant Effects

Construction

Any infrastructure or access tracks associated with the Proposed Development will be designed to avoid the identified heritage assets within the Proposed Development Area.

Should any previously unknown heritage assets be noted during the DBA or walkover survey, any infrastructure associated with the Proposed Development such as access tracks will take into account the presence of these heritage assets and avoid them through design.

Likely significant effects on unknown heritage assets will be discussed in terms of the risk that a significant effect could occur. The level of risk depends on the level of archaeological potential combined with the nature and scale of disturbance associated with construction activities and may vary between high and negligible for different elements or activities associated with a development, or for the Proposed Development as a whole.

Operation

Appraisal of heritage assets against the scoping ZTV has identified the following where visualisations will be beneficial in understanding change in their setting:

- SM13632 Carn A'Chaldha, broch and SM13634 Bail A'Chairn, broch, as well as their relationships with other brochs in the region, such as those at Spittal and Watten;
- SM450 Gallow Hillock, cairn on Backlass Hill, including sightlines towards it and from other prominent and contemporary sites in the region, such as SM472 Osle chambered cairn and SM431 Bilbster chambered cairn; and
- MHG1979 Possible stone circle, Acharole (non-designated).

Cumulative effects will be considered in cases where an effect of more than negligible significance would occur upon a heritage asset, as identified through EIA, as a result of the Proposed Development. Wind energy developments (under construction, consented or at application stage) are included in the cumulative assessment where they also feature prominently within views of or towards heritage assets identified as affected by the Proposed Development, thus also have a potential to impact upon cultural their significance.

7.6.7. Approach to Mitigation

Construction

Where potentially significant impacts are identified, mitigation measures will be proposed. The preferred mitigation option is always to avoid or reduce impacts through design, or through precautionary measures such as fencing off heritage assets during construction works. Effects which cannot be eliminated in these ways will lead to residual effects.

Cultural heritage constraint areas will, where appropriate, be defined to include an appropriate buffer around known heritage assets. Proposed ground works in constraint areas may lead to direct impacts.

Where potential direct impacts are identified, evaluation methodologies may be employed (such as intrusive works) to better understand the extent and cultural significance of archaeological remains.

Adverse effects may be mitigated by an appropriate level of survey, excavation, recording, analysis and publication of the results, in accordance with a written scheme of investigation (SPP Paragraph 150 and PAN2/2011, Sections 25-27). Archaeological investigation can have a beneficial effect of increasing knowledge and understanding of an asset, thereby enhancing its archaeological and historical interest and offsetting adverse effects.

Operation

Design will take into account any identified likely significant effects of the Proposed Development on the settings and cultural significance of any heritage assets identified during Stage 1 Setting Assessment.

For example, design will seek to ensure that the Proposed Development will not dominate heritage assets that were intentionally constructed historically to be prominent landscape features, and will seek to maintain key intentional sightlines between, to, from or across associated and contemporary monuments, or designed vistas. The Proposed Development layout will not impact upon any intact cultural landscapes. It is acknowledged that there are other factors which might form part of the setting of a heritage asset as outlined in Managing Change in the Historic Environment: Setting (HES, 2016, updated 2020) summarised in this Scoping Report above.

7.6.8. Effects Scoped Out

Construction phase setting effects will be temporary and are not considered to be significant in EIA due to their very short duration. **Construction phase setting effects are therefore proposed to be scoped out of the assessment.**

The extent of ground disturbance associated with decommissioning will not extend beyond the construction footprint and so decommissioning effects on heritage assets within the Proposed Development Area will not occur. Any residual operational phase setting effects will be reversed. **Decommissioning effects are therefore proposed to be scoped out of the assessment.**

7.6.9. Questions for Consultees

- **Question 19: Do consultees agree with the proposals for 'Effects Scoped Out' in this Scoping Report?**
- **Question 20: Are consultees content with the proposed study areas presented in this Scoping Report?**

- **Question 21: Are there any other relevant consultees other than HES and THC who should be contacted with respect to the Cultural Heritage and Archaeology assessment?**
- **Question 22: Do consultees wish to request any specific heritage assets to be assessed in the EIAR?**

7.7. Forestry

7.7.1. Introduction

This chapter sets out the proposed approach to the assessment of potential effects on the forestry within the Proposed Development Area which would result from the construction and operation of the Proposed Development. Decommissioning impacts will not be considered within the assessment due to the uncertainty of changes within the forest after the 35-year lifespan of the Proposed Development **and is therefore proposed to be scoped out.**

In the UK there is a strong presumption against permanent deforestation unless it addresses other environmental concerns. In Scotland, such deforestation is dealt with under the Scottish Government's Control of Woodland Removal Policy (Forestry Commission Scotland, 2009)¹¹⁴. The purpose of the policy is to provide direction for decisions on woodland removal in Scotland. It will be essential that the Proposed Development addresses and satisfies the requirements of the Policy.

7.7.2. Baseline Description

There are areas of privately owned commercial forestry located within the Proposed Development Area. The Forestry Study Area will be restricted to forests and woodlands within the Proposed Development Area.

The forestry baseline will describe the crops existing at time of preparation of the EIAR. Where available this will include current species; planting year; any approved felling and replanting plans; and other relevant woodland information. The baseline will be compiled from a desk-based assessment and field surveys as necessary.

The woodlands were planted between 1993 and 2003 under three separate Woodland Grant Scheme applications. The grant scheme applications comprised mainly of commercial conifers with small areas of broadleaves, with areas of open ground. Evidence from aerial photographs suggests that the broadleaf elements of the new woodland creation have largely failed.

An initial desk-based assessment identified there are no woodlands within the Proposed Development Area recorded in the Ancient Woodland Inventory Scotland (Scottish Natural Heritage, 2010)¹¹⁵. One small area is recorded as native woodland in the Native Woodland Survey of Scotland (Forestry Commission Scotland, 2013)¹¹⁶, but this was believed to have been planted as part of the Woodland Grant Schemes. There is no approved Forest Plan covering the forests.

7.7.3. Survey and Assessment Methodology

A Proposed Development Forest Plan will be prepared. This will include a felling plan to show which crops would be felled, and when, for the construction and operation of the Proposed Development. It will further include a restocking

¹¹⁴ Forestry Commission Scotland. (2009) *The Scottish Government's Policy on Control of Woodland Removal*. Forestry Commission Scotland. Edinburgh.

¹¹⁵ Scottish Natural Heritage. (2010) *Ancient Woodland Inventory Scotland* [Online] Available from - <https://map.environment.gov.scot/sewebmap/>. [Accessed: 10/04/22]

¹¹⁶ Forestry Commission Scotland. (2013) *The Native Woodland survey of Scotland* [Online] Available from - <https://scottishforestry.maps.arcgis.com/apps/webappviewer/index.html?id=0d6125cfe892439ab0e5d0b74d9acc18>. [Accessed: 04/05/22]



plan showing any areas to be replanted or areas which are to be left permanently unplanted for the Proposed Development.

The desk-based assessment will include landowner crop databases; the Native Woodland Survey of Scotland; the National Forest Inventory (Forestry Commission Scotland, 2018)¹¹⁷; aerial photography; Scottish Forestry (SF) publicly available databases; and current Policy, Legislation and Guidance.

The field survey will consist of a site walkover to verify and update baseline data and maps; assess the crops with respect to integration of the development infrastructure; and to identify any opportunities within the forests for onsite compensatory planting, if required.

A key issue will be the integration of the Proposed Development into the forest structure to minimise the loss of woodland area and to ensure the Landowners and the Applicant are able to meet their objectives. Forest design and the effect of the Proposed Development on it is an important part of the overall design process. In the absence of a Forest Plan the Proposed Development forestry proposals will be assessed against the current species composition of the forests.

The changes to the forest structure will be analysed and described including changes to woodland composition, timber production, traffic movements and the felling and restocking plans where relevant. The resulting changes to the forest structure will be assessed for compliance against the UK Forestry Standard (Forestry Commission, 2017)¹¹⁸ and the Scottish Government's Control of Woodland Removal Policy in line with the methodology outlined in the Control of Woodland Removal Policy Implementation Guidance (Forestry Commission Scotland, 2019)¹¹⁹.

7.7.4. Legislation, Policy and Guidance

The Proposed Development forestry proposals will be prepared with reference to the following legislation, policies and guidance:

Legislation

- Forestry and Land Management (Scotland) Act 2018¹²⁰.

Policy

- Scotland's Forestry Strategy 2019 – 2029¹²¹;
- Scotland's Third Land Use Strategy 2021 – 2026¹²²;
- The Scottish Government's Policy on Control of Woodland Removal¹²³;

¹¹⁷ Forestry Commission Scotland. (2018) *The National Forest Inventory Scotland* [Online] Available from - https://data-forestry.opendata.arcgis.com/datasets/b71da2b45dde4d0595b6270a87f67ea9_0. [Accessed: 04/05/22]

¹¹⁸ Forestry Commission. (2017). *The UK Forestry Standard: The Government's Approach to Sustainable Forestry*. Forestry Commission. Edinburgh.

¹¹⁹ Forestry Commission Scotland. (2019) *Guidance to Forestry Commission Scotland staff on implementing the Scottish Government's Policy on Control of Woodland Removal* [Online] Available from - <https://forestry.gov.scot/publications/349-scottish-government-s-policy-on-control-of-woodland-removal-implementation-guidance/viewdocument>. [Accessed: 10/04/22]

¹²⁰ The Scottish Government (2018). *The Forestry and Land Management (Scotland) Act 2018* [Online] Available from - <https://www.legislation.gov.uk/asp/2018/8/contents/enacted> [Accessed: 15/04/19]

¹²¹ The Scottish Government (2019). *Scotland's Forestry Strategy 2019 - 2029*, Edinburgh.

¹²² Scottish Government (2021): *Scotland's Third Land Use Strategy 2021 – 2026* [Online] Available from - <https://www.gov.scot/publications/scotlands-third-land-use-strategy-2021-2026-getting-best-land/> [Accessed: 10/03/2022]

¹²³ Forestry Commission Scotland. (2009) *The Scottish Government's Policy on Control of Woodland Removal*. Forestry Commission Scotland. Edinburgh.



- Scotland's Third National Planning Framework¹²⁴;
- Scottish Planning Policy¹²⁵; and
- Scotland's Fourth National Planning Framework¹²⁶.

Guidance

- The UK Forestry Standard¹²⁷;
- Guidance to Forestry Commission Scotland staff on implementing the Scottish Government's Policy on Control of Woodland Removal¹²⁸;
- The Highland Council Forestry and Woodland Strategy¹²⁹;
- SEPA Guidance Notes WST-G-027 "Management of Forestry Waste"¹³⁰;
- SEPA LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land"¹³¹; and
- Right Tree in the Right Place¹³².

7.7.5. Potential Effects

Commercial forests are dynamic and constantly changing through, for example, landowner activities; market forces; natural events, such as windblow, pest and diseases; or developments. The forestry assessment will be a factual assessment describing the changes to the physical forest structure resulting from the incorporation of the Proposed Development into the forest. Other Chapters within the EIAR will identify the sensitive receptors relevant to their disciplines and report on the effects of the Proposed Development forestry proposals on these receptors.

There is potential for changes to the forest structure resulting from the Proposed Development, with consequential implications for the management plans across the remaining parts of the forests. It is anticipated areas of forestry will require to be felled at the time of construction for access tracks, wind turbine locations and other infrastructure, which may result in a loss of woodland area. Apart from the crops to be felled at the time of construction it is anticipated at this stage that no other Proposed Development felling is anticipated during the operation and decommissioning phases, but this will be clarified within the EIAR following the design of the Proposed Development. Ongoing forestry management, including any further felling and restocking, is expected to be the responsibility of the forest owners as part of their normal routine management, subject to approval from SF as required.

124 The Scottish Government. (2014) Scotland's Third National Planning Framework (NPF3). Edinburgh.

125 The Scottish Government. (2014) Scottish Planning Policy. Edinburgh.

126 Scottish Government. (2021) *Scotland 2045: Our Fourth National Planning Framework* [Online] Available from - <https://www.gov.scot/publications/scotland-2045-fourth-national-planning-framework-draft/> [Accessed: 10/03/2022]

127 Forestry Commission. (2017) *The UK Forestry Standard: The Government's Approach to Sustainable Forestry*. Forestry Commission. Edinburgh.

128 Forestry Commission Scotland. (2019) *Guidance to Forestry Commission Scotland staff on implementing the Scottish Government's Policy on Control of Woodland Removal* [Online] Available from - <https://forestry.gov.scot/publications/349-scottish-government-s-policy-on-control-of-woodland-removal-implementation-guidance/viewdocument> [Accessed: 10/04/22]

129 The Highland Council. (2006) *Highland Forest & Woodland Strategy*. Inverness.

130 SEPA. (2017) *SEPA Guidance Notes WST-G-027 "Management of Forestry Waste"* [Online] Available from - https://www.sepa.org.uk/media/28957/forestry_waste_guidance_note.pdf [Accessed: 04/03/2022]

131 SEPA. (2014) *LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land"* [Online] Available from - https://www.sepa.org.uk/media/143799/use_of_trees_cleared_to_facilitate_development_on_afforested_land_sepa_snh_fcs_guidance_april_2014.pdf [Accessed: 20/01/2019]

132 Forestry Commission Scotland. (2010) *Right Tree in the Right Place - Planning for Forestry & Woodlands*. Forestry Commission, Edinburgh.

The changes to the forestry for a particular development are regarded as site specific and it is considered there are no cumulative on-site forestry issues to be addressed, therefore **cumulative forestry effects are scoped out of the EIA**.

7.7.6. Approach to Mitigation

Measures to avoid or mitigate potential effects upon the forest structure will, as far as practicable, sought to be embedded in the design of the Proposed Development through consideration of the siting of the Proposed Development infrastructure; and by using existing access tracks and management breaks in the forest where possible. Woodland loss would be minimised by keyholing infrastructure into the felling and restocking plans.

Potential forms of mitigation may include a redesign of the existing forest structure including, for example, changes to the felling programme; the use of designed open space; alternative species or woodland types; and the provision of compensation planting, on or off site.

7.7.7. Consultation Proposals

The main consultee on forestry matters is SF, Highland Conservancy. SF will be consulted to ensure that the proposed changes to the woodlands address the requirements of the Scottish Government's Control of Woodland Removal Policy (Forestry Commission Scotland, 2009) and other relevant guidance. In addition, there may be interrelated issues raised by other consultees and this will be clearly set out in the EIAR.

7.7.8. Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

- **Question 23: Are consultees content with the proposed methodology and scope for the forestry assessment?**
- **Question 24: Do the consultees have any information, particularly with reference to new guidance, which should be taken into account?**

7.8. Traffic and Transport

7.8.1. Introduction

The objective of the traffic and transport study is to assess the impact of the Proposed Development on the public road network, by means of a Traffic Impact Assessment (TIA). This will be supplemented by an Access Route Assessment for delivery of the wind turbine Abnormal Indivisible Loads (AILs) and a preliminary Traffic Management Plan (TMP).

Due to the nature of a wind farm project where operational traffic is limited weekly to only a very small number of Light Goods Vehicle's undertaking maintenance, and because future decommissioning activities are likely to generate smaller volumes of traffic compared to the construction phase, the assessment will focus on impacts during the construction phase of the Proposed Development only, excluding the operational and decommissioning phases from the assessment. It is currently proposed that the assessment will provide an expected 'worst case' example of impacts on the local road network.

7.8.2. EIA - Traffic and Transport Chapter

Following completion of the traffic and transport study, a Traffic and Transport EIA chapter will be produced as part of the EIA and will include the following information:

- Description of the proposed construction and AIL traffic routes;
- Description of the baseline traffic movements on identified delivery routes;
- Description of the predicted construction and AIL traffic movements, along with their predicted durations;
- Assessment of the resulting temporary increase to traffic movements on the road network (magnitude);
- Assessment of the sensitivity of receptors identified along the proposed traffic route(s);
- Assessment of the temporary environmental impacts on receptors due to the temporary increase in traffic (significance);
- Identification of required mitigation measures for any resultant significant effects;
- AIL Route Survey Report (appended); and
- Preliminary TMP (appended).

7.8.3. Consultation

In order to agree the scope of the traffic and transport study it is intended to consult with the following stakeholders:

- THC;
- Transport Scotland; and
- Police Scotland.

The discussions will identify the extent of the study area, the methodology and the data sources proposed for use in the assessment.

7.8.4. Geographical Context

The Proposed Development is situated in the Scottish Highlands on land to the east of Halsary Wind Farm and approximately 3 km to the south-west of Watten. The route of access to site, particularly for Abnormal Indivisible Loads (AILs), is still being assessed, but it is hoped that access will be feasible from the A9 via the Halsary Wind Farm.

Given the road network arrangement and location of the Proposed Development Area, it is considered that there are limited route options from identified material supply centres which would arrive to the site entrance via the A9, A882 or B870. The extent of the assessment will be discussed once a site entrance location is determined. At this stage it is anticipated to be limited to:

- The A9 between Latheron and its junction with the A882 near Georgemas;
- The A882 between Wick and its junction with the A9 near Georgemas; and
- The B870 between the A9 and A882.

7.8.5. Traffic Impact Assessment

The TIA will focus on impacts during the construction phase as any impact to the road network will cease once the relevant construction activities are completed. The following outlines the anticipated impacts associated with the Proposed Development:

- Temporary increase in movements of Heavy Goods Vehicles (HGVs) and Light Goods Vehicles (LGVs) associated with the construction, including any associated felling (if required) of the Proposed Development;
- Transport impacts due to the delivery of AILs associated with the wind turbine generator components, during the construction phase;
- Effects on sensitive receptors, principally residents and communities in the surrounding area; and
- Road widening/improvements to accommodate AILs.

During the operational phase these impacts will no longer occur and therefore longer-term mitigation is not required.

At this stage, turbine component deliveries are anticipated to come from the Port of Wick, however a number of options are currently being investigated for final site access.

7.8.6. Assessment Exclusions

The volume of traffic generated during the operational phase of the wind farm is considered to be negligible as this would be limited to operational staff in light goods or 4x4 vehicles inspecting the site and undertaking ad-hoc maintenance and servicing. It is assumed that traffic movement associated with inspection and maintenance will be occasional and limited in number. As such it is proposed to **scope out operational and maintenance impacts** from this assessment.

Decommissioning will include the removal of the wind turbines and associated infrastructure. Typically, buried infrastructure such as cabling, and turbine foundations (less the top 1 m) would remain in-situ following decommissioning. Similarly, access tracks may be left in-situ in whole or in part depending on planning conditions and any landowner arrangements. Hence, the vehicle movements associated with the decommissioning phase is considered to be significantly less than that during the construction phase.

Furthermore, decommissioning of the Proposed Development is unlikely to take place before the end of its life and as such a minimum period of 35 years is assumed before decommissioning takes place. Due to the changes in the baseline situation which may have occurred by the time that the Proposed Development is decommissioned it is considered impractical to assess the likely environmental effects. Given the uncertainty of baseline conditions around 35 years in the future and the expected reduction in traffic volumes associated with decommissioning, it is proposed to **scope out decommissioning impacts** from this assessment. However decommissioning impacts will be considered within the decommissioning plan which will be submitted prior to decommissioning.

7.8.7. Baseline Traffic

Published traffic data will be reviewed, or traffic surveys undertaken, to inform the assessment within a defined study area, set out above and to be agreed with consultees. The traffic data will be used to determine the baseline traffic volumes for use within the traffic and transport study. The assessment will consider the most up to date traffic data readily available, and/or utilise traffic survey data gathered, which will be used as a baseline.

Acquisition of traffic count data will be obtained either by use of the Department for Transport Traffic Count Database, consultation with the local roads authority or commissioning of traffic counts, depending on the level of existing information available.

Assessment of baseline sensitivity of receptors will include 'embedded mitigation'. With respect to this assessment, this includes best practice processes which are implemented during construction, regardless of the outcome of the traffic impact assessment. These measures will be defined within the assessment and delivered through the Traffic Management Plan.

7.8.8. Assessment Methodology

The traffic and transport study will be carried out in accordance with the following guidance documents:

- Transport Assessment Guidance (Transport Scotland)¹³³; and

¹³³ Transport Scotland. (2012) *Transport assessment guidance* [Online] Available at: [TRANSPORT ASSESSMENT GUIDANCE](#). [Accessed: 20/05/2022]

- IEMA Guidelines for the Environmental Assessment of Road Traffic (“the IEMA Guidelines”) to assess impact upon environmental receptors¹³⁴.

The traffic and transport study developed for the Proposed Development will provide the forecasts of vehicle movements. The assessment will seek to provide a robust (expected most likely case) assessment of impacts and effects associated with the Proposed Development. The assessment will identify the potential traffic increase and associated environmental effects on sensitive receptors, and mitigation will be proposed where necessary.

The proposals include for on-site borrow pits to source stone and it is proposed to account for this within estimation of traffic numbers. An allowance will be included for the import of stone as a finished surfacing to the infrastructure within the traffic numbers. This is to provide a conservative approach in case the quality of stone sourced from the on-site borrow pits does not meet the finished surfacing specifications.

With regards to Transport Scotland’s Transport Assessment Guidance, the guidance is aimed at appraising the operational implications of a development and as such has limited relevance to the development of a wind farm project given the temporary nature of traffic increase during construction and the low numbers of additional permanent traffic generated by its operation. However, Paragraph 5.54 states that ‘*Transport Assessment must cover traffic and road issues, parking and any particular impacts caused by abnormal loads*’. These elements will be assessed through a TIA and TMP respectively, focussed on the construction phase of the Proposed Development. The adopted AIL assessment methodology is set out in further detail below.

Transport Scotland’s Transport Assessment Form has been included as Appendix B to aid with establishing the assessment requirements, in line with Transport Scotland’s scoping process.

In terms of the environmental impact on receptors, the IEMA guidelines suggests that two rules can be used as a screening process to delimit the scale and extent of the assessment:

- Rule 1 – Include highway links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%); and
- Rule 2 – Include any other specifically sensitive areas where traffic flows would increase by 10% or more. (IEMA Guidelines Paragraph 3.20 defines sensitive area as including ‘*accident blackspots, conservation areas, hospitals, links with pedestrian flows etc.*’).

Where the predicted increase in traffic flow is lower than these thresholds, the significance of the effects will be stated to be low or insignificant, and further detailed assessments will not be warranted. Where the predicted increase in traffic flow exceeds these thresholds, the effects of the additional traffic generated will be assessed. The sensitivity of receptors will be assessed and synthesised with the magnitude of effect to determine its significance. Further mitigation may be required to minimise the potential effect.

The criteria used for the identification and assessment of potentially significant impacts will be clearly presented in the EIAR. The magnitude of each impact and its significance will be assessed by a variety of mechanisms, including published guidance and professional judgement.

7.8.9. Cumulative Assessment

Consideration will be given to possible cumulative effects of the Proposed Development with regards to other Proposed Developments (both in planning and consented), occurring as result of concurrent construction programmes within the same study area. It is important to note that a cumulative assessment in respect of traffic and transport effects is dependent on the likelihood of more than one wind farm being under construction at the same time as the Proposed Development.

¹³⁴ Institute of Environmental Assessment. (1993) *Guidelines for the Environmental Assessment of Road Traffic*.

7.8.10. AIL Route Survey Report

An assessment of potential delivery routes for AILs, associated with the wind turbine component deliveries, will be undertaken to identify the preferred route to the Proposed Development, from the nearest suitable port, and to assess what mitigating measures may be required on the public road network.

Swept path drawings for key points of interest, undertaken on OS base mapping will be prepared as deemed appropriate. These will be carried out on the expected wind turbine component dimensions. The swept path assessments will identify areas of over-sail and over-run, street furniture modifications and indicative mitigation works.

7.8.11. Preliminary Traffic Management Plan

As part of the transport study, and in line with any pre-application requirements, a preliminary construction TMP will be produced for transport associated with site traffic (HGV’s, LGV’s etc). The TMP will generally outline the detail of the works and the associated traffic. It will include aspects such as the standard industry mitigation measures considered for impacts associated with the works, and typical traffic management measures employed for control of traffic on the public road to ensure there are no safety issues or impediments on the public highway.

7.8.12. Questions for Consultees

- **Question 25: Do consultees agree with the proposed geographical extent of the assessment?**
- **Question 26: Do consultees agree that operational and decommissioning phases can be scoped out and the assessment will consider the effects during the construction phase only?**
- **Question 27: Can consultees provide traffic count data?**
- **Question 28: Do consultees agree that ‘embedded mitigation’ can be assumed in baseline assessment of receptors?**
- **Question 29: Do the consultees agree with the approach to consider the environmental impacts in line with IEMA thresholds of 30% and 10%?**
- **Question 30: Do the consultees agree with the traffic assessment approach set out in the above section?**
- **Question 31: Do consultees agree that the expected scenario of stone sourced via on-site borrow pits with a conservative allowance for import of finished surfacing stone be modelled?**
- **Question 32: Do Transport Scotland agree that in relation to their Transport Assessment Guidance, no ‘Transport Statement’ or ‘Transport Assessment’ is required in addition to the proposed TIA and TMP?**

7.9. Aviation and Existing Infrastructure

7.9.1. Introduction

Wind developments have the potential to impact aviation and radar infrastructure in their vicinity. This is predominantly due to three main considerations, namely:

- Wind turbines as physical structures that present a collision risk;
- Wind turbines interacting with electromagnetic signals; and
- Electromagnetic emissions emitted by the wind farm itself.

The second category can be further subdivided but essentially this comes down to weakening a radio signal in the shadow of the wind development or reflection of an electromagnetic signal in unwanted directions.

Similarly, wind turbines have the potential to impact telecommunication operations and infrastructure. There are many forms of telecommunications infrastructure in the UK. The most relevant aspect in the context of potential

restrictions/mitigation requirements for wind developments is the presence of wireless fixed links between radio antennae. Such links broadly fall into two categories, namely:

- 'Microwave links', which provide high-frequency data transfer between antennae and are utilised by mobile phone operators and the emergency services to support their communications network;
- Ultra High Frequency (UHF) links, which are utilised by operators including utility companies.

A secondary consideration within telecommunications is the impact upon terrestrial television signals which propagate from transmitters to receiving aerials as the aerials are also connected to television receiving equipment. Wind turbines can cause interference to telecommunications infrastructure and terrestrial television signals in three ways, namely:

- As a physical structure that blocks/weakens the transmitted signal, reducing the strength of the coverage in the shadow zone. Losses in strength due to this mechanism are called 'diffraction losses';
- The wind turbine blades intermittently 'chop' through the direct coverage path, causing fluctuations in received power;
- The wind turbines can reflect the signal in an unwanted direction, such that the same signal arrives twice at a receiving aerial with a time delay.

Aviation, telecommunication links and terrestrial television are considered collectively within this section. Impacts during construction are scoped in for aviation and telecommunications, whilst this is scoped out for terrestrial television impacts. Impacts during operation are considered for aviation, telecommunications and terrestrial television. Impacts during decommissioning are scoped out for all three topics because any impact would be the same or less than those experienced through construction and operation, and already mitigated, if required.

7.9.2. Policy and Relevant Guidance

Aviation

Guidance and policy are dictated primarily by the Civil Aviation Publications (CAP) produced by the CAA. There is also further policy provided by the Ministry of Defence (MOD) and National Air Traffic Service (NATS). Specific document guidance documents include:

- CAA Publication CAP 764 Policy and Guidelines on Wind Turbines, Version 6 dated February 2016¹³⁵;
- CAA Publication CAP 168 Licensing of Aerodromes, Version 11 dated March 2019¹³⁶;
- CAA Publication CAP 777 ATC Surveillance Minimum Altitude Charts in UK Airspace Policy and Design Criteria, Version 5 dated September 2018¹³⁷;
- International Civil Aviation Organization (ICAO) Procedures for Air Navigation Services, Aircraft Operations, Volume II Construction of Visual and Instrument Flight Procedures, Fifth Edition¹³⁸; and
- NATS Aeronautical Information Publication (AIP) (digital resource, various publication dates).

The relevant safeguarding distance varies depending on the type of infrastructure being considered. Long range radar used for en-route navigation purposes can reasonably be safeguarded against wind turbines at ranges of 100 km or more. Specific aerodromes are typically safeguarded against physical obstructions that present a collision risk within ranges of less than 20 km. Further details are presented in Section 7.10.3.

¹³⁵ Civil Aviation Authority. (2016) *Civil Aviation Publication 764* [Online] Available from - [CAP 764](#). [Accessed 25/05/2022]

¹³⁶ Civil Aviation Authority. (2019) *Civil Aviation Publication 168* [Online] Available from - [CAP 168](#). [Accessed 25/05/2022]

¹³⁷ Civil Aviation Authority. (2019) *Civil Aviation Publication 777* [Online] Available from - [CAP 168](#). [Accessed 25/05/2022]

¹³⁸ International Civil Aviation Organization, Procedures for Air Navigation Services, Aircraft Operations, Volume II Construction of Visual and Instrument Flight Procedures, Fifth Edition

Telecommunications

There is no set process within any guidance for assessment of telecommunications infrastructure. Pager Power considers the Second Fresnel zone when assessing the effect of a wind turbine upon microwave links and the 0.6th Fresnel zone when assessing UHF links¹³⁹. A buffer zone may then be added (typically 25 m) and then the rotor diameter, to produce the exclusion zone. This is based on the Ofcom methodology¹⁴⁰. Where the link is UHF, reflection calculations in line with the Joint Radio Company (JRC) methodology may be completed. Furthermore, each stakeholder has their own fixed standoff distances and safeguarding criteria.

For terrestrial television, there is no set guidance on the assessment process. The methodology used by Pager Power is to undertake Carrier to Interference Ratio (CIR) calculations relative to the turbine and an area surrounding the Proposed Development (20 km by 20 km).

7.9.3. Assessment Methodology and Significance Criteria

Aviation

Consultation criteria for civil aviation stakeholders is defined in Chapter 4 of the CAP 764 document and the recommended distances include:

- Airfield with a surveillance radar – 30 km;
- Non radar licensed aerodrome with a runway of more than 1,100 m – 17 km;
- Non radar licensed aerodrome with a runway of less than 1,100 m – 5 km;
- Licensed aerodromes where the turbines would lie within airspace coincidental with any published Instrument Flight Procedure (IFP);
- Unlicensed aerodromes with runways of more than 800 m – 4 km;
- Unlicensed aerodromes with runways of less than 800 m – 3 km;
- Gliding sites – 10 km; and
- Other aviation activity such as parachute sites and microlight sites within 3 km – in such instances developers are referred to appropriate organisations.

CAP 764 goes on to state that these distances are for guidance purposes only and do not represent ranges beyond which all wind turbine developments will be approved, or within which they will always be objected to. These ranges are intended as a prompt for further discussion between developers and aviation stakeholders. Key stakeholders include:

- Licensed and unlicensed aerodrome within the associated safeguarding distances;
- National Air Traffic Services En Route Ltd (NERL) and their associated communications, navigation and surveillance systems – a network of primary and secondary radars and navigation facilities around the country;
- The Met Office regarding their weather radar;
- MOD as safeguarded by the Defence Infrastructure Organisation (DIO). The types of issues that will be addressed in the EIAR include:
 - MOD Airfields, both radar and non-radar equipped;
 - MOD Air Defence Radars; and
 - Military Low Flying.

¹³⁹ Manning, T. (1999) *Microwave Radio Transmission Design Guide*. Artech House Books

¹⁴⁰ Ofcom, D F Bacon. (2002) *Fixed-link wind-turbine exclusion zone method* [Online] Available from - [Fixed-link wind-turbine exclusion zone method](#). [Accessed 25/05/2022]

Preliminary analysis for a wind turbine tip height of 150 m was completed for the Proposed Development and the following aviation risks were identified (note: the Proposed Development now considers assessment of wind turbines measuring up to 220 m and therefore the preliminary analysis is indicative only):

- Military Low Flying System – the Proposed Development is located within a low priority military low flying area – safeguarded by the MOD;
- Wick VOR/DME Beacon – the Proposed Development is located within 14.4 km of the navigation aid – safeguarded by NATS NERL;
- Wick Aerodrome (Licensed) – the Proposed Development is located within 14.8 km of the aerodrome;
- Three radar installations were identified which will require further analysis:
 - Lossiemouth Primary Surveillance Radar (PSR) – 82.4 km from the Proposed Development – safeguarded by the MOD;
 - Allanshill PSR – 114.1 km from the Proposed Development – safeguarded by NATS NERL;
 - Buchan Air Surveillance and Control System (ASACS) – 143.4 km from the Proposed Development – safeguarded by the MOD.

Detailed assessment considering the increased wind turbine tip height and the impact upon this infrastructure will be reported in the EIAR and associated Technical Appendix. A cumulative assessment will be conducted, as appropriate.

Telecommunications

Initial analysis for a wind turbine tip height of 150 m has been completed for the Proposed Development identifying a number of potential risks, the following stakeholders provided link details:

- Arqiva; and
- JRC.

Considering the time since the initial consultation, subsequent layout change and increase to the wind turbine tip height, all consultation will be updated to ensure the most accurate data is assessed. The complete list of stakeholders includes:

- Airwave;
- Arqiva;
- Atkins;
- British telecom (BT);
- JRC;
- Mobile Broadband Network Limited (MBNL);
- Virgin Media O2 (formerly Telefonica); and
- Vodafone.

If a stakeholder raises an objection, an assessment of the link or infrastructure will be carried out to determine whether there is an impact and its magnitude. The link data supplied by the stakeholder will be used to model exclusion zones of each link and to calculate the clearance/infringement of the Proposed Development. A significant impact occurs where the outcome of the analysis confirms the infringement of a link and that mitigation will be necessary. The process for mitigation is to engage with the stakeholder managing the link to discuss a mitigation strategy. A cumulative assessment is not expected to be required.

With respect to terrestrial television services, no preliminary analysis has been completed. The terrestrial transmitters serving the area will broadcast digital television signals only. A desk-based study and/or site survey can be undertaken to determine the potential interference of the Proposed Development upon terrestrial television

signals either during planning or post-consent as part of a planning condition. A cumulative assessment will be conducted, as appropriate. If adverse effects on television services occurs as a result of the Proposed Development, mitigation measures will be required. The most effective form of mitigation is dependent on the specific impact. The impacts will only be identified once the Proposed Development is operational via complaints received or by carrying out a post-construction survey. The requirement for the implementation of such measures will be addressed on a case-by-case basis dependant on the complaint received or the results of the post-construction survey. A mitigation strategy can be implemented pursuant to a planning condition.

Significance Criteria

The sensitivity of aviation and telecommunications receptors varies by infrastructure, operations, etc. The general principle is that any overall impact measured to be Moderate or higher will require mitigation. A precise breakdown of the sensitivity for the identified receptors will be presented within the EIAR.

7.9.4. Potentially Significant Effects and Approach to Mitigation

Aviation

A significant effect may occur if the wind turbines are visible and detectable to the radar, and an operational impact is predicted.

There are no licensed aerodromes within the safeguarding range which would require consideration. There are no meteorological radar within their safeguarded range.

Both military and en-route radar may be impacted by the Proposed Development depending on the specific location of the wind turbines and their overall tip height.

Other aviation issues that will be assessed include military low flying operations and any other radio navigation aids. Formal assessment of such installations is to be completed in accordance with industry standard and best-practice to ensure constraints are comprehensively incorporated.

Aviation lighting will be a requirement due to the proposed height of the turbines. A detailed assessment will inform a lighting scheme in accordance with UK CAA policy.

It is recommended that aviation is scoped in, in the first instance due to the significance of any impact and the potential implications upon planning and aviation safety. However, if the technical analysis and consultation reveal no significant issues requiring mitigation, then aviation should be scoped out. A technical assessment will however support the application in either circumstance.

Telecommunications

For fixed telecommunications infrastructure, it is common practice for developers to assess potential impacts and, where necessary, mitigate them. It is extremely uncommon for wind developments to be refused planning permission on the basis of telecommunications issues. This is largely because technical solutions generally exist and are commercially viable. The up-to-date infrastructure details in the area surrounding the Proposed Development are unknown. Considering the results of the preliminary analysis whereby communications links have been identified near the Proposed Development Area, it is expected that telecommunications infrastructure will cross close to or over the Proposed Development Area (see Figure 3.1: Regional Context). On this basis, it is recommended that telecommunications infrastructure is scoped in. However, if the technical and analysis consultation reveals no significant issues requiring mitigation, then telecommunications should be scoped out. A technical assessment will however support the application in either circumstance.

For terrestrial television, it is recommended that a technical assessment is progressed as per best practice, and suitable planning conditions are agreed at the planning stage. Provided this process is followed, it is considered appropriate for television signal impacts to be scoped out.

7.9.5. Questions for Consultees

Question 33: Do consultees agree with the proposed approach for the aviation and telecommunications assessment?

7.10. Noise

7.10.1. Introduction

Noise will be emitted as a result of the Proposed Development during the construction, operation and decommissioning phases. This section provides a summary of the noise effects anticipated at each stage of the development and, where appropriate, details of the proposed assessment work.

7.10.2. Study Area

The Proposed Development Area is located within a rural location. There are a number of scattered residential properties around the Proposed Development Area with the closest occupied property being roughly 1 km from the proposed turbines (based on the current draft layout).

There are a number of operational, consented and proposed wind farm developments surrounding the Proposed Development and they lie to the north-east, east, south-west and west of the Proposed Development.

7.10.3. Assessment Methodology

Construction Noise

If required, a construction noise assessment will be undertaken in accordance with BS5228-1: 2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Noise'¹⁴¹.

Operational Noise

The Scottish Government's Planning Advice Note PAN1/2011 'Planning and Noise'¹⁴² refers to the 'Onshore Wind Turbines' web-based document which in turn states that ETSU-R-97 'The Assessment and Rating of Noise from Windfarms'¹⁴³ should be used by Planning Authorities 'to assess and rate noise from wind energy developments until such time that an update is available.' The web-based document also refers to the Institute of Acoustics (IOA) 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'¹⁴⁴ (IOA GPG) as a source, which provides:

'significant support on technical issues to all users of the ETSU-R-97 method for rating and assessing wind turbine noise, and should be used by all IOA members and those undertaking assessments to ETSU-R-97. The Scottish Government accepts that the guide represents current industry good practice.'

¹⁴¹ British Standards Institute. (2009) *BS 5228-1:2009 (amended 2014) Code of practice for noise and vibration control on construction and open sites – Part 1: Noise*. British Standards Institute. London.

¹⁴² Scottish Government. (2011) *Planning Advice Note 1/2011: Planning and Noise* [Online] Available from - <https://www.gov.scot/publications/planning-advice-note-1-2011-planning-noise/>. [Accessed: April 2022]

¹⁴³ The Working Group on Noise from Wind Turbines. (1996) *ETSU-R-97, the Assessment and Rating of Noise from Windfarms, Final Report for the Department of Trade & Industry*.

¹⁴⁴ Institute of Acoustics. (2013) *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* [Online] Available from - <https://www.ioa.org.uk/sites/default/files/IOA%20Good%20Practice%20Guide%20on%20Wind%20Turbine%20Noise%20-%20May%202013.pdf>. [Accessed: April 2022]

ETSU-R-97 details a methodology for establishing noise limits for proposed wind farm developments and these limits should not be exceeded. ETSU-R-97 states that noise limits should be set relative to existing background noise levels at the nearest receptors and that these limits should reflect the variation in both turbine source noise and background noise with wind speed. Separate noise limits apply for quiet daytime and for night-time periods. Quiet daytime limits are chosen to protect a property's external amenity, and night-time limits are chosen to prevent sleep disturbance indoors, with windows open.

ETSU-R-97 recommends that wind farm noise for the quiet daytime periods should be limited to 5 dB(A)¹⁴⁵ above the prevailing background or a fixed minimum level within the range 35 - 40 dB LA90,10min, whichever is the higher. The precise choice of criterion level within the range 35 – 40 dB(A) depends on a number of factors, including the number of dwellings in the neighbourhood of the wind farm (relatively few dwellings suggest a figure towards the upper end), the effect of noise limits on the number of kWh generated (larger sites tend to suggest a higher figure) and the duration and level of exposure to any noise. These factors will be taken into account with justification for deriving suitable noise limits included in the noise assessment.

An exception to the setting of both the quiet daytime and night-time fixed minimum limit occurs where a property occupier has a financial involvement with the Proposed Development. In that case the fixed minimum limit can be increased to 45 dB LA90,10min or the prevailing background noise LA90 plus 5 dB, whichever is the greater for both the quiet daytime and night-time periods.

A background noise survey may not be required for situations where predicted wind turbine noise levels at the nearest noise sensitive properties is limited to an LA90,10min of 35dB(A) up to wind speeds of 10 m/s at 10 m, as the protection of the amenity of those properties can be controlled through a simplified noise condition as detailed in ETSU-R-97. ETSU-R-97 states that:

'For single turbines or wind farms with very large separation distances between the turbines and the nearest properties, a simplified noise condition may be suitable. If the noise is limited to an LA90,10min of 35 dB(A) up to wind speeds of 10 m/s at 10 m height, then this condition alone would offer sufficient protection of amenity, and background noise surveys would be unnecessary.'

The noise assessment for the Proposed Development will be undertaken in three stages:

- Determine the 'Total ETSU-R-97 Noise Limits' which are applicable to the operation of all schemes in the area;
- Undertake a cumulative assessment (where required) to determine whether predictions from all cumulative schemes meet the 'Total ETSU-R-97 Noise Limits'; and
- Derive a set of Site Specific Noise Limits (for the Proposed Development) and undertake predictions to determine whether the Proposed Development can operate within the Site Specific Noise Limits.

Given the proximity of other operational and consented schemes in the area and the fact that background noise monitoring has already been undertaken at a number of the closest properties, a review will be undertaken of the previously collected datasets to determine whether additional noise monitoring will be required.

Given the existing noise limits allocated to other schemes in the area, it is proposed that the 'Total ETSU-R-97 Noise Limits' for the assessment will be based on a 40 dB noise limit during the daytime period and a 43 dB noise limit during the night-time period.

¹⁴⁵ A logarithmic scale is used in noise level measurements because of this wide range. The scale used is the decibel (dB) scale which extends from 0 to 140 decibels (dB) corresponding to the intensity of the sound level. The correction factor is called 'A Weighting' and the resulting measurements are written as dB(A). The dB(A) is internationally accepted and has been found to correspond well with people's subjective reaction to noise.

The guidance contained in the IOA GPG will be used to establish suitable Site Specific Noise Limits which fully take account of the proportion of the Total ETSU-R-97 Noise Limits which has been allocated too, and can realistically be used by, existing operational and consented wind farms in the area.

Detailed consultation will be undertaken with THC's Environmental Health Department in order to agree the overall assessment methodology.

The noise assessment will include predictions of likely wind turbine noise levels across a range of wind speeds to demonstrate compliance with the Total ETSU-R-97 and Site Specific Noise Limits. A cumulative noise assessment will also be undertaken in order to consider the consented, operational and proposed wind farms within the vicinity of the Proposed Development. The assessment will be undertaken in accordance with ETSU-R-97 and the IOA GPG.

Battery Storage

In respect to operational noise from non-wind developments, such as battery energy storage sites, PAN 1/2011 refers to Assessment of Noise: Technical Advice Note (TAN)¹⁴⁶. The TAN identifies BS 4142:2014+A1:2019 'Methods for Rating and Assessing Industrial and Commercial Sound'¹⁴⁷ and BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'¹⁴⁸ as appropriate methodologies for the assessment of environmental noise from proposed new developments or activities.

Should a battery energy storage facility be proposed to store excess electricity generated by the Proposed Development, an operational noise assessment may be required. Where necessary, an assessment will be undertaken in line with BS 4142:2014+A1:2019 and BS 8233:2014.

7.10.4. Potential Mitigation

Potential noise effects at nearby noise sensitive receptors will be considered during the site design process.

Proposed mitigation measures will depend on the findings of the noise assessment and potential noise effects identified. Good practice guidance and mitigation measures during the construction phase will be implemented as part of a CEMP or similar.

7.10.5. Discussion: Matters to be Scoped Out

Vibration

Given the nature of construction activities proposed and the relative distances from residential receptors, the risk of ground borne vibration impacting on residential receptors is considered very low, as such it is not proposed that a vibration assessment be undertaken and that **a vibration assessment is scoped out**.

Decommissioning Noise

The potential noise impacts from the decommissioning phase will be no greater than those predicted during the construction phase (as decommissioning is effectively a reversal of the construction process). On that basis, it is not proposed to undertake an assessment of **decommissioning noise and that it should be scoped out**.

Low-Frequency Noise

¹⁴⁶ Scottish Government. (2011) *Planning Advice Note 1/2011: Planning and Noise - Assessment of noise: technical advice note* [Online] Available from - <https://www.gov.scot/publications/planning-advice-note-1-2011-planning-noise/>. [Accessed: April 2022]

¹⁴⁷ British Standards Institute. *Methods for Rating and Assessing Industrial and Commercial Sound*. UK : BSI, 2014. BS4142:2014 + A1:2019.

¹⁴⁸ British Standards Institute. *Guidance on Sound Insulation and Noise Reduction for Buildings*. UK : BSI, 2014. BS8233:2014.

A study, published in 2006 by acoustic consultants Hayes McKenzie on the behalf of the Department of Trade and Industry (DTI), investigated low frequency noise from wind farms. This study concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines.

In February 2013, the Environmental Protection Authority of South Australia published the results of a study into in infrasound levels near wind farms. This study measured infrasound levels at urban locations and rural locations with wind turbines close by, and rural locations with no wind turbines in the vicinity. It found that infrasound levels near wind farms are comparable to levels away from wind farms in both urban and rural locations. Infrasound levels were also measured during organised shut downs of the windfarms; the results showed that there was no noticeable difference in infrasound levels whether the turbines were active or inactive.

Bowdler et al., (2009) concluded that:

"...there is no robust evidence that low frequency noise (including 'infrasound') or ground-borne vibration from wind farms generally has adverse effects on wind farm neighbours".

During a Planning Appeal (PPA-310-2028, Clydeport Hunterston Terminal Facility, approximately 2.5 km south-west of Fairlie, 9 Jan 2018), the health impacts related to low frequency noise associated with wind turbines were considered at length by the appointed Reporter (Mr M Croft). The Reporter considered evidence from Health Protection Scotland and the National Health Service. In addition, he also considered low frequency noise surveys undertaken by the Appellant and the Local Authority both of which demonstrated compliance with planning conditions and did not identify any problems attributable to the turbine operations; some periods with highest levels of low frequency noise were recorded when the turbines were not operating.

The Reporter concluded that:

- The literature reviews by bodies with very significant responsibilities for the health of local people found insufficient evidence to confirm a causal relationship between wind turbine noise and the type of health complaints cited by some local residents;
- The NHS's assessment is that concerns about health impact are not supported by good quality research; and
- Although given the opportunity, the Community Council failed to provide evidence that can properly be set against the general tenor of the scientific evidence.

It is therefore **not considered necessary to carry out specific assessments of low frequency noise and that it should be scoped out**.

Amplitude Modulation

In its simplest form, Amplitude Modulation (AM), by definition, is the regular variation in noise level of a given noise source. This variation (the modulation) occurs at a specific frequency, which, in the case of wind turbines, is defined by the rotational speed of the blades, i.e. it occurs at the rate at which the blades pass a fixed point (e.g. the tower), known as Blade Passing Frequency.

A study was carried out in 2007 on behalf of the Department for Business, Enterprise and Regulatory Reform (BERR) by the University of Salford¹⁴⁹, which investigated the incidence of noise complaints associated with wind farms and whether these were associated with AM. The study defined AM as aerodynamic noise from wind turbines with a greater degree of fluctuation than normal at blade passing frequency. Its aims were to ascertain the prevalence of AM on UK wind farm sites, to try to gain a better understanding of the likely causes, and to establish whether further research into AM is required.

¹⁴⁹ University of Salford. (2007) *Research into aerodynamic modulation of wind turbine noise: final report* [Online] Available from - <http://usir.salford.ac.uk/id/eprint/1554/>. [Accessed: May 2022]

The study concluded that AM had occurred at only a small number (4 of 133) of wind farms in the UK, and only for between 7% and 15% of the time. It also stated that, the causes of AM are not well understood and that prediction of the effect was not currently possible.

This research was updated in 2013 by an in-depth study undertaken by Renewable UK¹⁵⁰, which has identified that many of the previously suggested causes of AM have little or no association to the occurrence of AM in practice. The generation of AM is based upon the interaction of a number of factors, the combination and contributions of which are unique to each site. With the current state of knowledge, it is not possible to predict whether any particular site is more or less likely to give rise to AM, and the incidence of AM occurring at any particular site remains low, as identified in the University of Salford study. The report includes a sample planning condition to address AM, however that has not yet been validated or endorsed by UK Government.

In 2016, the IOA proposed a measurement technique to quantify the level of AM present in any particular sample of wind farm noise. In August 2016 a report written by WSP/Parsons Brinkerhoff¹⁵¹ was published by the Department of Business, Energy & Industrial Strategy (BEIS, formerly The Department of Energy & Climate Change). The report sought to build on the conclusions of the IOA study in order to define an appropriate assessment method for AM, including a penalty scheme and an outline planning condition.

In November 2017, an article entitled 'A planning condition for wind farms' was published in Vol 42 No 6 of the Acoustics Bulletin magazine. The article was written collaboratively by a number of noise consultants and suggested a noise planning condition which included consideration of AM. The authors noted in the article that:

'Whilst local authorities and developers have waited for a planning condition that could be applied to newly consented wind farms, or to those already consented but with a suspensive condition, the report Wind Turbine AM Review (WTAMR) by WSP/Parsons Brinckerhoff for DECC arguably did not provide that. In addition there have been a number of comments on WTAMR that we consider should be addressed.'

The article then went on to propose a draft condition but noted that: *'This approach is proposed based on the current state of understanding, but may be subject to modification in light of new research and further robust information.'* And *'As various people before us have discovered, the derivation of a penalty is not easy. There is not sufficient reliable research to be confident that a penalty system would always provide a fair indication of the impact of AM.'*

At the time of writing there has been no official response to those recommendations from the IOA Noise Working Group and, as yet, no endorsement from any Scottish Government Minister or Department. The recommendation to impose a planning condition and the associated penalty scheme is at odds with the advice from the IOA GPG which currently states (paragraph 7.2.10):

'7.2.1 The evidence in relation to "Excess" or "Other" Amplitude Modulation (AM) is still developing. At the time of writing, current practice is not to assign a planning condition to deal with AM.'

At time of writing there is no agreed methodology which can be used to predict the occurrence of AM or an agreed methodology which can be used to determine whether the effects of AM, should it occur, are likely to be significant. On that basis it is considered therefore that **amplitude modulation should be scoped out**.

150 Renewable UK. (2013) *Wind Turbine Amplitude Modulation: Research to Improve Understanding as to its Cause and Effect* [Online] Available from -[https://cdn.ymaws.com/www.renewableuk.com/resource/collection/4E7CC744-FEF2-473B-AF2B-135FF2AA3A43/ruk_wind_turbine_amplitude_modulation_dec_2013_v2_\(1\).pdf](https://cdn.ymaws.com/www.renewableuk.com/resource/collection/4E7CC744-FEF2-473B-AF2B-135FF2AA3A43/ruk_wind_turbine_amplitude_modulation_dec_2013_v2_(1).pdf). [Accessed: May 2022]

151 WSP/ Parsons Brinkerhoff. (2016) *Wind Turbine AM Review Phase 2 report* [Online] Available from - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/562186/Phase_2_Report_-_Wind_Turbine_AM_Review_Issue_3_FINAL.pdf. [Accessed: May 2022]

7.10.6. Questions for Consultees

- **Question 34: Can the consultees confirm that they agree with the proposed assessment methodologies, specifically the use of ETSU-R-97 and the IOA GPG to assess operational noise and BS5228 to assess construction noise?**
- **Question 35: Can consultees agree that assessment of vibration, decommissioning noise, low frequency noise and amplitude modulation be scoped out of the EIA?**

7.11. Socio-economics, Recreation and Tourism

7.11.1. Introduction

This chapter will consider the potential socio-economic, recreation and tourism effects from the Proposed Development. Consideration of sustainable economic development has become a cornerstone of government policy and a key driver of the planning system in recent years. The underlying socio-economic wellbeing of an area is also itself a driver in terms of population change. The EIA will therefore include a socio-economic assessment to ensure the balance between economic, social and environmental effects can be properly assessed.

The socio-economics, recreation and tourism assessment will include consideration of local tourism and recreation activity, employment generation and the wider indirect and induced effects from the Proposed Development.

7.11.2. Baseline Description

The baseline assessment will include a description of the current socio-economic, recreation and tourism baseline within the local area. This will include a summary of the economic performance data and a description of the relevant tourism assets that will be covered in the assessment.

The baseline will include the following:

- The existing economic environment (baseline) using official data on population, industrial structure, unemployment and economic activity levels, income and earnings; and
- The role of the tourism sector in the local and regional economy, with consideration of assets, including accommodation providers and other tourism assets in the vicinity of the Proposed Development.

7.11.3. Study Areas

Socio-economic Study Area

The baseline description will cover and compare the study areas of:

- Scottish Highlands (local);
- Scotland (regional); and
- Great Britain (national).

Tourism and Recreation Study Areas

The baseline description will cover a study area within 15 km of the Proposed Development.

7.11.4. Relevant Guidance and Legislation

There is no specific legislation or guidance on the methods that should be used to assess the socio-economic impacts of a proposed onshore wind farm development. The proposed method has however been based on established best practice, including that used in the UK Government and industry reports on the sector. In particular, this assessment will draw from two studies by BiGGAR Economics on the UK onshore wind sector: a report published

by RenewableUK and the Department for Energy and Climate Change (DECC) in 2012 on the direct and wider economic benefits of the onshore wind sector to the UK economy (BiGGAR Economics, 2012)¹⁵² and a subsequent update to this report published by RenewableUK in 2015 (BiGGAR Economics, 2015)¹⁵³.

There is also no formal legislation or guidance on the methods that should be used to assess the effects that renewable energy development may have on general tourism and recreation interests. The proposed method will consider individual attractions and tourism facilities to assess if there could be any effects from the Proposed Development.

The assessment work will also take account of the relevant local and national policy objectives as well as other relevant strategies such as:

- Scotland's National Performance Framework¹⁵⁴;
- Scotland's National Strategy for Economic Transformation¹⁵⁵;
- Highland-wide Local Development Plan¹⁵⁶;
- Highlands and Islands Enterprise 2019 – 2022 Strategy¹⁵⁷; and
- Scotland Outlook 2030 – Scotland's tourism strategy¹⁵⁸.

7.11.5. Proposed Scope of Survey and Assessment

It is proposed the assessment will include the following:

- Assessment of the potential economic effects during the development and construction phase of the Proposed Development including direct employment, supplier effects and income effects;
- Assessment of the potential economic effects during the operation of the wind farm including direct employment, supplier effects and income effects;
- Assessment of the economic effects arising from infrastructure improvements and potential community benefits and shared ownership;
- Consideration of and reporting on mitigation and management measures which could be employed to minimise any negative impacts and maximise potential positive impacts.; and
- Assessment of the potential impacts on tourist accommodations, visitor attractions and destinations, visitor activities, and visitor and tourist routes.

It is proposed to scope out decommissioning effects of the Proposed Development due to uncertainties surrounding the future value of such effects some 35 years on.

152 RenewableUK. (2012) *Onshore Wind Direct & Wider Economic Impacts* [Online] Available from - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48359/5229-onshore-wind-direct-wider-economic-impacts.pdf [Accessed: April 2022]

153 RenewableUK. (2015) *Onshore Wind: Direct and Wider Economic Benefits* [Online] Available from - <https://www.renewableuk.com/news/295907/Onshore-Wind-Direct-and-Wider-Economic-Benefits-Members-only-htm> [Accessed: April 2022]

154 The Scottish Government. (2021) *Scotland's National Performance Framework* [Online] Available from: [National Performance Framework | National Performance Framework](#). [Accessed 20/05/2022]

155 The Scottish Government. (2022) *Scotland's National Strategy for Economic Transformation* [Online] Available from: [Scotland's National Strategy for Economic Transformation - gov.scot \(www.gov.scot\)](#) [Accessed 20/05/2022]

156 The Highland Council. (2012) *Highland Wide Local Development Plan* [Online] Available from: [Highland wide Local Development Plan \(8\).pdf](#). [Accessed 20/05/2022]

157 The Highlands and Islands Enterprise. (2019) *Highlands and Islands Enterprise 2019 – 2022 Strategy* [Online] Available from: [strategyplusplanplus2019-2022-1.pdf \(hie.co.uk\)](#). [Accessed 20/05/2022]

158 Scottish Tourism Alliance. (2020) *Scotland Outlook 2030 – Scotland's tourism strategy* [Online] Available at: [Scotland Outlook 2030 - Scotland's tourism strategy \(scottishtourismalliance.co.uk\)](#). [Accessed 20/05/2022]

It is anticipated that the contents of the assessment chapter will include:

- Introduction, including scope of assessment and methodology;
- Economic development and tourism strategic context;
- Baseline socio-economic, tourism and recreation context;
- Socio-economic assessment;
- Tourism and recreation impact assessment;
- Proposed measures and actions to maximise local economic impacts;
- Proposed measures and actions to mitigate any harmful effects (if required); and
- Summary of findings and conclusions.

This study will be a desk-based study.

7.11.6. Potential Impacts

In order to assess the magnitude of the socio-economic impacts, the level of activity/employment supported during the project lifecycle of the Proposed Development will be estimated (e.g. development, construction, and operation phases).

Government and industry reports will be used to determine the expected capital and operational expenditure associated with the Proposed Development, as well as the breakdown of expenditure by different contracts and the associated site infrastructure works. An assumption will then be made based on the share of each type of contract that can be secured regionally and nationally. This increase in turnover in each study area will then be used to estimate the economic impact associated with the Proposed Development.

In order to assess effects on tourism and recreation assets, the features that make them distinctive and attractive will be identified. The potential impact of the Proposed Development on those key features will then be assessed, with consideration of other chapters of the EIAR where relevant, to determine the magnitude of the change.

Given the evidence from numerous large scale wind farm applications in the UK that there is little likelihood of significant effects in EIA terms, the socio-economic chapter will not aim to derive EIA significance for effects.

Potential Mitigation

Proposed mitigation measures will depend on the findings of the assessment and potential effects identified.

Potential Effects

The effects that will be considered in the assessment will include the potential socio-economic, tourism and recreation effects associated with the Proposed Development. This will be done using the methodology developed by BiGGAR Economics, which has been used to assess over 140 renewable energy projects across the UK.

The potential socio-economic effects will include:

- Direct and supply chain impacts;
- The total amounts predicted to be spent in terms of development, construction and operation;
- Predicted numbers of jobs supported in the construction and operational phase;
- Environmental benefits – electricity generated annually (MWh); and
- Investment in community – details of potential community benefits.

The relationship between wind farm development and tourism has been the subject of several studies. If impacts arising from onshore wind farms, such as landscape character or visual impacts, lead to changes in visitor behaviour

or spending, it would be expected that there would be evidence of such changes in other areas where there has been onshore wind farm development.

The tourism sector is an important contributor to the Scottish economy, particularly in rural economies, and so there is merit in considering whether the development will have any effect on the tourism sector.

This assessment will consider the potential effects that the development could have on tourism assets and local accommodation providers. This will consider the implications of any effects identified for the tourism sector in the local area and wider region.

The potential tourism and recreational effects will include:

- Effects on tourist accommodation - including Bed and Breakfasts (B&Bs) and guest houses, caravanning, hotels and camping: their business prospects, visitor profile, and potential business impacts and effects;
- Effects on visitor attractions, facilities and destinations including – archaeological sites, cultural facilities, sports, recreation, and leisure facilities: their markets, performance and business impacts and effects;
- Effects on visitor activities – including walking, fishing, country pursuits, wildlife interests, and sports: their potential profile, prospects, and business impacts and effects; and
- Effects on visitor and tourist routes – including driving, cycling, walking, bridleways, and rights of way: their visitor numbers, patterns of activity and potential focal points of spend.

7.11.7. Questions for Consultees

Question 36: Do consultees agree with the proposed approach for the socio-economic, tourism and recreation assessment?

7.12. Other Issues

7.12.1. Shadow Flicker

Shadow flicker is an effect caused by the rotation of the turbine blades when the sun is shining, which can create a flickering or strobe like effect. Shadow flicker will be calculated using WindFarmer software which will identify the potential areas susceptible to shadow flicker and the extent of shadow flicker impact caused. This software can identify the study area for the assessment based on candidate turbine dimensions and orientations, as well as model periods of predicted shadow flicker.

Shadow flicker will be calculated assuming:

- There are clear skies every day of the year;
- The turbines are always rotating;
- The sun can be represented as a single point; and
- The blades of the turbines are always perpendicular to the direction of the line of sight from the specified location to the sun.

There is no standard for the assessment of shadow flicker in Scotland and there are no guidelines with which to quantify what exposure levels would represent a significant versus not significant effect. In the absence of specific guidelines and if shadow flicker has to be assessed in the EIAR, the assessment will consider the 'Best Practice Guidance for Planning Policy Statement 18 (PPS18) Renewable Energy' (Department of Environment Northern Ireland, 2009)¹⁵⁹ from Northern Ireland, which states: "It is recommended that shadow flicker at neighbouring offices

¹⁵⁹ Department of Environment, Northern Ireland. (2009) *Best practice Guidance to Planning Policy statement 18 'Renewable Energy'* [Online] Available from - <https://www.infrastructure-ni.gov.uk>. [Accessed: 23/05/2022]

and dwellings...should not exceed 30 hours per year or 30 minutes per day". As such, properties where shadow flicker would potentially exceed these thresholds would be subject to significant effects.

It is proposed that shadow flicker **can be scoped out if the final layout for proposed turbines is further than 10 rotor diameters from potential receptors.**

7.12.2. Climate and Carbon Balance

A wind farm has the potential to make savings on greenhouse gas emissions compared to electricity generation which involves the burning of fossil fuels. The EIAR will consider the current electricity generation mix and assess the level of 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 will be undertaken in accordance with Scottish Government recommended methodology¹⁶⁰.

Where peat or carbon-rich soils are present, SEPA requires planning applications for onshore wind farms to include a systematic assessment of the likely effects to these features. This requirement aligns with the - EIA Directive 2014/52/EU (as amended) which sets out that direct and indirect effects of development projects on climate (Article 3) and climatic factors (Annex IV) are considered.

Accordingly, a Climate Impact Assessment (CIA) will be undertaken in accordance with Schedule IV of the EIA Regulations 3 which transpose the EIA Directive into Scottish law and states that:

(4) A description of the factors specified in Article 3(1) likely to be significantly affected by the project, including climate (for example greenhouse gas emissions, impacts relevant to adaptation).

(5) A description of the likely significant effects of the project on the environment resulting from, inter alia ...

(f) The impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change.

The assessment will also consider relevant Scottish policy on climate change and adaption and will also consider the climate change targets of THC as set out in the Council Plan (2017-2022) document.

The CIA approach will consider the likely magnitude of greenhouse gas (GHG) emissions of the Proposed Development in comparison to the baseline scenario with no development (where no emissions are produced as no construction takes place).

Carbon Balance

Current best practice recommends that the EIAR include a carbon balance assessment which assesses effects with reference to the magnitude of emissions released by the development and the period of time it takes to payback for those carbon emissions, the context of those emissions (e.g. national, regional and local emissions reduction targets) and professional judgement. This assessment will be based on the proposed information regarding the scale and nature of the Proposed Development. Where data is unavailable, worst-case reasonable assumptions will be used.

A carbon balance assessment employs the Scottish Government's Carbon Calculator Tool¹⁶¹ and quantifies the CO₂ emissions savings over the life of the Proposed Development against the release of CO₂ from other energy generation methods as a result of implementing the project. It also reports on the time it takes to pay back any carbon debt and the potential effects of the Proposed Development on climate change in terms of carbon savings produced.

¹⁶⁰ 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 20/05/2022]

A carbon balance assessment will be produced to give an indication of the Proposed Development's impact on the existing peat on site and to assess the potential effects in terms of carbon dioxide (CO₂) emissions against the total potential carbon savings attributed to the Proposed Development. The assessment will quantify the gains over the life of the project against the release of CO₂ during construction, including loss of peat bog and construction of roads/tracks and other infrastructure. The latest version of the Carbon Calculator¹⁶² that is available before the application is submitted will be used. It is not expected for there to be any requirement for the Carbon Balance assessment to be amended post submission following any further update of the Carbon Calculator that may occur.

7.12.3. Population and Human Health

The assessment of potential health effects will be covered under individual aspect chapters where relevant and where scoped into the EIA (e.g. noise, socio-economics, tourism and recreation, and shadow flicker).

7.12.4. Major Accidents and Disasters

The Proposed Development is not located in an area with a history of natural disasters such as extreme weather events, and the construction and operation of the Proposed Development would be managed within the requirements of a number of health and safety related regulations, including the Construction (Design and Management) Regulations 2015 and the Health and Safety at Work etc. Act 1974. However, a screening exercise would be undertaken to identify further detail that may need to be provided (in relation to flood risk or peat slide risk for example).

7.12.5. Ice Throw

Ice throw is the process of ice falling or being launched from the blades of a turbine. As embedded mitigation, the turbines will have sensors on them to detect the build-up of ice and automatically prevent the turbines spinning when ice has developed on them, therefore preventing the ice being thrown. The Scottish Government's Onshore Wind Farm Advice Sheet¹⁶³ states that danger to human or animal life from falling parts or ice is rare. **Ice throw will not be assessed in the EIA and is therefore scoped out of the assessment.**

7.12.6. Lightning

As stated in the Scottish Government's Onshore Wind Farm Advice Sheet¹⁶³, the danger to human or animal life from lightning strike via a turbine is rare since lightning is directed down the turbine to the earth; the turbine itself being earthed. Maintenance of the turbines would not be undertaken during high lightning risk weather conditions. **Lightning will therefore not be assessed in the EIA and is therefore scoped out of the assessment.**

7.12.7. Questions for Consultees

Question 37: Do consultees agree with the proposed approach of the assessments referred to under Section 7.12?

¹⁶² The Scottish Government. (2008) CARBON CALCULATOR TOOL [Online] Available from - [Carbon Calculator Tool \(sepa.org.uk\)](#). [Accessed: 20/05/2022]

¹⁶³ Scottish Government. (2014) Onshore wind turbines: planning advice [Online] Available from - [Onshore wind turbines: planning advice - gov.scot \(www.gov.scot\)](#). [Accessed: 20/05/2022]

7.13. Residual, Synergist Effects and Mitigation

A concluding chapter will present the key findings from each EIA chapter and any required mitigation. In line with the EIA Regulations it will then assess the potential synergistic effects that may occur in combination.

This chapter will summarise the residual effects regarding all of the proposed work in relation to the construction, operation and decommissioning of the Proposed Development. It will identify all mitigation, including the mitigation by design that will be undertaken to reduce any such effects, should the development be consented.

8. EIA Accompanying Documents

8.1. Non-technical Summary

The NTS details the main components of the Proposed Development and summarizes the main findings of the environmental studies carried out to build and operate the Proposed Development. It is designed to be an easily readable document that will communicate the main elements of the EIA to any interested party without the need for the reader to have specialist background knowledge. It will also contain maps that show the extent and geographical location of the development.

8.2. Planning, Design and Access Statement

Although not a statutory requirement for Section 36 applications, a PDAS will be produced and seek to highlight the design principles and concepts behind the Proposed Development. It will detail how the developer has applied these principles to the Proposed Development in tandem with input from consultation activities.

The PDAS will also provide a commentary of the EIA findings and assess the Proposed Development accounting for residual effects (both positive and negative) against national policy and legislation, the Development Plan and other material planning considerations relevant to the Proposed Development.

8.3. Pre-application Consultation Report

Although not a statutory requirement for applications submitted under Section 36 of the Electricity Act 1989, the Applicant intends to submit a PAC Report to accompany the application.

It is proposed that the legislation and best practice guidance in relation to public consultation for major developments will be broadly followed as contained in PAN 3/2010 - Community Engagement - Planning with People.

The PAC Report will:

- Outline the scope of the consultation programme including when and who has been consulted;
- Confirm how the consultation programme meets the best practice standards;
- Set out how the Applicant has responded to the comments made, including whether and the extent to which the proposals have changed as a result of PAC;
- Provide documentary evidence that the planned consultation programme has taken place e.g. copies of advertisements of the public events and reference to display materials and records of response from such events;
- Demonstrate that steps were taken to explain the nature of PAC i.e. that it does not replace the application process whereby representations can be made to the planning authority; and
- Make an assessment of the success of the Pre-application Consultation activities.

9. Conclusion

This document has been prepared by Natural Power on behalf of EDF Renewables in anticipation of an application under Section 36 of the Electricity Act 1989 for Watten Wind Farm in the Scottish Highlands.

For each topic area questions have been provided within this Scoping Report. The questions focus on the methodologies, baseline data and likely impacts caused by the development. Information has been provided on the Proposed Development and the known environmental receptors. Where features or receptors are deemed to have a possible significant effect the methodologies to assess the impact have been provided for comment. Responses on these would help ensure that the detailed methodology, survey and assessment are carried out with consideration to all statutory consultees and key stakeholders. This approach is in line with good practice in the planning system and an emphasis being communicated at a national level to focus the content of the EIA and EIAR on key elements identified at the scoping stage.

10. Summary of all the Questions for Consultees

A summary of consultation questions as proposed throughout this Scoping Report is below. Please see previous Sections where relevant for further context.

Question 1: Do the consultees have any comments about the proposed approach to scoping and the purpose of the Scoping Report?

Question 2: Do consultees agree with the approach to the EIA and the associated mitigation and monitoring?

Question 3: Do consultees agree with the proposed approach set out for consultation?

Question 4: Do consultees agree with the proposed chapters to be included in the EIAR?

Question 5: Do consultees agree with the suggested viewpoint locations detailed in Table 7.2.1?

Question 6: Do the consultees agree with the LVIA and CLVIA methodologies proposed?

Question 7: Do consultees agree with the approach suggested for aviation lighting?

Question 8: Do consultees agree with the study area suggested for the RVAA?

Question 9: Do consultees agree that the scope of IEFs to be included in the assessment is appropriate?

Question 10: Do consultees agree that there is no connectivity and therefore no Likely Significant Effects of the Proposed Development on SACs?

Question 11: Do consultees agree that the data obtained in 2015 and 2020 in addition to a desk study is sufficient to inform a robust impact assessment?

Question 12: Do consultees agree that the methodology and scope of assessment is appropriate?

Question 13: Do consultees agree that, subject to further information coming to light from the field surveys and desk study, the scope of IOFs, including designated sites, to be included in the assessment is appropriate?

Question 14: Do consultees agree that North Caithness Cliffs SPA, East Caithness Cliffs SPA, Strathmore Peatlands SSSI, Loch Caluim Flows SSSI, Rumsdale Peatlands SSSI, Dunbeath Peatlands SSSI, Broubster Leans SSSI and Lambsdale Leans SSSI can be scoped out of the assessment?

Question 15: Do consultees agree that the data obtained via field surveys in 2013 to 2015, and 2019 to 2022, as well as a desk study is sufficient to inform a robust impact assessment?

Question 16: Do consultees agree that the methodology and scope of the assessment is appropriate?

Question 17: Do the consultees agree that, subject to further information coming to light from the field surveys, consultation and desk study, the scope of the assessment is appropriate?

Question 18: Do the consultees have any information not outlined in the Scoping report that would inform the impact assessment for geology, peat, hydrology and hydrogeology?

Question 19: Do consultees agree with the proposals for 'Effects Scoped Out' in this Scoping Report?

Question 20: Are consultees content with the proposed study areas presented in this Scoping Report?

Question 21: Are there any other relevant consultees other than HES and THC who should be contacted with respect to the Cultural Heritage and Archaeology assessment?

Question 22: Do consultees wish to request any specific heritage assets to be assessed in the EIAR?

Question 23: Are consultees content with the proposed methodology and scope for the forestry assessment?

Question 24: Do the consultees have any information, particularly with reference to new guidance, which should be taken into account?

Question 25: Do consultees agree with the proposed geographical extent of the assessment?

Question 26: Do consultees agree that operational and decommissioning phases can be scoped out and the assessment will consider the effects during the construction phase only?

Question 27: Can consultees provide traffic count data?

Question 28: Do consultees agree that 'embedded mitigation' can be assumed in baseline assessment of receptors?

Question 29: Do the consultees agree with the approach to consider the environmental impacts in line with IEMA thresholds of 30% and 10%?

Question 30: Do the consultees agree with the traffic assessment approach set out in the above section?

Question 31: Do consultees agree that the expected scenario of stone sourced via on-site borrow pits with a conservative allowance for import of finished surfacing stone be modelled?

Question 32: Do Transport Scotland agree that in relation to their Transport Assessment Guidance, no 'Transport Statement' or 'Transport Assessment' is required in addition to the proposed TIA and TMP?

Question 33: Do consultees agree with the proposed approach for the aviation and telecommunications assessment?

Question 34: Can the consultees confirm that they agree with the proposed assessment methodologies, specifically the use of ETSU-R-97 and the IOA GPG to assess operational noise and BS5228 to assess construction noise?

Question 35: Can consultees agree that assessment of vibration, decommissioning noise, low frequency noise and amplitude modulation be scoped out of the EIA?

Question 36: Do consultees agree with the proposed approach for the socio-economic, tourism and recreation assessment?

Question 37: Do consultees agree with the proposed approach of the assessments referred to under Section 7.12?

11. Responding to this Scoping Report

Consultee responses to this report should be directed to the ECU which will form a Scoping Opinion. The ECU can be contacted via email:

Econsents_Admin@gov.scot

The Applicant will welcome such responses to inform the scope of EIA to be undertaken for the Proposed Development and further consultation to be undertaken with each consultee as the EIA progresses.

Appendix A – List of Figures

- Figure 3.1: Regional Context
- Figure 3.2: Site Layout
- Figure 3.3: Location Plan
- Figure 7.2.1: Zone of Theoretical Visibility to Tip Height (A3 size)
- Figure 7.2.2: Zone of Theoretical Visibility to Tip Height (A0 size)
- Figure 7.2.3: Zone of Theoretical Visibility to Hub Height (A3 size)
- Figure 7.3.1: Ecology Survey Areas
- Figure 7.3.2: Ecological Designated sites and Ancient Woodland within 5 km
- Figure 7.4.1: Ornithological Study Area
- Figure 7.4.2: Ornithological Designated sites within 20 km
- Figure 7.5.1: Hydrology Study Area
- Figure 7.5.2: Peatland Condition
- Figure 7.6.1: Cultural Heritage Assets

Appendix B - Transport Assessment Form



Contact Details		
	Applicant	Consultant
Contact name		Euan Reilly
Company	EDF Energy Renewables Limited	Natural Power Consultants Ltd
Address		Ochil House, Stirling, FK7 7XE
Telephone		
E-mail		euanr@naturalpower.com

Development Details	Watten Wind Farm
Brief description	The following are being considered for the proposed development: Up to 8 wind turbines with associated infrastructure; Battery Storage; Underground electricity cables; Permanent anemometry mast; Temporary construction and storage compounds and ancillary infrastructure; Temporary construction gatehouse; and Waste water and surface water drainage.
Existing/ historical site use	Sparsely settled landscape and settlement today takes the form of dispersed crofts and farms. Currently much of the site area is forestry.
Location: Street/Road Town/City/Plan Area (see Figure 3.1: Location Plan)	Proposed Development is situated in The Highland Council on land to the east of Halsary Wind Farm and approximately 3 km to the south-east of Watten, between the A9 and B870
Size (e.g. GFA, no. of dwellings, etc.) Indicate if any thresholds in Table 3.1 are exceeded.	The Proposed Development is a wind farm and covers an area greater than the thresholds noted in Table 3.1.
Opening year(s)	Estimated 2026



Creating a better environment



naturalpower.com
sayhello@naturalpower.com



For full details on our ISO and other certifications, please visit our website.

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A1.2. The Scottish Government Energy Consents Unit, Scoping Opinion On Behalf Of the Scottish Ministers Under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 – Watten Wind Farm



**The Scottish Government
Energy Consents Unit**

**Scoping Opinion On Behalf Of the Scottish Ministers Under the
Electricity Works (Environmental Impact Assessment) (Scotland)
Regulations 2017**

Watten Wind Farm

EDF Energy Renewables Limited

2 September 2022

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1. Introduction

This scoping opinion is issued by the Scottish Government Energy Consents Unit on behalf of the Scottish Ministers to EDF Energy Renewables Limited, (hereafter referred to as the “Company”), a company incorporated under the Companies Act with company number 06456689 and having its registered office at Alexander House, 1 Mandarin Road, Rainton Bridge Business Park, Houghton Le Spring, Sunderland, DH4 5RA. This is in response to a request dated 7 June 2022 for a scoping opinion under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 in relation to the proposed Watten Wind Farm development (“the proposed Development”). The request was accompanied by a scoping report prepared by Natural Power Consulting Ltd.

The proposed Development would be located approximately 3km south west of Watten, in the planning authority area of the Highland Council.

The proposed Development will comprise up to 8 turbines, each with blade tip height of 220m, which will have a generating capacity of over 50MW.

In addition to the wind turbines, there will be ancillary infrastructure including:

- Turbine foundations and hardstandings;
- Onsite substation;
- Battery storage;
- External transformer housing;
- Crane pads;
- Access tracks;
- Underground electricity cables;
- Permanent anemometry mast;
- Borrow pits;
- Temporary construction and storage compounds and ancillary infrastructure;
- Site signage;
- Temporary construction gatehouse; and
- Waste water and surface water drainage.

The Company indicates the proposed Development would be decommissioned after 35 years and the site restored in accordance with the decommissioning and restoration plan.

The proposed Development is solely within the planning authority of the Highland Council.

2. Consultation

Following the scoping opinion request a list of consultees was agreed between Natural Power Consultants Ltd on behalf of the Company and the Energy Consents Unit. A consultation on the scoping report was undertaken by the Scottish Ministers and this commenced on 7 June 2022. The consultation period was scheduled to close on 28 June 2022.

Extensions to this deadline were granted to:

- The Highland Council;
- Historic Environment Scotland; and
- RSPB Scotland.

The Scottish Ministers also requested responses from their internal advisors Transport Scotland and Scottish Forestry. Standing advice from Marine Scotland Science (MSS) has been provided with requirements to complete a checklist prior to the submission of the application for consent under section 36 of the Electricity Act 1989. All consultation responses received and the standing advice from MSS are attached in **ANNEX A – List of Consultees and their responses**.

The purpose of the consultation was to obtain scoping advice from each consultee on environmental matters within their remit. Responses from consultees and advisors, including the standing advice from MSS, should be read in full for detailed requirements and for comprehensive guidance, advice and, where appropriate, templates for preparation of the Environmental Impact Assessment report ("EIA report").

Unless stated to the contrary in this scoping opinion, the Scottish Ministers expect the EIA report to include all matters raised in responses from the consultees and advisors.

No responses were received from:

- British Horse Society;
- Civil Aviation Authority;
- Highlands and Islands Airports Limited;
- John Muir Trust;
- Mountaineering Scotland;
- Nuclear Safety Directorate (HSE)
- NATS Safeguarding;
- ScotWays;
- Scottish Water;
- Scottish Wildlife Trust;
- Scottish Wild Land Group;
- VisitScotland;
- Watten Community Council;
- Latheron, Lybster and Clyth Community Council;
- Tannach & District Community Council;
- Halkirk Community Council;
- Sinclairs Bay Community Council;
- Bower Community Council;
- Berriedale & Dunbeath Community Council; and
- Castletown Community Council.

With regard to those consultees who did not respond, it is assumed that they have no comment to make on the scoping report, however each would be consulted again in the event that an application for consent is submitted subsequent to this EIA scoping opinion.

The Scottish Ministers are satisfied that the requirements for consultation set out in Regulation 12(4) of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 have been met.

3. The Scoping Opinion

This scoping opinion has been adopted following consultation with the Highland Council, NatureScot, Scottish Environment Protection Agency (SEPA) and Historic Environment Scotland (HES), all as statutory consultation bodies. Other bodies which the Scottish Ministers consider likely to have an interest in the proposed Development by reason of their specific environmental responsibilities or local and regional competencies were also consulted.

The Scottish Ministers adopt this scoping opinion having taken into account the information provided by the Company in its request dated 7 June 2022 in respect of the specific characteristics of the proposed Development and responses received to the consultation undertaken. In providing this scoping opinion, the Scottish Ministers having had regard to current knowledge and methods of assessment, have taken into account the specific characteristics of the proposed Development, the specific characteristics of that type of Development and the environmental features likely to be affected.

A copy of this scoping opinion has been sent to the Highland Council for publication on their website. It has also been published on the Scottish Government Energy Consents Unit website at [Scottish Government - Energy Consents Unit](#).

The Scottish Ministers expect the EIA report which will accompany the application for the proposed Development to consider in full **all** consultation responses attached in **Annex A**.

The Scottish Ministers are satisfied with the scope of the EIA set out in the scoping report.

In addition to the consultation responses, the Scottish Ministers wish to provide comments with regards to the scope of the EIA report. The Company should note and address each matter:

The proposed Development

For **each** generating component of the proposed Development for which consent will be applied for, the following will be required to be assessed and fully detailed in the EIA report:

- components required for each generating station;

- the scale of the development (dimensions of the wind turbines) solar panels, battery storage etc:
- minimum and maximum export capacity of megawatts and megawatt hours of electricity for battery storage and / or solar.

Aviation, Radar and Telecoms

At the current proposed tip height for each of the turbines, aviation lighting will be required. It is recommended by the Scottish Ministers that, as soon as they can, the Company engages with the Civil Aviation Authority to discuss and agree their night-time aviation lighting requirements.

The Defence Infrastructure Organisation (DIO) have advised that the turbines will have an unacceptable interference on Air Traffic Control used by RAF Lossiemouth. The Company should engage further with DIO to discuss compromise or mitigation that works for all parties.

The Scottish Ministers note Joint Radio Company (JRC) have objected to the proposed Development and the Company should engage with JRC in order to compromise on a Development that works for all parties.

The Company should engage with Highland and Islands Airports Ltd to establish any impact on the radar at airports in the area.

As well as the scope, methodology, findings and recommendations of such assessments, full details of all mitigation of aviation lighting impacts subsequently identified should be provided in the EIA report

Bird surveys

NatureScot and RSPB have advised that the flight activity data around Turbine 1 is likely to be considered too old to be relevant for an assessment of potential impacts. The Company should liaise further with NatureScot to ensure that all potential impacts are assessed. Collision risk modelling should also be undertaken, and a displacement assessment of curlew breeding pairs should also be undertaken, with infrastructure avoiding the areas of highest breeding density. This assessment should also include snipe, lapwing, oystercatcher and golden plovers.

It is recommended by the Scottish Ministers that decisions on bird surveys – species, methodology, vantage points, viewsheds and duration – site specific and cumulative – should be made following discussion between the Company, the Highland Council, NatureScot and RSPB Scotland.

Borrow pits

Where borrow pits are proposed as a source of on-site aggregate they should be considered as part of the EIA process and included in the EIA report detailing information regarding their location, size, layout and nature. Ultimately, it would be necessary to provide details of the proposed depth of the excavation compared to the actual topography and water table, proposed drainage and settlement traps, turf and

overburden removal and storage for reinstatement, and details of the proposed restoration profile. The impact of such facilities (including dust, blasting and impact on water) should also be appraised as part of the overall impact. Information should cover the requirements set out in 'PAN 50: Controlling the Environmental Effects of Surface Mineral Workings'.

Private water supplies

The Scottish Ministers request that the Company investigates the presence of any private water supplies which may be impacted by the proposed Development. The EIA report should include details of any supplies identified by this investigation, and if any supplies are identified, the Company should provide an assessment of the potential impacts, risks, and any mitigation which would be provided.

Fish

Fisheries Management Scotland have developed advice which should be fully considered throughout the planning, construction and monitoring phases of the proposed Development. That advice can be found at: <http://fms.scot/wp-content/uploads/2017/04/170412-Guidance-Terrestrial-windfarms.pdf>

MSS generic scoping guidelines for onshore wind farm developments (and overhead line Development) is provided at: [Onshore Renewables Interactions - gov.scot \(www.gov.scot\)](http://www.gov.scot)

How fish populations can be impacted during the construction, operation and decommissioning of a wind farm development should be considered, in relation to freshwater and diadromous fish and fisheries, during the EIA process.

Baseline fish surveys

The Scottish Ministers recommend that the Company discuss and agree Baseline Fish Surveys with the local District Salmon Fishery Board and Fisheries Trust.

Study area – Landscape and visual

The Highland Council have advised that the study area for a cumulative LVIA for the proposed Development should extend to a minimum of 60km. The study area in kilometres from the outermost turbines of the proposed Development should be agreed following discussion between the Company, the Highland Council, HES and NatureScot.

Cumulative landscape impact assessment

To ensure that assessments are as up-to-date as possible, developments to be included in cumulative landscape impact assessments should be discussed and agreed by the Company, the Highland Council and NatureScot. Photography and visualisations submitted in the EIA report should reflect the most up-to-date cumulative position and the most up-to-date ecological and vegetation position.

Designated areas

The Scottish Ministers recommend that the Company contact the Highland Council, HES, RSPB Scotland and NatureScot to discuss and agree designated sites to be included in the EIA report and the survey work and further in-depth modelling and research to be undertaken.

Wild Land Areas, Special Areas of Conservation, Sites of Special Scientific Interest and Special Protection Areas

A Wild Land Assessment will be required to identify potential impacts on the Causeymire – Knockfin Flows Wild Land Area (WLA), and the East Halladale Flows WLA.

NatureScot and RSPB Scotland do not agree that impacts to the East Caithness Cliffs Special Protection Area (SPA) and Caithness and Sutherland Peatlands Special Area of Conservation (SAC) should be scoped out. The Highland Council ask the Company to have regard to NatureScot and RSPB comments in this respect. Therefore, assessments will also be required to identify potential impacts on Caithness and Sutherland Peatlands SPA, SAC and Ramsar site, along with Caithness Lochs SPA, East Caithness Cliffs SPA and Shielton Peatlands Site of Special Scientific Interest (SSSI).

Viewpoints and visualisations

It is recommended by the Scottish Ministers that the final list of viewpoints and visualisations should be agreed following discussion between the Company, the Highland Council, HES and NatureScot.

Peat landslide hazard and risk assessment

The Scottish Ministers consider that where there is a demonstrable requirement for peat landslide hazard and risk assessment (PLHRA), the assessment should be undertaken as part of the EIA process. This will provide the Scottish Ministers with a clear understanding of whether the risks are acceptable and capable of being controlled by mitigation measures.

The published **Proposed electricity generation developments: peat landslide hazard best practice guide - gov.scot (www.gov.scot)** should be followed in the preparation of the EIA report, which should contain such an assessment and details of mitigation measures. It should be noted by the Company that the Scottish Ministers engage the services of appropriate specialists to assess Peat Landslide Hazard and Risk Assessments submitted with an EIA report.

Noise assessment

It is recommended by the Scottish Ministers that the final list of receptors in respect of noise assessment should be agreed following discussion between the Company and the Highland Council.

The noise assessment report should be formatted as per Table 6.1 of *the IOA “A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise”*.

Drinking water protected areas

The Scottish Ministers recommend that the Company contacts Scottish Water (via EIA@scottishwater.co.uk) and makes further enquiries to confirm whether there any Scottish Water assets which may be affected by the proposed Development, and, if appropriate, include full details in the EIA report along with all mitigation measures to be adopted.

Cultural heritage

The Scottish Ministers recommend that the Company engage with HES regarding any potential impacts to heritage assets in the vicinity of the proposed Development.

Ecology and ornithology

The EIA report should provide a baseline survey of the animals (mammals, reptiles, amphibians, etc) present on site. It needs to be categorically established which species are present on the site, and where, before a future application is submitted. Furthermore the EIA report should provide an account of the habitats present on the proposed Development site. It should identify rare and threatened habitats, and those protected by European or UK legislation, or identified in national or local Biodiversity Action Plans.

Hydrology, geology, hydrogeology and peat

A full assessment on the impact on peat should be included in the EIA report. The assessment of the impact on peat must include peat probing for all areas where development is proposed. This assessment should include probing not just at the point of infrastructure as proposed by the scheme but also covering the areas of ground which would be subject to micro-siting limits. An updated peat slide risk assessment in accordance with the Scottish Government Best Practice Guide for Developers should also be completed.

Woodland

Scottish Forestry have recommended that the EIA report should include a section on the impacts of the proposed Development on the woodland in the study area.

Deer

It is noted that further assessments will be carried out in relation to wild deer. NatureScot have advised that a Deer Management Plan will be required in order to ensure that potential impacts can be mitigated.

4. Mitigation Measures

The Scottish Ministers are required to make a reasoned conclusion on the significant effects of the proposed Development on the environment as identified in the environmental impact assessment. The mitigation measures suggested for any significant environmental impacts identified should be presented as a conclusion to each chapter. Applicants are also asked to provide a consolidated schedule of all mitigation measures proposed in the environmental assessment, provided in tabular form, where that mitigation is relied upon in relation to reported conclusions of likelihood or significance of impacts.

5. Conclusion

This scoping opinion is based on information contained in the scoping report and written request for a scoping opinion and information available at the date of this scoping opinion. The adoption of this scoping opinion by the Scottish Ministers does not preclude the Scottish Ministers from requiring of the Company information in connection with an EIA report submitted in connection with any application for section 36 consent for the proposed Development.

This scoping opinion will not prevent the Scottish Ministers from seeking additional information at application stage, for example to include cumulative impacts of additional developments which enter the planning process after the date of this opinion.

Without prejudice to that generality, it is recommended that advice regarding the requirement for an additional scoping opinion be sought from the Scottish Ministers in the event that no application has been submitted within 12 months of the date of this opinion.

It is acknowledged that the environmental impact assessment process is iterative and should inform the final layout and design of proposed developments. The Scottish Ministers note that further engagement between relevant parties in relation to the refinement of the design of this proposed Development will be required, and would request that they are kept informed of on-going discussions in relation to this.

Applicants are encouraged to engage with officials at the Scottish Government's Energy Consents Unit at the pre-application stage and before proposals reach design freeze.

Applicants are reminded that there will be limited opportunity to materially vary the form and content of the proposed Development once an application is submitted.

When finalising the EIA report, applicants are asked to provide a summary in tabular form of where within the EIA report each of the specific matters raised in this scoping opinion has been addressed.

It should be noted that to facilitate uploading to the Energy Consents portal, the EIA report and its associated documentation should be divided into appropriately named separate files of sizes no more than 10 megabytes (MB). In addition, a separate disc or other electronic format containing the EIA report and its associated documentation will be required.

Nicola Kennedy
Energy Consents Unit
2 September 2022

A1



ANNEX A – List of Consultees and their responses.

Consultation

List of consultees

• The Highland Council	A1-A28
• Scottish Environment Protection Agency	A29-A36
• NatureScot	A37-A43
• Historic Environment Scotland	A44-A51
• Scottish Forestry	A52-A53
• Transport Scotland	A54-A56
• Aberdeen Airport	A57
• British Telecoms Plc	A58
• Caithness District Salmon Fishery Board	A59
• Crown Estate Scotland	A60
• Defence Infrastructure Organisation	A61-A63
• Edinburgh Airport	A64
• Fisheries Management Scotland	A65
• Glasgow Airport	A66
• Glasgow Prestwick Airport	A67
• Joint Radio Company	A68-A70
• RSPB Scotland	A71-A75
• Marine Scotland Science	A76-A83

Energy Consents Unit
Per Nicola Kennedy
Scottish Government
4th Floor
5 Atlantic Quay
150 Broomielaw Glasgow
G2 8LU

Please ask for: Simon Hindson
Direct Dial: 01463 785047
E-mail: simon.hindson@highland.gov.uk
Our Ref: 22/02644/SCOP
Your Ref: ECU00004509
Date: 28 July 2022

By email only to:

Econsents_Admin@gov.scot

Dear Nicola,

PLANNING REFERENCE: 22/02644/SCOP
DEVELOPMENT: WATTEN WIND FARM - UP TO 8 WIND TURBINES UP TO 220 M TO TIP HEIGHT (CANDIDATE TURBINE MODEL SPECIFICATIONS HAVE HUB HEIGHTS OF 139 M AND ROTOR DIAMETERS OF 162 M), TURBINE FOUNDATIONS AND HARDSTANDINGS, ONSITE SUBSTATION, BATTERY STORAGE, EXTERNAL TRANSFORMER HOUSING, CRANE PADS, ACCESS TRACKS, UNDERGROUND ELECTRICITY CABLES, PERMANENT ANEMOMETRY MAST, BORROW PITS, TEMPORARY CONSTRUCTION AND STORAGE COMPOUNDS AND ANCILLARY INFRASTRUCTURE, SITE SIGNAGE, TEMPORARY CONSTRUCTION GATEHOUSE AND WASTE WATER AND SURFACE WATER DRAINAGE
LOCATION: LAND 3670M SW OF WATTEN VILLAGE HALL
WATTEN

Thank you for consulting The Highland Council (THC) on the Environmental Impact Assessment (EIA) Scoping Request for the above project. We received the consultation on 07 June 2022 by email and we are grateful for the extension of time to make comments.

Our view on the scope of the assessment may be subject to change on a number of topics within the EIAR if the scale of development, in terms of the number and height of turbines, changes.

Whilst unlikely, this application may reduce in scale to a level which would be considered as an application under the Town and Country Planning (Scotland) Act 1997 (As Amended). If this is the case we would require a revised scoping response under the relevant regulations.

We trust that this consultation response helps inform ECUs Scoping Opinion and is helpful to the applicant when formalising any forthcoming application.

ePlanning Centre, The Highland Council, Glenurquhart Road, INVERNESS IV3 5NX

Email: eplanning@highland.gov.uk

LETTER

A2

A3

SCOPING RESPONSE TO ENERGY CONSENTS UNIT

Applicant:	Natural Power
Project:	Watten Wind Farm - Up to 8 wind turbines up to 220 m to tip height (candidate turbine model specifications have hub heights of 139 m and rotor diameters of 162 m), Turbine foundations and hardstandings, Onsite substation, Battery storage, External transformer housing, Crane pads, Access tracks, Underground electricity cables, Permanent anemometry mast, Borrow pits, Temporary construction and storage compounds and ancillary infrastructure, Site signage, Temporary construction gatehouse and Waste water and surface water drainage
Project Address:	Land 3670M SW Of Watten Village Hall Watten
Our Reference	22/02644/SCOP

This response is given without prejudice to the Planning Authority's right to request additional information in connection with any statement, whether Environmental Impact Assessment Report (EIAR) or not, submitted in support of any future application. These views are also given without prejudice to the future consideration of and decision on any planning application received by The Highland Council (THC).

THC request that any EIAR submitted in support of an application for the above development take the comments highlighted below into account; many of which are already acknowledged within the Scoping Report. In particular, the elements of this report as highlighted in parts 3, 4 and 5 should be presented as three distinct elements.

Responses to the internal consultation undertaken are attached. Should any further responses be received from internal consultees, these will be forwarded on in due course.

1.0 Description of the Development

- 1.1 The description of development for an EIAR is often much more than would be set out in any planning application. An EIAR must include:
- a description of the physical characteristics of the whole development and the full land-use requirements during the operational, construction and decommissioning phases. These might include requirements for borrow pits, local road improvements, infrastructural connections (i.e. connections to the grid), off site conservation measures, etc. A plan with eight figure OS Grid co-ordinates for all main elements of the proposal should be supplied;
 - a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;
 - the risk of accidents, having regard in particular to substances or technologies used;
 - an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light / flicker, heat, radiation, etc.) resulting from the operation of the development; and

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- the estimated cumulative impact of the project with other consented or operation development.

2.0 Alternatives

2.1 A statement is required which outlines the main development alternatives studied by the applicant and an indication of the main reasons for the final project choice. This is expected to highlight the following:

- the range of technologies that may have been considered;
- locational criteria and economic parameters used in the initial site selection;
- options for access;
- design and locational options for all elements of the proposed development (including grid connection); and
- the environmental effects of the different options examined.

Such assessment should also highlight sustainable development attributes including for example assessment of carbon emissions / carbon savings.

3.0 Environmental Elements Affected

3.1 The EIAR must provide a description of the aspects of the environment likely to be significantly affected by the development. The following paragraphs highlight some principal considerations. There are a number of wind energy developments in the area and you are encouraged to use your understanding of these in assessing your development and the potential for cumulative effects to arise. The EIAR should fully utilise this understanding to ensure that information provided is relevant and robustly grounded.

Land Use and Policy

3.2 The EIAR should recognise the existing land uses affected by the development having particular regard for THC's Development Plan inclusive of all statutorily adopted Supplementary Guidance (SG). Particular attention should be paid to the provisions of the Onshore Wind Energy SG (OWESG) inclusive of any Landscape Sensitivity Appraisal. This is not instead of but in addition to the expectation of receiving a Planning Statement in support of the application itself which, in addition to exploring compliance with the Development Plan, should look at Scottish Planning Policy and Planning Advice Notes which identify the issues that should be taken into account when considering significant development. Scottish Government policy and guidance on renewable energy and wind energy should be considered in this section. The purpose of this chapter is to highlight relevant policies not to assess the compatibility of the proposal with policy. The Council's Development Plans Team contributed to the preparation of the recently provided pre-application advice pack, the content of which remains applicable and should help inform the preparation of this section of the EIAR.

Sustainability

3.3 The Council's Sustainable Design Guide SG provides advice and guidance on a range of sustainability topics, including design, building materials and minimising environmental impacts of development. A Sustainable Design Statement is required. Wind farms produce

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- a sustainable form of energy, however, the Council will need to be satisfied in reaching a conclusion on any consultation or application that the development in its entirety is in fact sustainable development. In order for us to do so we recommend that matters related to the three pillars of sustainable development are fully assessed in the information which supports the application. The wind farm needs to be considering the provision of energy systems within the holistic demand cycle of the network. The developer needs to consider the impact of the installation and the prospective long-term use of the energy to accommodate the requirements of a decarbonised energy provision for Scotland and the Highlands. The application should include a statement on how the development is likely to contribute to the Scottish Government Energy Efficient Scotland roadmap and provide the Highlands with secure and clean electricity supplies.
- 3.4 Concepts of developing Energy storage and/or Major Energy Users (such as Hydrogen production) in association with Energy Generation are of interest to the Council, with considerable potential benefits for energy generation (avoiding or reducing curtailment), diversity, decarbonisation, efficiency and supply and for the economy. It may be noted that the Council supports in broad principle the inclusion of energy storage within such developments and that in respect of hydrogen the Council has recently (March 2021) agreed to prepare a Hydrogen Strategy for Highland.
- 3.5 It was noted at the pre-application meeting that the proposal includes energy storage, the intention being 'shipping container-style' battery storage although no specific detail is available at this stage. If the developer were to pursue energy storage as part of the development, it should be noted that any associated buildings with the wind farm scheme must be designed in a way which is sympathetic to the local area and existing pattern of development. In considering the detail we would need to understand the type and nature of storage facility proposed, such as scale and appearance. The potential impacts must be understood and carefully assessed, for example any pollution risks and particular requirements for decommissioning. These details will be important for understanding the effects of detailed proposals and to assist in the consideration of whether they are able to be supported.
- 3.6 It would be highly beneficial to have information to explain electricity network benefits and capacity proposed, with the end result ideally being all wind turbines being operational on a consistent basis when there is sufficient windspeeds, rather than either certain or no turbines being in operational depending upon short term grid constraints or levels of demand. A strategy for the provision of charging points within the development should also be submitted with the application.
- Landscape and Visual**
- 3.7 The Council expects the EIAR to consider the landscape and visual impact of the development. The Council makes a distinction between the two. While not mutually exclusive, these elements require separate assessment and therefore presentation of visual material in different ways. It is the Council's position that it is not possible to use panoramic images for the purposes of visual impact assessment. The Council, while not precluding the use of panoramic images, require single frame images with different focal lengths taken with a 35mm format full frame sensor camera – not an 'equivalent.' The focal lengths required are 50mm and 75mm. The former gives an indication of field of view and the latter best represents the scale and distance in the landscape i.e. a more realistic impression of what we see from the viewpoint. These images should form part of the EIAR

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- and not be separate from it. Photomontages should follow the Council's Visualisation Standards and are subject an independent verification check upon receipt:
- https://www.highland.gov.uk/downloads/file/12880/visualisation_standards_for_wind_energy_developments
- 3.8 Separate volumes of visualisations should be prepared to both Highland Council Standards and NatureScot guidance. These should be provided in hard copy. It would be beneficial for THC's volume to be provided in a **A3 leaver arch folder** for ease of use. The use of monochrome for specific viewpoints is useful where there are a number of different wind farms in the view. We are happy to provide advice on this matter going forward. All existing turbines should be re-rendered even if they appear to be facing the viewer in the photograph to ensure consistency.
- 3.9 This assessment must include the expected impact of on-site borrow pits and access roads, despite the fact that the principal structures will be a primary concern. All elements of a development are to be rendered into photomontages and are important to consider within any EIAR.
- 3.10 There are a number of similar applications in this area which are yet to be determined / concluded in the vicinity of this application, many of these have been identified in the scoping report, which may or may not help clarify the weight towards particular policy elements in the final planning balance. Our interactive Wind Turbine map is up to date as of 15 January 2021 and can be accessed on the link below:
- <http://highland.gov.uk/windmap>
- The assessment of landscape and visual impacts (including cumulative impacts) with other wind turbine developments in this area will also be required. In particular, the in-combination effects with nearby and existing turbines will need to be carefully considered given the large scale of turbines proposed.
- 3.11 The finalised list of Viewpoints (VP) and wireframes for the assessment of effects of a proposed development must be agreed in advance of preparation of any visuals with THC and NatureScot. This should include details of the extent of detailed route analysis through the provision of sequential wirelines along the A9 and A882 and the B870.
- 3.12 We acknowledge that there will be some micro-siting of the viewpoints to avoid intervening screening of vegetation boundary treatments etc. We would recommend that the photographer has in their mind whether the VP is representative or specific and also who the receptors are when they are taking the photos it would be helpful. We have also found that if the photographer has a 3D model on a laptop when they go out on site it helps the orientation of the photography.
- 3.13 As far as possible, the viewpoints should correspond with the viewpoints used for existing wind energy schemes within the area. The detailed location of viewpoints will be informed by site survey, mapping and predicted ZTVs. Failure to do this may result in abortive work, requests for additional visual material and delays in processing applications/consultation responses. Community Council's may request additional viewpoints and it would be recommended that any pre-application discussions with the local community, and associated reporting on consultation undertaken, take this into account.
- 3.14 The purpose of the selected and agreed viewpoints shall be clearly identified and stated in the supporting information. For example, it should be clear that the VP has been chosen for landscape assessment, or visual impact assessment, or cumulative assessment, or

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- sequential assessment, or to show a representative view or for assessment of impact on designated sites, communities or individual properties.
- 3.15 When assessing the impact on recreational routes please ensure that all core paths, the national cycle network, long distance trails are assessed. It should be noted that these routes are used by a range of receptors.
- 3.16 The development will further extend the number of proposals of this type in the surrounding area, necessitating appropriate cumulative impact. It is considered that cumulative impact will be a significant material consideration in the final determination of any future application. The Study Area for a cumulative LVIA (CLVIA) should extend to a minimum of 60km.
- 3.17 Given the cumulative impact of renewable energy in this area it is expected that the applicant should present images for presentation within the Panoramic Digital Viewer deployed by the Council – see visualisation standards document. If the applicant wished to utilise this tool there may be an associated cost per image to be inserted which should be discussed with the Council prior to submission. To view current or determined schemes in the Council's Panoramic Viewer please see the link below:
<http://www.highland.gov.uk/panoramicviewer>
- 3.18 We expect an assessment of the proposal against the criterion set out in the Council's OWESG to be included within the LVIA chapter of the EIAR.
- 3.19 As the turbine heights remain above 149.9m, aviation lighting is envisaged to be required. The Scoping Report proposes the LVIA to include a proportionate night-time assessment of the aviation lighting. The methodology for this assessment requires to be agreed by NatureScot and through further consultation with THC when agreeing the finalised viewpoints.
- Geology, Hydrology and Hydrogeology**
- 3.20 The EIAR should include a full assessment on the impact of the development on peat. The assessment of the impact on peat must include peat probing for all areas where development is proposed. The Council are of the view this should include probing not just at the point of infrastructure as proposed by the scheme but also covering the areas of ground which would be subject to micro-siting limits.
- 3.21 SEPA can provide detailed advice on methodology for peat probing and the peat assessment.
- 3.22 Carbon balance calculations should be undertaken and included within the EIAR with a summary of the results provided focussing on the carbon payback period for the wind farm.
- 3.23 The EIAR should fully describe the likely significant effects of the development on the local geology including aspects such as borrow pits, earthworks, site restoration and the soil generally including direct effects and any indirect. Proposals should demonstrate construction practices that help to minimise the use of raw materials and maximise the use of secondary aggregates and recycled or renewable materials. Where borrow pits are proposed the EIAR should include information regarding the location, size and nature of these borrow pits including information on the depth of the borrow pit floor and the borrow pit final reinstated profile. This can avoid the need for further applications.
- 3.24 The EIAR needs to address the nature of the hydrology and hydrogeology of the site, and of the potential impacts on water courses, water supplies including private supplies, water

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- quality, water quantity and on aquatic flora and fauna. Impacts on watercourses, lochs, groundwater, other water features and sensitive receptors, such as water supplies, need to be assessed. Measures to prevent erosion, sedimentation or discolouration will be required, along with monitoring proposals and contingency plans. Assessment will need to recognise periods of high rainfall which will impact on any calculations of run-off, high flow in watercourses and hydrogeological matters. You are strongly advised at an early stage to consult SEPA as the regulatory body responsible for the implementation of the Controlled Activities (Scotland) Regulations 2005 (CAR), to identify if a CAR license is necessary and the extent of the information required by SEPA to assess any license application.
- 3.25 If culverting should be proposed, either in relation to new or upgraded tracks, then it should be noted that SEPA has a general presumption against modification, diversion or culverting of watercourses. Schemes should be designed to avoid crossing watercourses, and to bridge watercourses where this cannot be avoided. The EIAR will be expected to identify all water crossings and include a systematic table of watercourse crossings or channelising, with detailed justification for any such elements and design to minimise impact. The table should be accompanied by photography of each watercourse affected and include dimensions of the watercourse. It may be useful for the applicant to demonstrate choice of watercourse crossing by means of a decision tree, taking into account factors including catchment size (resultant flows), natural habitat and environmental concerns. Further guidance on the design and implementation of crossings can be found on SEPA's Construction of River Crossings Good Practice Guide.
- 3.26 The need for, and information on, abstractions of water supplies for concrete works or other operations should also be identified. The EIAR should identify whether a public or private source is to be utilised. If a private source is to be utilised, full details on the source and details of abstraction need to be provided.
- 3.27 The applicant will be required to carry out an investigation to identify any private water supplies, including pipework, which may be adversely affected by the development and to submit details of the measures proposed to prevent contamination or physical disruption. Highland Council has some information on known supplies but it is not definitive. An on-site survey will be required.
- 3.28 It is anticipated that detailed comments will be provided on impacts on the water environment, in particular on buffers to water courses, by SEPA.
- Ecology and Ornithology**
- 3.29 The EIAR should provide a baseline survey of the bird and animals (mammals, reptiles, amphibians, etc) interest on site. It needs to be categorically established which species are present on the site, and where, before a future application is submitted. Further the EIAR should provide an account of the habitats present on the proposed development site. It should identify rare and threatened habitats, and those protected by European or UK legislation, or identified in national or local Biodiversity Action Plans.
- 3.30 Habitat enhancement and mitigation measures should be detailed, particularly in respect to any blanket bog, in the contexts of both biodiversity conservation. Details of any habitat enhancement programme (such as native- tree planting, stock exclusion, etc) for the proposed site should be provided. It is expected that the EIAR will address whether or not the development could assist or impede delivery of elements of relevant Biodiversity Action Plans.

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- 3.31 The presence of protected species such as Schedule 1 Birds or European Protected Species must be included and considered as part of the planning application process, not as an issue which can be considered at a later stage. Any consent given without due consideration to these species may breach European Directives with the possibility of consequential delays or the project being halted by the EC. Please refer to the comments of NatureScot and RSPB in this respect.
- 3.32 The EIAR should address the likely impacts on the nature conservation interests of all the designated sites in the vicinity of the proposed development. It should provide proposals for any mitigation that is required to avoid these impacts or to reduce them to a level where they are not significant. NatureScot can also provide specific advice in respect of the designated site boundaries for SACs and SPAs and on protected species and habitats within those sites. The potential impact of the development proposals on other designated areas such as SSSI's should be carefully and thoroughly considered and, where possible, appropriate mitigation measures outlined in the EIAR. NatureScot provide advice on the impact on designated sites.
- 3.33 If wild deer are present or will use the site an assessment of the potential impact on deer will be required. This should address deer welfare, habitats and other interests.
- 3.34 The EIAR needs to address the aquatic interests within local watercourses, including down stream interests that may be affected by the development, for example increases in silt and sediment loads resulting from construction works; pollution risk / incidents during construction; obstruction to upstream and downstream migration both during and after construction; disturbance of spawning beds / timing of works; and other drainage issues. The EIAR should evidence consultation input from the local fishery board(s) where relevant.
- 3.35 Further advice may be provided by NatureScot on ecology in relation to the surveys required and the adequacy of the work already undertaken.
- 3.36 The EIAR should include an assessment of the effects on Ground Water Dependent Terrestrial Ecosystems (GWDTE). Please contact SEPA for detailed advice.
- Cultural Heritage**
- 3.37 The proposal has the potential to impact the following sites: The EIAR needs to identify all designated sites which may be affected by the development either directly or indirectly. This will require you to identify:
- the architectural heritage (Conservation Areas, Listed Buildings);
 - the archaeological heritage (Scheduled Monuments);
 - the landscape (including designations such as National Parks, National Scenic Areas, Areas of Great Landscape Value, Gardens and Designed Landscapes and general setting of the development; and
 - the inter-relationship between the above factors.
- 3.38 We would expect the EIAR to contain a full appreciation of the setting of these historic environment assets and the likely impact on their settings. It would be helpful if, where the assessment finds that significant impacts are likely, appropriate visualisations such as photomontage and wireframe views of the development in relation to the sites and their settings could be provided. Visualisations illustrating views both from the asset towards the

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- proposed development and views towards the asset with the development in the background would be helpful.
- 3.39 Historic Environment Scotland (HES) are anticipated to provide comment on the assessment methodology for heritage assets within their remit.
- 3.40 It is anticipated that HES will provide further comments on the scope of the assessment and their requirements for supporting information (including visualisations) and the potential impacts on heritage assets in their consultation response.
- 3.41 There are a large number of heritage assets in the vicinity of the development, these need to be assessed. HES may provide detailed advice on potential setting impacts. THC's Historic Environment Team are generally satisfied with the information presented at Chapter 9 of the Scoping Report; It considers that it will adequately address an impact assessment for this proposal. The methodology as set out in the Scoping Report is acceptable. They agree that the potential for direct impacts here is low. In response to the specific questions asked in the report:
1. Agree that the proposed study areas and methodology are appropriate.
 2. There are no additional sources of baseline information recommend in this case.
 3. There are no additional heritage assets than those noted in the scoping report that need to be included in the impact assessment.
- Noise**
- Operational Noise
- 3.42 The applicant will be required to submit a noise assessment with regard to the operational phase of the development. The assessment should be carried out in accordance with ETSU-R-97 "The Assessment and Rating of Noise from Wind Farms" and the associated Good Practice Guide published by the Institute of Acoustics.
- 3.43 The target noise levels are either a simplified standard of 35dB LA90 at wind speeds up to 10m/s or a composite standard of 35dB LA90 (daytime) and 38dB LA90 (night time) or up to 5dB above background noise levels at up to 12m/s. The night time lower limit of 43dB LA90 as suggested in ETSU is not considered acceptable in many areas of the highlands due to very low background levels. These limits would apply to cumulative noise levels from more than one development.
- Cumulative Noise
- 3.44 The noise assessment must take into account the potential cumulative effect from any other existing or consented or, in some cases, proposed wind turbine developments. Where applications run concurrently, developers and consultants are advised to consider adopting a joint approach with regard to noise assessments. The noise assessment must take into account predicted and consented levels from such developments. The good practice guide offers guidance on how to deal with cumulative issues. Where existing development has consented limits higher than suggested above, the applicant should agree appropriate limits with the Council's Environmental Health Officer.
- 3.45 The assessment should include a map showing all wind farm developments which may have a cumulative impact and all noise sensitive properties including any for which a financial involvement relaxation is being claimed.

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The assessment should include a table of figures which includes the following:

- The predicted levels from this development based at each noise sensitive location (NSL) at wind speeds up to 12m/s
- The maximum levels based on consented limits from each existing or consented wind farm development at each NSL. If any reduction is made for controlling property or another reason, this should be made clear.
- The predicted levels from each existing or consented wind farm development at each NSL.
- The cumulative levels based on consented and predicted levels at each NSL. The assessment should also include a mitigation scheme to be implemented should noise levels from the development be subsequently found to exceed consented levels.

Noise Exposure

- 3.46 When assessing the cumulative impact from more than one wind farm, consideration must be given to any increase in exposure time. Regardless of whether cumulative levels can meet relevant criteria, if a noise sensitive property subsequently becomes affected by wind turbine noise from more than one direction this could result in a significant loss of respite.

Background Noise Measurements

- 3.47 If background noise surveys are required, these should be undertaken in accordance with ETSU-R-97 and the Good Practice Guide. It is recommended that monitoring locations be agreed with the Council's Environmental Health Officer. Where a monitoring locations is to be used as a proxy location for another property, particular care must be taken to ensure it is not affected by other noise sources such as boiler flues, wind chimes, etc. which are not present at that other property.

- 3.48 Difficulties can arise where a location is already subject to noise from an existing wind turbine development. ETSU states that background noise must not include noise from an existing wind farm. The GPG offers advice on how to approach this problem and in some cases, it may be possible to utilise the results from historical background surveys.

- 3.49 It is recommended that the developer's noise consultant liaises with Environmental Health at an early stage to discuss any issues regarding the proposed methodology.

Amplitude Modulation

- 3.50 Research has been carried out in recent years on the phenomenon of amplitude modulation arising from some wind turbine developments. However at this time, the Good Practice guide does not provide definitive Planning guidance on this subject. That being the case, any complaints linked to amplitude modulation would be investigated in terms of the Statutory Nuisance provisions of the Environmental Protection Act 1990.

Construction Noise

- 3.51 Planning conditions are not used to control the impact of construction noise as similar powers are available to the Local Authority under Section 60 of the Control of Pollution Act 1974. Generally, people are tolerant of construction noise during typical working hours which are taken to be 8am to 7pm Monday to Friday and 8am to 1pm on Saturdays. Works

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for which noise is inaudible at the curtilage of any noise sensitive property could still be carried out out-with these times.

- 3.52 If the applicant intends to undertake noisy work out-with the aforementioned times, they will be required to submit a detailed construction noise assessment for the written approval of the planning authority. The assessment should include:

1. A description of construction activities with reference to noise generating plant and equipment.
2. A detailed plan showing the location of noise sources, noise sensitive premises and any survey measurement locations.
3. A description of any noise mitigation methods that will be employed and the predicted effect of said methods on noise levels.
4. A prediction of noise levels resultant at the curtilage of noise sensitive receptors.
5. An assessment of the predicted noise levels in comparison with relevant standards.

- 3.53 Regardless of whether a construction noise assessment is required, it is expected that the developer/contractor will employ the best practicable means to reduce the impact of noise from construction activities. The applicant will be required to submit a scheme demonstrating how this will be implemented. Particular attention should be given to the use of tonal reversing alarms and ground compaction plant which are often the most intrusive noise generating elements of a large construction project.

Traffic and Transport

- 3.54 The methodology proposed is noted; however, any subsequent planning application should be supported by a stand-alone Transport Assessment (TA) or section on traffic and transportation, within the Environmental Impact Assessment (EIA) Report for the project. Guidance document provides further guidance on the matters to be addressed by the TA. Prior to preparation of the TA the developer should first carry out a detailed scoping exercise in consultation with the Council, as local roads authority, and Transport Scotland, as trunk roads authority. Details of any other committed developments to be considered in the TA should be obtained from the planning service. Any significant timber extraction required in connection with the development proposals should also be considered in the TA. Available traffic data for Council maintained roads can be obtained from the Council's Traffic Section. It is accepted that the impact of operational traffic associated with the development should be minimal and can therefore be scoped out of the assessment.

The TA should identify all Council maintained roads likely to be affected by the various stages of the development, consider in detail the impact of development traffic, including abnormal load movements, on these roads and propose mitigation measures.

Within the TA justification for the chosen Port of Entry and the preferred route for AIL's shall be clearly demonstrated. This shall include details of alternative routes that have been considered and an explanation as to why these were discounted in favour of the preferred route. A detailed review of the preferred route, to include swept path assessment and consideration of any structures along the route, shall be undertaken. It is likely that a trial run to demonstrate the suitability of the route will be required.

Transport Assessment Methodology

- 3.55 Transport Planning would expect any subsequent planning application should be supported by a stand-alone Transport Assessment (TA) or section on traffic and transportation, within

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the Environmental Impact Assessment (EIA) Report for the project a Transport Assessment to be submitted with any future planning application and a High National Traffic Forecast be applied. The information below is not exhaustive and should be used as a guide to submitting all relevant information in relation to roads, traffic and transportation matters arising from the development proposals.

1. Identify all public roads affected by the development. In addition to transportation of all abnormal loads & vehicles (delivery of components) this should also include routes to be used by local suppliers and staff. It is expected that the developer submits a preferred access route for the development. All other access route options should be provided, having been investigated in order to establish their feasibility. This should clearly identify the pros and cons of all the route options and therefore provide a logical selection process to arrive at a preferred route.

2. Establish current condition of the roads. This work which should be undertaken by a consulting engineer acceptable to the Council and will involve an engineering appraisal of the routes including the following:

- assessment of structural strength of carriageway including construction depths and road formation where this is likely to be significant in respect of proposed impacts, including non-destructive testing and sampling as required;
- road surface condition and profile;
- assessment of structures and any weight restrictions;
- road widths, vertical and horizontal alignment and provision of passing places; and
- details of adjacent communities.

3. Determine the traffic generation and distribution of the proposals throughout the construction and operation periods to provide accurate data resulting from the proposed development including:

- nos. of light and heavy vehicles including staff travel;
- abnormal loads; and
- duration of works.

4. Current traffic flows including use by public transport services, school buses, refuse vehicles, commercial users, pedestrians, cyclists and equestrians.

5. Impacts of proposed traffic including:

- impacts on carriageway, structures, verges etc.;
- impacts on other road users;
- impacts on adjacent communities;
- swept path and gradient analysis where it is envisaged that transportation of traffic could be problematic; and
- provision of Trial Runs to be carried out in order to prove the route is achievable and/or to establish the extent of works required to facilitate transportation.

6. Cumulative impacts with other developments in progress and committed developments including other Renewable Energy projects, of which there are several which require to be accessed via the A82 and through Fort Augustus. When complaining a list of consented

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projects in the vicinity, which should include other wind farm projects, as well as other hydro schemes, and the ongoing expansion of Fort Augustus substation, please share this with the Planning Authority for further comment.

7. Proposed mitigation measures to address impacts identified in 5 above, including:

- carriageway strengthening;
- strengthening of bridges and culverts;
- carriageway widening and/or edge strengthening;
- provision of passing places;
- road safety measures; and
- traffic management including measures to be taken to ensure that development traffic does not use routes other than the approved routes.

8. Details of residual effects.

Abnormal Load Assessment

3.56 The TA should include an Abnormal Load Assessment of the roads utilised to convey abnormal loads to the site. The assessment will need to confirm the proposed port of entry for ALL components and justify the adequacy of the route for transporting them to the site. Early discussion with the Council's abnormal loads team (the contact is Greg Otreba Grzegorz.Otreba@highland.gov.uk) and the Council's structures team (the contact is Norman Smart Norman.Smart@highland.gov.uk) is recommended.

Construction Traffic Management Plan

3.57

THC Transport Planning will require any application for planning permission associated with this proposal to submit a CTMP for the approval of the Planning Authority. A CTMP will normally detail the following issues, however this is not an exhaustive list and the CTMP should be tailored to reflect the issues pertinent to this development:

- Identification of all Council maintained roads likely to be affected by the various stages of the development,
- Predicted volume, type and duration of construction traffic.
- Location of site compound, staff parking and visitor parking.
- Proposed measures to mitigate the impact of general construction traffic and abnormal loads on the local road network following detailed assessment of relevant roads.
- Details of any traffic management signage required for the duration of the construction period.
- Measures to ensure that all affected public roads are kept free of mud and debris arising from the development.
- The developer may also be requested to enter into a Section 96 agreement with the Highland Council to cover any abnormal wear and tear to the Council roads. This will include a requirement for pre and post construction surveys to be undertaken and agreed with the Council and for the provision of a suitable bond.

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- If the development involves any abnormal loads a detailed protocol, route and delivery programme will be required and agreed with any interested parties such as Highland Council, the Police, Transport Scotland and community representatives. The protocol shall identify any requirement for convoy working and/or escorting of vehicles and include arrangements to provide advance notice of abnormal load movements in the local media.

Cumulative impact of related development and mitigation

- 3.58 Should related grid connection and/or substation works be likely to impact on any of the local roads forming the access routes to the site, it would be desirable to consider the impact of these works and the mitigation required in conjunction with the proposed wind farm. Details of any new site access should be clearly set out on dimensioned drawings related to OS data and include confirmation of geometry, construction form, drainage details to prevent water running out onto the public road and evidence that appropriate visibility splays can be achieved. Vehicle swept paths should also be provided to evidence that the proposed junction form will be suitable for its intended use. Details of reinstatement of any temporary site access at its junction with the public road, post construction is also required. Appropriate junction arrangements and visibility splay information can be found in THC's published Roads and Transport Guidelines for New Developments. Mitigation required may include new or improved infrastructure, road safety measures and traffic management. Traffic management shall include measures to ensure that development traffic adheres to approved routes.
- Socio-Economic, Tourism and Recreation**
- 3.59 The EIAR should estimate who may be affected by the development, in all or in part, which may required individual households to be identified, local communities or a wider socio economic groupings such as tourists and tourist related businesses, recreational groups, economically active, etc. The application should include relevant economic information connected with the project, including the potential number of jobs, and economic activity associated with the procurement, construction, operation and decommissioning of the development.
- 3.60 Estimations of who may be affected by the development, in all or in part, which may required individual households to be identified, local communities or a wider socio economic groupings such as tourists and tourist related businesses, recreational groups, economically active, etc should be included. The application should include relevant economic information connected with the project, including the potential number of jobs, and economic activity associated with the procurement, construction, operation and decommissioning of the development. In this regard wind farm development experience in this location should be used to help set the basis of likely impact. This should set out the impact on the regional and local economy, not just the national economy. Any mitigation proposed should also address impacts on the regional and local economy.
- 3.61 The site is on land with access rights provided by the Land Reform Scotland Act. The potential impact on and mitigation for public access should be assessed incorporating core paths, public rights of way, long distance routes, other paths and wider access rights across the site. There are core paths and public rights of way in this area which are likely to be affected during construction and operational phases. An Access Management Plan is required to be submitted with the application and an assessment of the developments impact on public access is habitually included within this Socio Economic section of the EIAR. Guidance on assessing that impact as part of an EIA in Appendix 6 of this document:
<https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf>

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[%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf](#)

Any new tracks though will be available for public use during the operation of any development and links through to the Halsary WF and the Shielton road would enhance the available access resource.

- 3.62 While the Scoping Report and an eventual EIA may include impacts on elements of outdoor access assessed under other headings THC's Access Officer considers that all the impacts on outdoor access should all be brought together here in a comprehensive assessment of the proposals visual and physical impacts on outdoor access during the preparatory, construction, operational and post-operational phases. Those impacts, along with the mitigation measures, will inform an Access Management Plan which should be submitted with an application as per the requirements of HwLDP Policy 77 Outdoor Access.
- 3.63 The proposed site access follows a promoted line for the local Corbett as both the approach and continuation of a traverse from Cluanie. The currently locked gate without an alternative for walkers and cyclists is the subject of a complaint by the community council and is under investigation. That access should be accommodated as far as possible during any upgrade of that track and, once completed, during and after construction of the scheme as a whole. Any retained or planned gates should have a pass gate installed by them to accommodate walkers, cyclists and horse riders with an internal width of at least 1.5m – kissing gates are unacceptable.
- Aviation, Radar and Telecoms**
- 3.64 The EIAR needs to recognise community assets that are currently in operation for example TV, radio, tele-communication links, aviation interests including radar, MOD safeguards, etc. In this regard the applicant, when submitting a future application, will need to demonstrate what interests they have identified and the outcomes of any consultations with relevant authorities such as Ofcom, NATS, BAA, CAA, MOD, Highlands and Islands Airports Ltd, etc. through the provision of written evidence of concluded discussions / agreed outcomes. We consider the results of these surveys should be contained within the EIAR to determine whether any suspensive conditions are required in relation to such issues.
- 3.65 There should be continued dialogue with HIAL over the impact on the radar at airports in the area.
- 3.66 If there are no predicted effects on communication links as a result of the development, the EIAR should still address this matter by explaining how this conclusion was reached.
- Miscellaneous: Health and Safety, Shadow Flicker and Forestry**
- 3.67 The EIAR needs to address all relevant climatic factors which can greatly influence the impact range of many of the preceding factors on account of seasonal changes affecting, rainfall, sunlight, prevailing wind direction etc. From this base data information on the expected impacts of any development can then be founded recognising likely impacts for each phases of development including construction, operation and decommissioning. Issues such as dust, air borne pollution and / or vapours, noise, light, shadow-flicker can then be highlighted. Consideration must also be given to the potential health and safety risks associated with lightning strikes and ice throw given the proximity of recreational routes through the site.

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 Email: eplanning@highland.gov.uk

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- 3.68 Depending on the proximity of the working area and access route to any houses etc. the applicant may require to submit a scheme for the suppression of dust during construction. Particular attention should be paid to construction traffic movements and routing.
- 3.69 A number of the aforementioned matters could be addressed by a CEMD for the proposal. While acceptable in principle we would request that an Outline CEMD is included with the application.
- 3.70 Given the reported separation distance from any nearby residential properties, it is accepted that a shadow flicker assessment is not required to be undertaken.
- Private Water Supplies**
- 3.71 The applicant will be required to carry out an investigation to identify any private water supplies, including pipework, which may be adversely affected by the development and to submit details of the measures proposed to prevent contamination or physical disruption. Highland Council has some information on known supplies but it is not definitive. An on-site survey will be required.
- Dust**
- 3.72 Depending on the proximity of the working area to houses etc. the applicant may require to submit a scheme for the suppression of dust during construction. Particular attention should be paid to construction traffic movements.
- Forestry**
- 3.73 It is advised that a specific chapter on forestry is included in the EIAR where there is likely to be an adverse impact on woodland. The EIAR should provide a baseline survey of the plants (including fungi, lichens and bryophytes) and trees present on the site to determine the presence of any rare or threatened species. The EIAR should indicate areas of woodland / forestry plantation which may be felled to accommodate new development (including the access), including any off site works / mitigation. Compensatory woodland is a clear expectation of any proposals for felling, and thereby such mitigation needs to be considered within any assessment.
- 3.74 Compliance with the Scottish Government's Control of Woodland Removal Policy must be demonstrated. Consideration must be given to the full area required for the construction access road through trees / woodlands and the impacts on these identified. Although the EIAR Scoping Report envisages that 100m keyholing would be undertaken, ability to undertake this based on the specific site conditions must be proven at the EIAR stage. Similarly, the potential requirement for further felling to maximise wind yield has also been highlighted in the Scoping Report. Any requirement for this and the maximum extent of felling must be considered through the EIAR with this detail to be finalised ahead the planning application's submission. Any areas of woodland listed in the Ancient Woodland Inventory should be safeguarded from adverse impacts.
- 3.75 Full details of commercial forest management, including intended felling and replanting cycles, should be provided with the application. This is particularly important when considering the landscape and visual impacts of the proposal and whilst the assessment should be based on bare earth visibility, it would be helpful context to help understand how land uses may change in the vicinity of the site over the operational lifetime of the development.
- 4.0 Significant Effects on the Environment**

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- 4.1 Leading from the assessment of the environmental elements the EIAR needs to describe the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from:
- the existence of the development;
 - the use of natural resources; and
 - the emission of pollutants, the creation of nuisances and the elimination of waste.
- 4.2 The potential significant effects of development must have regard to:
- the extent of the impact (geographical area and size of the affected population);
 - the trans-frontier nature of the impact;
 - the magnitude and complexity of the impact;
 - the probability of the impact; and
 - the duration, frequency and reversibility of the impact.
- 4.3 The effects of development upon baseline data should be provided in clear summary points.
- 4.4 The Council requests that when measuring the positive and negative effects of the development a four point scale is used advising any effect to be either strong positive, positive, negative or strong negative.
- 4.5 The applicant should provide a description of the forecasting methods used to assess the effects on the environment.
- 5.0 Mitigation**
- 5.1 Consideration of the significance of any adverse impacts of a development will of course be balanced against the projected benefits of the proposal. Valid concerns can be overcome or minimised by mitigation by design, approach or the offer of additional features, both on and off site. A description of the measures envisaged to prevent, reducing and where possible offset any significant adverse effects on the environment must be set out within the EIAR statement and be followed through within the application for development.
- 5.2 The mitigation being tabled in respect of a single development proposal can be manifold. Consequently the EIAR should present a clear summary table of all mitigation measures associated with the development proposal. This table should be entitled draft Schedule of Mitigation. As the development progresses to procurement and then implementation this carries forward to a requirement for a Construction Environmental Management Document (CEMD) and then Plan (CEMP) which in turn will set the framework for individual Construction Method Statements (CMS). Further guidance can be obtained at:
http://www.highland.gov.uk/NR/rdonlyres/485C70FB-98A7-4F77-8D6B-ED5ACC7409C0/0/construction_environmental_management_22122010.pdf
This is currently under review by a working party led by SEPA working through Heads of Planning Scotland but for the time being remains relevant.
- 5.3 The implementation of mitigation can often involve a number of parties other than the developer. In particular local liaison groups involving the local community are often deployed to assist with phasing of construction works – abnormal load deliveries, construction works to the road network, borrow pit blasting. It should be made clear within the EIAR or supporting information accompanying a planning application exactly which

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groups are being involved in such liaison, the remit of the group and the management and resourcing of the required effort.

If you would like to discuss this scoping response please contact Simon Hindson using the details at the top of this response.

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Consultee Comments for Planning Application 22/02644/SCOP

Application Summary

Application Number: 22/02644/SCOP

Address: 3km Southwest Of Watten

Proposal: Watten Wind Farm - Up to 8 wind turbines up to 220 m to tip height (candidate turbine model specifications have hub heights of 139 m and rotor diameters of 162 m), Turbine foundations and hardstandings, Onsite substation, Battery storage, External transformer housing, Crane pads, Access tracks, Underground electricity cables, Permanent anemometry mast, Borrow pits, Temporary construction and storage compounds and ancillary infrastructure, Site signage, Temporary construction gatehouse and Waste water and surface water drainage

Case Officer: Simon Hindson

Consultee Details

Name: . FLOOD RISK MANAGEMENT TEAM

Address: The Highland Council Headquarters, Glenurquhart Road, Inverness IV3 5NX

Email: Not Available

On Behalf Of: D & I Flood Team

Comments

The Flood Risk Management Team do not wish to comment on this application

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MEMORANDUM

To:	Area Planning Manager, North FAO: Simon Hindson
From:	Transport Planning
Subject:	Watten Wind Farm
Date:	30.06.21
Our ref:	
Your ref:	22/02644/SCOP
Please ask for:	FM

We refer to the drawings and documentation submitted in respect of the above scoping request.

Development Proposed

Construction of a wind farm of up to 8 no. turbines, each with a tip height of up to 220 metres, including onsite substation, battery storage, external transformer housing and associated works at a site 3 km southwest of Watten.

Access, Traffic and Transport

The submitted Environmental Impact Assessment Scoping Report includes Section 7.8, Traffic and Transport, which sets out how the impact of the proposed development on the public road network will be assessed.

The methodology proposed is noted; however, any subsequent planning application should be supported by a stand-alone Transport Assessment (TA) or section on traffic and transportation, within the Environmental Impact Assessment (EIA) Report for the project.

The TA should identify all Council maintained roads likely to be affected by the various stages of the development, consider in detail the impact of development traffic, including abnormal load movements, on these roads and propose mitigation measures.

Within the TA justification for the chosen Port of Entry and the preferred route for AIL's shall be clearly demonstrated. This shall include details of alternative routes that have been considered and an explanation as to why these were discounted in favour of the preferred route. A detailed review of the preferred route, to include swept path assessment and consideration of any structures along the route, shall be undertaken. It is likely that a trial run to demonstrate the suitability of the route will be required.

Early consultation with the Council's Structures Section is recommended regarding affected Council maintained structures.

The proposed route/s for general construction traffic should also be identified and reviewed within the TA. Careful consideration should be given to the routes to site from local quarries and other material sources.

The geographical extent of the assessment will be determined by the location of material sources.

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The attached Renewable Pre-app. Guidance document provides further guidance on the matters to be addressed by the TA.

Prior to preparation of the TA the developer should first carry out a detailed scoping exercise in consultation with the Council, as local roads authority, and Transport Scotland, as trunk roads authority.

Details of any other committed developments to be considered in the TA should be obtained from the planning service.

Any significant timber extraction required in connection with the development proposals should also be considered in the TA.

Available traffic data for Council maintained roads can be obtained from the Council's Traffic Section.

It is accepted that the impact of operational traffic associated with the development should be minimal and can therefore be scoped out of the assessment.

Mitigation

Mitigation required may include new or improved infrastructure, road safety measures and traffic management. Traffic management shall include measures to ensure that development traffic adheres to approved routes.

Grid Connection Works

Should related grid connection and/or substation works be likely to impact on any of the local roads forming the access routes to the site, it would be desirable to consider the impact of these works and the mitigation required in conjunction with the proposed wind farm.

Construction Traffic Management Plan (CTMP)

The TA should include a framework CTMP aimed at minimising and mitigating the impact of construction traffic. On appointment of a main contractor the framework shall be developed into a formal Construction Traffic Management Plan.

The CTMP shall be prepared by the applicant in consultation and agreement with Transport Scotland and Highland Council.

Early consultation with the Council's local Roads Office is strongly recommended regarding the detailed content of the CTMP and the mitigation measures required.

No works relating to the development shall commence until the full details of the CTMP have been agreed in consultation with the relevant interested parties.

Useful contacts:

Structures - Simon Farrow, Principal Engineer
Simon.farrow@highland.gov.uk

Local Roads - Jonathan Gunn, Senior Engineer
jonathan.gunn@highland.gov.uk

Traffic Data - Greg Otreba, Senior Technician

Transport Planning - Infrastructure, Environment and Economy, Glenurquhart Road, Inverness, IV3 5NX

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grzegorz.Otreba@highland.gov.uk

Renewable Energy Proposal

Transport Statement/Assessment Methodology for Public Roads for which Highland Council is the Roads Authority

1. Identify all public roads affected by the development. In addition to transportation of abnormal loads this should include the roads to be used by general construction traffic and staff.
2. Establish current condition of the relevant roads. This work should be undertaken by a consulting engineer acceptable to the Council and will involve an engineering appraisal of the routes including the following:
 - Assessment of structural strength of carriageway
 - Road surface condition and profile
 - Assessment of structures and any weight restrictions
 - Road widths, vertical and horizontal alignment, and provision of passing places
 - Details of adjacent communities
3. Determine the traffic generation and distribution of the proposals throughout the construction and operation periods to provide accurate data resulting from the proposed development, including:
 - Nos. of light and heavy vehicles, including staff travel
 - Abnormal loads
 - Duration of works
4. Current traffic flows including use by public transport services, school buses, refuse vehicles, commercial users, pedestrians, cyclists, and equestrians.
5. Impacts of proposed traffic, including:
 - Impacts on carriageway, structures, verges etc.
 - Impacts on other road users
 - Impacts on adjacent communities
 - Swept path and gradient analysis for the transportation of abnormal loads.
 - Provision of Trial Runs to be carried out in order to prove the route is achievable and/or to establish the extent of works required to facilitate transportation.
6. Cumulative impacts with other developments in progress and committed developments including other Renewable Energy projects.
7. Proposed mitigation measures to address impacts identified in 5 above, including:
 - Carriageway strengthening
 - Strengthening of bridges and culverts
 - Carriageway widening and/or edge strengthening
 - Provision of passing places
 - Road safety measures
 - Traffic management including measures to be taken to ensure that development traffic adheres to approved routes.
8. Details of residual effects.

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The above information is not exhaustive and should be used as a guide to submission of relevant information in relation to roads, traffic and transportation matters arising from the development proposed.

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Consultee Comments for Planning Application 22/02644/SCOP

Application Summary

Application Number: 22/02644/SCOP

Address: Land 3670M SW Of Watten Village Hall Watten

Proposal: Watten Wind Farm - Up to 8 wind turbines up to 220 m to tip height (candidate turbine model specifications have hub heights of 139 m and rotor diameters of 162 m), Turbine foundations and hardstandings, Onsite substation, Battery storage, External transformer housing, Crane pads, Access tracks, Underground electricity cables, Permanent anemometry mast, Borrow pits, Temporary construction and storage compounds and ancillary infrastructure, Site signage, Temporary construction gatehouse and Waste water and surface water drainage

Case Officer: Simon Hindson

Consultee Details

Name: . HISTORIC ENVIRONMENT TEAM - CONSERVATION

Address: The Highland Council Headquarters, Glenurquhart Road, Inverness IV3 5NX

Email: Not Available

On Behalf Of: Conservation - Historic Environment Team

Comments

There appear to be no listed buildings, or their settings, which would be directly or significantly affected by this proposal [on a desk-based assessment]; accordingly we have no objections.



Scoping Application Response

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Planning Ref:	22/02644/SCOP
Proposal Name	Watten Wind Farm
Your Organisation	Highland Council
Your Name	Robin Fraser
Your Position	Environmental Health Officer
Email	robin.fraser@highland.gov.uk
Date	20 July 2022

Response
Topic Amenity - Noise - Operational
<p>Operational Noise</p> <p>The applicant will be required to submit a noise assessment with regard to the operational phase of the development. The assessment should be carried out in accordance with ETSU-R-97 "The Assessment and Rating of Noise from Wind Farms" and the associated Good Practice Guide published by the Institute of Acoustics.</p> <p>The target noise levels are either a simplified standard of 35dB LA90 at wind speeds up to 10m/s or a composite standard of 35dB LA90 (daytime) and 38dB LA90 (night time) or up to 5dB above background noise levels at up to 12m/s. The night time lower limit of 43dB LA90 as suggested in ETSU is not considered acceptable in many areas of the highlands due to very low background levels. These limits would apply to cumulative noise levels from more than one development.</p> <p>Cumulative Noise</p> <p>The noise assessment must take into account the potential cumulative effect from any other existing or consented or, in some cases, proposed wind turbine developments. Where applications run concurrently, developers and consultants are advised to consider adopting a joint approach with regard to noise assessments. The noise assessment must take into account predicted <u>and consented levels</u> from such developments. The good practice guide offers guidance on how to deal with cumulative issues. Where existing development has consented limits higher than suggested above, the applicant should agree appropriate limits with the Council's Environmental Health Officer.</p> <p>The assessment should include a map showing all wind farm developments which may have a cumulative impact and all noise sensitive properties including any for which a financial involvement relaxation is being claimed.</p>

The assessment should include a table of figures which includes the following: -

- The predicted levels from this development based at each noise sensitive location (NSL) at wind speeds up to 12m/s
- The maximum levels based on consented limits from each existing or consented wind farm development at each NSL. If any reduction is made for controlling property or another reason, this should be made clear.
- The predicted levels from each existing or consented wind farm development at each NSL.
- The cumulative levels based on consented and predicted levels at each NSL.

The assessment should also include a mitigation scheme to be implemented should noise levels from the development be subsequently found to exceed consented levels.

Noise Exposure

When assessing the cumulative impact from more than one wind farm, consideration must be given to any increase in exposure time. Regardless of whether cumulative levels can meet relevant criteria, if a noise sensitive property subsequently becomes affected by wind turbine noise from more than one direction this could result in a significant loss of respite.

Background Noise Measurements

If background noise surveys are required, these should be undertaken in accordance with ETSU-R-97 and the Good Practice Guide. It is recommended that monitoring locations be agreed with the Council's Environmental Health Officer. Where a monitoring locations is to be used as a proxy location for another property, particular care must be taken to ensure it is not affected by other noise sources such as boiler flues, wind chimes, etc. which are not present at that other property.

Difficulties can arise where a location is already subject to noise from an existing wind turbine development. ETSU states that background noise must not include noise from an existing wind farm. The GPG offers advice on how to approach this problem and in some cases, it may be possible to utilise the results from historical background surveys.

It is recommended that the developer's noise consultant liaises with Environmental Health at an early stage to discuss any issues regarding the proposed methodology.

Amplitude Modulation

Research has been carried out in recent years on the phenomenon of amplitude modulation arising from some wind turbine developments. However at this time, the Good Practice guide does not provide definitive Planning guidance on this subject. That being the case,

any complaints linked to amplitude modulation would be investigated in terms of the Statutory Nuisance provisions of the Environmental Protection Act 1990.

Topic Amenity - Construction

Construction Noise

Planning conditions are not used to control the impact of construction noise as similar powers are available to the Local Authority under Section 60 of the Control of Pollution Act 1974. Generally, people are tolerant of construction noise during typical working hours which are taken to be 8am to 7pm Monday to Friday and 8am to 1pm on Saturdays. Works for which noise is inaudible at the curtilage of any noise sensitive property could still be carried out out-with these times.

If the applicant intends to undertake noisy work out-with the aforementioned times, they will be required to submit a detailed construction noise assessment for the written approval of the planning authority. The assessment should include: -

- 1) A description of construction activities with reference to noise generating plant and equipment.
- 2) A detailed plan showing the location of noise sources, noise sensitive premises and any survey measurement locations.
- 3) A description of any noise mitigation methods that will be employed and the predicted effect of said methods on noise levels.
- 4) A prediction of noise levels resultant at the curtilage of noise sensitive receptors.
- 5) An assessment of the predicted noise levels in comparison with relevant standards.

Regardless of whether a construction noise assessment is required, it is expected that the developer/contractor will employ the best practicable means to reduce the impact of noise from construction activities. The applicant will be required to submit a scheme demonstrating how this will be implemented. Particular attention should be given to the use of tonal reversing alarms and ground compaction plant which are often the most intrusive noise generating elements of a large construction project.

Topic Amenity - Private Water Supplies

Private Water Supplies

The applicant will be required to carry out an investigation to identify any private water supplies, including pipework, which may be adversely affected by the development and to submit details of the measures proposed to prevent contamination or physical disruption. Highland Council has some information on known supplies but it is not definitive. An on-site survey will be required.



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Topic Choose an item.
Dust Depending on the proximity of the working area to houses etc. the applicant may require to submit a scheme for the suppression of dust during construction. Particular attention should be paid to construction traffic movements.

Assessments to be carried out and/or submitted with application	
Operational noise assessment	Y
Detailed construction noise assessment	TBC
Construction noise – scheme of best practicable means	Y
Dust suppression scheme	Y
Private water supply survey/mitigation scheme	Y
Odour impact assessment	N
Other	N

Please attach any additional information as a separate file and upload via Consultee Access

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Our Ref: 5524
Your Ref: ECU00004509

SEPA Email Contact:
planning.north@sepa.org.uk

23 June 2022

Nicola Kennedy
Energy Consents Unit
The Scottish Government

By email only to: Econsents.Admin@gov.scot.

Dear Nicola Kennedy

**Electricity Act 1989 – Section 36
The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017
Application: ECU00004509
Request for Scoping Opinion for Proposed Section 36 Application for Watten Wind Farm**

Thank you for your consultation which was received by SEPA on 7 June 2022 in relation to a scoping opinion for the above application.

Advice for the determining authority

We consider that the following key issues must be addressed in the Environmental Impact Assessment process. To **avoid delay and potential objection**, the information outlined below and in the attached appendix must be submitted in support of the application.

- a) Map and assessment of all engineering works within and near the water environment including buffers, details of any flood risk assessment and details of any related CAR applications.
- b) Map and assessment of impacts upon Groundwater Dependent Terrestrial Ecosystems and buffers.
- c) Map and assessment of impacts upon groundwater abstractions and buffers.
- d) Peat depth survey and table detailing re-use proposals.
- e) Map and table detailing forest removal.
- f) Map and site layout of borrow pits.
- g) Schedule of mitigation including pollution prevention measures.
- h) Borrow Pit Site Management Plan of pollution prevention measures.
- i) Map of proposed wastewater drainage layout.
- j) Map of proposed surface water drainage layout.
- k) Map of proposed water abstractions including details of the proposed operating regime.
- l) Decommissioning statement.

Further details on these information requirements and the form in which they must be submitted can be found in the attached appendix. We also provide site specific comments in the following section which can help the developer focus the scope of the assessment.



Chairman
Bob Downes
Acting Chief Executive
Jo Green

Angus Smith Building
6 Parklands Avenue, Eurocentral,
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1. Site specific comments

- 1.1. We note from much of the site is on peat and that previous peat depth surveys have been undertaken. We would highlight that peat greater than 1m in depth is considered deep peat, and that the submission must demonstrate how the layout has been designed to avoid areas of deep peat. It is not clear whether this information has been used to inform the proposed turbine layout as shown in Figure 7.3.1. but avoidance must be used as the first method of mitigation. To avoid delays and potential objection at a later stage, we would welcome the opportunity to review the proposed layouts and peat probing data in advance of the finalised EIA Report. We would ask that the phase 1 and phase 2 peat probing data is made available as part of the application submission.
- 1.2. In this case, where much of the site appears to be on peat, we also expect the application to be supported by a comprehensive site-specific Peat Management Plan. Peat cannot be exported off-site as a waste product, and it will not be acceptable for peat to be used in general landscaping proposals. The PMP should sit alongside a Habitat Management Plan which identifies where excavated peat can be used in peatland restoration. Please refer to Section 3 of Appendix 1 for our detailed requirements in relation to impacts on peat.
- 1.3. In relation to GWDTE, our requirements are set out in Section 4 of Appendix 1, below. GWDTE must be scoped into the EIA and the layout of the site must be modified to take account of any GWDTE that are present. We note GWDTE have not been classified within forested areas. However, whilst we accept that densely forested areas cannot be surveyed until after felling and site clearance, we expect all relevant available information (i.e., bedrock and superficial geology, topography/breaks in slopes, pre-forestry historic maps showing issues) to be used when designing the layout to minimise the likelihood that excavation for the development will impact on springs or seepages.
- 1.4. We note from our flood risk maps that there is potential flood risk associated with several watercourses including the Black Burn, Loch Burn and Red Burn running through the site. Should any proposed infrastructure, including landraising, further detailed flood risk information may be required. However, if all watercourse crossings are designed to accommodate the 1 in 200-year event and other infrastructure is located well away from watercourses the requirement for detailed flood assessment can be eliminated.
- 1.5. We note there are a relatively large number of waterbodies on site, particularly in the eastern half of the site, including the presence of the Black Pools. We highlight the requirement for a 50m wide buffer to all waterbodies on site to be included in the finalised layout. No construction activities, including earthworks should be proposed within this buffer.
- 1.6. There appears to be no mention of potential biodiversity net gain within the scoping report. We would welcome exploration of this to be included in the final application. Both peatland restoration (on or off-site) and improvements to watercourses, such as the removal of any manmade features or re-meandering, would be looked upon favourably.

Regulatory advice for the applicant

2 Regulatory requirements

- 2.1 Proposed engineering works within the water environment will require authorisation under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended).

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Management of surplus peat or soils may require an exemption under The Waste Management Licensing (Scotland) Regulations 2011. Proposed crushing or screening will require a permit under The Pollution Prevention and Control (Scotland) Regulations 2012. Please consider if other environmental licences may be required for any installations or processes.

- 2.2 Details of further regulatory requirements and good practice advice can be found on the [regulations section](#) of our website. If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the local compliance team at: NHNI@sepa.org.uk

If you have queries relating to this letter, please contact planning.north@sepa.org.uk including our reference number in the email subject.

Yours sincerely

Zoe Griffin
Senior Planning Officer
Planning Service

ECopy to: Case officer, Nicola.Kennedy@gov.scot, Agent, hannahb@naturalpower.com

Disclaimer

This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at this time. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning or similar application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application or similar application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. For planning applications, if you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found on our [website planning pages - www.sepa.org.uk/environment/land/planning/](http://www.sepa.org.uk/environment/land/planning/).

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Appendix 1: SEPA detailed scoping requirements

This appendix sets out our scoping information requirements. There may be opportunities to scope out some of the issues below depending on the site. Evidence must be provided in the submission to support why an issue is not relevant for this site to **avoid delay and potential objection**.

If there is a delay between scoping and the submission of the application, then please refer to our website for our latest information requirements as they are regularly updated; current best practice must be followed.

We would welcome the opportunity to comment on the draft submission. As we can process files of a maximum size of only 25MB the submission must be divided into appropriately named sections of less than 25MB each.

1. Site layout

1.1. All maps must be based on an adequate scale with which to assess the information. This could range from OS 1: 10,000 to a more detailed scale in more sensitive locations. Each of the maps below must detail all proposed upgraded, temporary and permanent site infrastructure. This includes all tracks, excavations, buildings, borrow pits, pipelines, cabling, site compounds, laydown areas, storage areas and any other built elements. Existing built infrastructure must be re-used or upgraded wherever possible. The layout should be designed to minimise the extent of new works on previously undisturbed ground. For example, a layout which makes use of lots of spurs or loops is unlikely to be acceptable. Cabling must be laid in ground already disturbed such as verges. A comparison of the environmental effects of alternative locations of infrastructure elements, such as tracks, may be required.

2. Engineering activities which may have adverse effects on the water environment

2.1. The site layout must be designed to avoid impacts upon the water environment. Where activities such as watercourse crossings, watercourse diversions or other engineering activities in or impacting on the water environment cannot be avoided then the submission must include justification of this and a map showing:

- a) All proposed temporary or permanent infrastructure overlain with all lochs and watercourses.
- b) A minimum buffer of 50m around each loch or watercourse. If this minimum buffer cannot be achieved each breach must be numbered on a plan with an associated photograph of the location, dimensions of the loch or watercourse and drawings of what is proposed in terms of engineering works.
- c) Detailed layout of all proposed mitigation including all cut off drains, location, number and size of settlement ponds.

2.2. If water abstractions or dewatering are proposed, a table of volumes and timings of groundwater abstractions and related mitigation measures must be provided.

2.3. Further advice and our best practice guidance are available within the water [engineering](#) section of our website. Guidance on the design of water crossings can be found in our [Construction of River Crossings Good Practice Guide](#).

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2.4. Refer to our flood risk [Standing Advice](#) for advice on flood risk. Watercourse crossings must be designed to accommodate the 0.5% Annual Exceedance Probability (AEP) flows, or information provided to justify smaller structures. If it is thought that the development could result in an increased risk of flooding to a nearby receptor then a Flood Risk Assessment must be submitted in support of the planning application. Our [Technical flood risk guidance for stakeholders](#) outlines the information we require to be submitted as part of a Flood Risk Assessment. Please also refer to Controlled Activities Regulations (CAR) Flood Risk Standing Advice for Engineering, Discharge and Impoundment Activities.

3. Disturbance and re-use of excavated peat and other carbon rich soils

3.1. Scottish Planning Policy states (Paragraph 205) that "Where peat and other carbon rich soils are present, applicants must assess the likely effects of development on carbon dioxide (CO₂) emissions. Where peatland is drained or otherwise disturbed, there is liable to be a release of CO₂ to the atmosphere. Developments must aim to minimise this release."

3.2. The planning submission must a) demonstrate how the layout has been designed to minimise disturbance of peat and consequential release of CO₂ and b) outline the preventative/mitigation measures to avoid significant drying or oxidation of peat through, for example, the construction of access tracks, drainage channels, cable trenches, or the storage and re-use of excavated peat. There is often less environmental impact from localised temporary storage and reuse rather than movement to large central peat storage areas.

3.3. The submission must include:

- a) A detailed map of peat depths (this must be to full depth and follow the survey requirement of the Scottish Government's Guidance on [Developments on Peatland - Peatland Survey \(2017\)](#)) with all the built elements (including peat storage areas) overlain to demonstrate how the development avoids areas of deep peat and other sensitive receptors such as Groundwater Dependent Terrestrial Ecosystems.
- b) A table which details the quantities of acrotelmic, catotelmic and amorphous peat which will be excavated for each element and where it will be re-used during reinstatement. Details of the proposed widths and depths of peat to be re-used and how it will be kept wet permanently must be included.

3.4. To avoid delay and potential objection proposals must be in accordance with [Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and Minimisation of Waste](#) and our [Developments on Peat and Off-Site uses of Waste Peat](#).

3.5. Dependent upon the volumes of peat likely to be encountered and the scale of the development, applicants must consider whether a full Peat Management Plan (as detailed in the above guidance) is required or whether the above information would be best submitted as part of the schedule of mitigation.

3.6. Please note we do not validate carbon balance assessments except where requested to by Scottish Government in exceptional circumstances. Our advice on the minimisation of peat disturbance and peatland restoration may need to be taken into account when you consider such assessments.

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4. Disruption to Groundwater Dependent Terrestrial Ecosystems (GWDTE)

4.1. GWDTE are protected under the Water Framework Directive and therefore the layout and design of the development must avoid impact on such areas. The following information must be included in the submission:

- a) A map demonstrating that all GWDTE are outwith a 100m radius of all excavations shallower than 1m and outwith 250m of all excavations deeper than 1m and proposed groundwater abstractions. If micro-siting is to be considered as a mitigation measure the distance of survey needs to be extended by the proposed maximum extent of micro-siting. The survey needs to extend beyond the site boundary where the distances require it.
- b) If the minimum buffers above cannot be achieved, a detailed site specific qualitative and/or quantitative risk assessment will be required. We are likely to seek conditions securing appropriate mitigation for all GWDTE affected.

4.2. Please refer to [Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems](#) for further advice and the minimum information we require to be submitted.

5. Existing groundwater abstractions

5.1. Excavations and other construction works can disrupt groundwater flow and impact on existing groundwater abstractions. The submission must include:

- a) A map demonstrating that all existing groundwater abstractions are outwith a 100m radius of all excavations shallower than 1m and outwith 250m of all excavations deeper than 1m and proposed groundwater abstractions. If micro-siting is to be considered as a mitigation measure the distance of survey needs to be extended by the proposed maximum extent of micro-siting. The survey needs to extend beyond the site boundary where the distances require it.
- b) If the minimum buffers above cannot be achieved, a detailed site specific qualitative and/or quantitative risk assessment will be required. We are likely to seek conditions securing appropriate mitigation for all existing groundwater abstractions affected.

5.2. Please refer to [Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems](#) for further advice on the minimum information we require to be submitted.

6. Forest removal and forest waste

6.1. Key holing must be used wherever possible as large scale felling can result in large amounts of waste material and in a peak release of nutrients which can affect local water quality. The supporting information should refer to the current Forest Plan if one exists and measures should comply with the Plan where possible.

6.2. Clear felling may be acceptable only in cases where planting took place on deep peat and it is proposed through a Habitat Management Plan to reinstate peat-forming habitats. The submission must include:

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- a) A map demarcating the areas to be subject to different felling techniques.
- b) Photography of general timber condition in each of these areas.
- c) A table of approximate volumes of timber which will be removed from site and volumes, sizes of chips or brush and depths that will be re-used on site.
- d) A plan showing how and where any timber residues will be re-used for ecological benefit within that area, supported by a Habitat Management Plan. Further guidance on this can be found in [Use of Trees Cleared to Facilitate Development on Afforested Land – Joint Guidance from SEPA, SNH and FCS](#).

7. Borrow pits

7.1. Scottish Planning Policy states (Paragraph 243) that “Borrow pits should only be permitted if there are significant environmental or economic benefits compared to obtaining material from local quarries, they are time-limited; tied to a particular project and appropriate reclamation measures are in place.” The submission must provide sufficient information to address this policy statement.

7.2. In accordance with Paragraphs 52 to 57 of Planning Advice Note 50 Controlling the Environmental Effects of Surface Mineral Workings (PAN 50) a Site Management Plan should be submitted in support of any application.

7.3. The following information should also be submitted for each borrow pit:

- a) A map showing the location, size, depths and dimensions.
- b) A map showing any stocks of rock, overburden, soils and temporary and permanent infrastructure including tracks, buildings, oil storage, pipes and drainage, overlain with all lochs and watercourses to a distance of 250 metres. You need to demonstrate that a site specific proportionate buffer can be achieved. On this map, a site-specific buffer must be drawn around each loch or watercourse proportionate to the depth of excavations and at least 10m from access tracks. If this minimum buffer cannot be achieved each breach must be numbered on a plan with an associated photograph of the location, dimensions of the loch or watercourse, drawings of what is proposed in terms of engineering works.
- c) You need to provide a justification for the proposed location of borrow pits and evidence of the suitability of the material to be excavated for the proposed use, including any risk of pollution caused by degradation of the rock.
- d) A ground investigation report giving existing seasonally highest water table including sections showing the maximum area, depth and profile of working in relation to the water table.
- e) A site map showing cut-off drains, silt management devices and settlement lagoons to manage surface water and dewatering discharge. Cut-off drains must be installed to maximise diversion of water from entering quarry works.
- f) A site map showing proposed water abstractions with details of the volumes and timings of abstractions.

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- g) A site map showing the location of pollution prevention measures such as spill kits, oil interceptors, drainage associated with welfare facilities, recycling and bin storage and vehicle washing areas. The drawing notes should include a commitment to check these daily.
- h) A site map showing where soils and overburden will be stored including details of the heights and dimensions of each store, how long the material will be stored for and how soils will be kept fit for restoration purposes. Where the development will result in the disturbance of peat or other carbon rich soils then the submission must also include a detailed map of peat depths (this must be to full depth and follow the survey requirement of the Scottish Government's Guidance on [Developments on Peatland - Peatland Survey \(2017\)](#)) with all the built elements and excavation areas overlain so it can clearly be seen how the development minimises disturbance of peat and the consequential release of CO₂.
- i) Sections and plans detailing how restoration will be progressed including the phasing, profiles, depths and types of material to be used.
- j) Details of how the rock will be processed in order to produce a grade of rock that will not cause siltation problems during its end use on tracks, trenches and other hardstanding.

8. Pollution prevention and environmental management

- 8.1. One of our key interests in relation to developments is pollution prevention measures during the periods of construction, operation, maintenance, demolition and restoration.
- 8.2. A schedule of mitigation supported by the above site specific maps and plans must be submitted. These must include reference to best practice pollution prevention and construction techniques (for example, limiting the maximum area to be stripped of soils at any one time) and regulatory requirements. They should set out the daily responsibilities of ECOWs, how site inspections will be recorded and acted upon and proposals for a planning monitoring enforcement officer. Please refer to [Guidance for Pollution Prevention](#) (GPPs).

9. Life extension, repowering and decommissioning

- 9.1. Proposals for life extension, repowering and/or decommissioning must demonstrate accordance with SEPA Guidance on the [life extension and decommissioning of onshore wind farms](#). Table 1 of the guidance provides a hierarchical framework of environmental impact based upon the principles of sustainable resource use, effective mitigation of environmental risk (including climate change) and optimisation of long term ecological restoration. The submission must demonstrate how the hierarchy of environmental impact has been applied, within the context of latest knowledge and best practice, including justification for not selecting lower impact options when life extension is not proposed.
- 9.2. The submission needs to demonstrate that there will be no discarding of materials that are likely to be classified as waste as any such proposals would be unacceptable under waste management licensing. Further guidance on this may be found in the document [Is it waste - Understanding the definition of waste](#).

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Nicola Kennedy
Case Officer
Energy Consents Unit
The Scottish Government
By e-mail: Econsents_admin@gov.scot

28 June 2022

Our ref: CEA167263
Your ref: ECU00004509

Dear Ms Kennedy,

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulation 2017 Scoping opinion for the proposed Section 36 Application for Watten Wind Farm (8 x 220m to tip turbines)

Thank you for your consultation dated 07 June 2022 requesting a scoping opinion for the above proposal.

1. Key issues

The proposal raises the following main issues which will need to be carefully considered as part of the Environmental Impact Assessment (EIA):

- **Impacts on protected areas:** The proposal has the potential to impact the following sites:

- Caithness and Sutherland Peatlands Special Protection Area (SPA), Special Area of Conservation (SAC) and Ramsar site;
- Caithness Lochs SPA;
- East Caithness Cliffs SPA; and
- Shielton Peatlands Site of Special Scientific Interest (SSSI).

The developer should assess the direct and indirect impacts on these protected sites and their qualifying interests in context of their conservation/management objectives¹. The assessment should consider the impact of the proposal both as a single development and cumulatively with other projects affecting these protected sites.

- **Landscape and visual impacts :** The proposal has the potential to significantly impact the Causeymire – Knockfin Flows Wild Land Area (WLA) and East Halladale Flows WLA. A Wild Land Assessment will therefore be required.

¹ Full details on the sites, their qualifying interests and their conservation/management objectives can be found on SiteLink at: <https://sitelink.nature.scot/home>.

The Links, Golspie Business Park, Golspie KW10 6UB
A' Mhachair, Raon Gnothachais Ghoillspidh, Goillspidh KW10 6UB
01463 701608 nature.scot

NatureScot is the operating name of Scottish Natural Heritage

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The assessment of landscape and visual impacts (including cumulative impacts) with other wind turbine developments in this area will also be required. In particular, the in-combination effects with nearby and existing turbines will need to be carefully considered given the very large scale of turbines proposed.

- **Impacts on peat habitat and carbon rich soils** which are present on the proposal site and wider area. The developer will need to demonstrate through the EIA that a wind farm can be built on this site without significant loss or damage to these nationally important interests.
- **There are other impacts on the natural heritage that the developer will need to consider during the EIA process including (but not limited to) impacts on wild deer and protected species (including breeding birds).** We refer the developer to our published general scoping and pre-application advice document², to help inform the work carried out for their EIA Report.

We provide further advice on the scope of the EIA and comments on the submitted scoping report in Annex 1 of this letter.

2. Concluding remarks

Please note that while we are supportive of the principle of renewable energy, our advice is given without prejudice to a full and detailed consideration of the impacts of the proposal if it is submitted as a formal application.

Please let me know if you need any further information or advice from us in relation to this proposal.

Yours sincerely,

Siân Haddon
Operations Officer – North
Sian.Haddon@nature.scot

² General pre-application and scoping advice for onshore wind farms (2020), available at: <https://www.nature.scot/doc/general-pre-application-and-scoping-advice-onshore-wind-farms>.

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Annex 1 – Our advice on the scope of the EIA and comments on the scoping report

1. Protected areas

a) European protected sites

The proposal lies adjacent to the Caithness and Sutherland Peatlands SPA, SAC and Ramsar site, protected for its range of upland breeding birds, habitats and species. The developer should be aware that the Ramsar citation has recently been updated and 'Conservation Advice Packages' are now available for all terrestrial SACs.

In addition, the proposal also lies within foraging range for geese and swans associated with the Caithness Lochs SPA and gulls associated with the East Caithness Cliffs SPA. Full details for all the sites described can be found on SiteLink at: <https://sitelink.nature.scot/home>.

The status of these sites mean that the Conservation (Natural Habitats, & c.) Regulations 1994 as amended (the 'Habitats Regulations') apply. Due to the connectivity with these sites, Habitats Regulation Appraisals (HRAs)³ will be required and any direct or indirect impacts to their features will need to be carefully considered as part of the EIA process.

Avoiding impacts to these sites should be a key consideration in the design and layout of the wind farm. Where impacts are predicted, the developer will need to demonstrate that a wind farm can be built on this site without an adverse effect on these protected sites.

In relation to the scoping report, we are in broad agreement with the proposed methodology and scope of assessments in relation to protected sites. However, **we do not agree that impacts to the East Caithness Cliffs SPA are scoped-out of the assessment.** This is due to the proposal being within foraging range for both herring gull and great black-backed gull associated with this SPA. From the information available, herring gull has been recorded during survey work for this proposal. We are also aware that both species have been regularly recorded during survey work for other nearby wind farms and flight lines identified between this inland area and the coastal SPA.

We also do not agree that impacts to the Caithness and Sutherland Peatlands SAC are scoped-out of the assessment. In part, this is due to identified otter activity on the site and its likely connectivity with the nearby SAC. In addition, the Burn of Acharole appears to cut into the SAC in places along its route and impacts to water quality on the SAC should be considered further in any future application.

b) Nationally important sites – Shielton Peatlands SSSI

The proposal also lies adjacent to Shielton Peatlands SSSI, which forms part of the larger Caithness and Sutherland Peatlands SAC/SPA/Ramsar site and is protected for its blanket bog and breeding bird assemblage.

Impacts to this SSSI and its features should also be considered further within the EIA Report. In relation to the site's bird interests, the developer may find the SSSI's Site Management Statement (available from SiteLink¹) useful in identifying which species regularly breed on the SSSI.

2. Ornithology

From the information provided, the completed bird surveys appear to follow our recommended guidance⁴. We advise that full details of the surveys undertaken (and their results) are provided within any future application, to support the conclusions presented in the EIA Report.

³ More information on HRAs is available from: <https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulations-appraisal-hra>.

⁴ As outlined in *Guidance Note – Recommended bird survey methods to inform impact assessment of onshore windfarms* (2017), available at: <https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms>.

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In relation to the Vantage Point (VP) locations, we note that 2 VPs were used up until 2015. While VP 2 has continued to be used throughout the full period of survey (i.e. 2013-2021), it appears from Figure 7.4.1 that turbine 1 has not been covered by the newer surveys, given its location behind VP2. Without further information at this stage, the flight activity data for the area around turbine 1 is likely to be considered too old to be relevant for an assessment of potential impacts. The developer may have further information for this area and we would be happy to discuss this further with them.

In relation to the proposed assessment methodology, we welcome the intended scope to assess direct, indirect and cumulative impacts to birds from construction and operation of the proposed development. We welcome the intention to undertake a lighting assessment in relation to birds and refer the developer to Annex 2 of our pre-application guidance⁵ for more information. We also welcome the intention to produce a Bird Disturbance Management Plan and recommend the details of this are included within any future application.

In addition, where a collision risk is identified, Collision Risk Modelling⁶ should be undertaken. For species associated with the SPA, an assessment should be made against the conservation objectives for the site. For wider countryside species, an assessment should be made against the relevant Natural Heritage Zone(s) (NHZs). Where a collision risk is identified, we would be happy to provide further advice on the appropriate developments and figures to include in a cumulative assessment.

We also note the proposed development will include the installation of an anemometer mast. **Should a guyed mast be proposed, we advise the following mitigation is implemented to avoid and/or reduce the risk of bird collision:**

- Bird deflectors fitted to all meteorological / anemometer mast guy wires and spaces evenly at 5m intervals. Stops or clamps should be fitted to the guy wires to prevent the deflectors from sliding down. The mast should be regularly inspected to ensure the deflectors remain in place. In this case, these inspections and any required maintenance should take place in early March each year, prior to the bird breeding season.

3. Ecology

Full details in relation to ecology interests are not available at this stage. However, from the information available, the approach to surveying and assessing impacts appears to follow recommended guidance.

Nonetheless, **we do not agree that impacts to the Caithness and Sutherland Peatlands SAC are scoped-out of the assessment.** Given the proximity of the SAC, identified otter activity on the proposal site and the overlap of the Acharole Burn with the SAC, connectivity with this site should be considered further within the EIA Report.

We welcome the developer's intention to produce specific Species Protection Plans (SPPs) as part of the EIA. We advise details of these (and any other mitigation proposed) are included within the EIA Report. More information is available within our standing advice for the relevant species⁷. The developer will also need to consider if any species licenses are required and contact our licensing team regarding any application (licensing@nature.scot).

We also welcome the intention to undertake further assessment in relation to wild deer. This assessment should consider the direct and indirect impacts to wild deer and their impact on other interests (e.g. if

⁵ *General pre-application and scoping advice for onshore wind farms* (2020), available at: <https://www.nature.scot/doc/general-pre-application-and-scoping-advice-onshore-wind-farms>.

⁶ More information on collision risk modelling is available from: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/renewable-energy/onshore-wind-energy/wind-farm-impacts-birds>.

⁷ Available from: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-protected-species>.

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changes to deer movement could adversely affect peatland habitats, particularly in relation to the adjacent SAC). A Deer Management Plan will be required and we refer the developer to our guidance⁸ for more information.

4. Peat, peatland habitat and carbon rich soils

As outlined in the scoping report, the Carbon and Peatland Map (2016) indicates the proposal site includes areas of Class 1 peatland. Class 1 areas are described as nationally important carbon-rich soils, deep peat and priority peatland habitat likely to be of high conservation value. The EIA Report will therefore need to demonstrate clearly how any impacts to these interests will be avoided, mitigated and/or compensated.

Where peat is present, specific peat surveys should be carried out in line with Scottish Government guidance, available at: <https://www.gov.scot/publications/peatland-survey-guidance>. Further information for development on peat, peatland habitat and carbon-rich soils is also available from our website⁹.

We also recommend that the Applicant complete and include within the EIA Report a summary table in relation to peatland of national importance. While not essential, this would be extremely helpful in facilitating the assessment of potential impacts on peat, peatland habitat and carbon-rich soils. An example table is included in Annex 2 below.

5. Landscape and visual

We welcome the developer's intention to undertake further consultation with consultees on the proposed Landscape and Visual Impact Assessment (LVIA) and would be happy to provide further advice as necessary.

In the meantime, and with reference to the information provided, we have the following advice:

- **We do not do not agree that a Wild Land Assessment is scoped-out of the EIA.** Figure 7.2.1 shows that the predicted visibility of the proposal will extend into both the Causeymire – Knockfin Flows WLA and the East Halladale Flows WLA.

Given the scale of turbines proposed, the predicted visibility and the requirement for turbine lighting, a full assessment of impacts on Wild Land will be required. More information on such an assessment is available from our website¹⁰ and we would be happy to discuss this further with the developer.

- In addition, further development guidance in the referenced Landscape Sensitivity Appraisal for Caithness (2017)¹¹ advises that turbines should concentrate and consolidate with existing development, continue the scale, form and proportions of existing and consented development and avoid unnecessary cumulative effects. We highlight this specifically as the proposed turbine heights for this development are of very large scale in comparison to the existing turbines in this area.
- With reference to our comments above, we are in broad agreement with the proposed approach to the LVIA. We welcome the developer's intention to undertake a turbine lighting assessment and refer them to Annex 2 of our pre-application and scoping advice document⁵ for further advice at

⁸ *Planning for development: What to consider and include in deer assessments and management at development sites* (2016), available from: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/renewable-energy/onshore-wind-energy/advice-wind-farm-development>.

⁹ Available from: <https://www.nature.scot/advising-carbon-rich-soils-deep-peat-and-priority-peatland-habitat-development-management>.

¹⁰ Available from: <https://www.nature.scot/professional-advice/landscape/landscape-policy-and-guidance/wild-land/wild-land-area-descriptions-and-assessment-guidance>.

¹¹ *Development guidance – onshore wind energy: Addendum Supplementary Guidance: 'Part 2b', December 2017* (2017), available from: https://www.highland.gov.uk/directory_record/712079/onshore_wind_energy.

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this stage. Due to immediate resourcing constraints, we cannot provide detailed input into the selection of viewpoints outlined in Table 7.2.1. However, we would wish the opportunity to agree a final selection in consultation with the Highland Council.

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Annex 2 – Summary table in relation to peatland of National Importance

Infrastructure	Grid Reference (citing EIA Report source)		Peat Depth (cm) (citing EIA Report source)	Phase 1/UKHab Habitats (citing EIA Report source)	NVC (citing EIA Report source)	Altitude (m)	National Importance (Yes/No) ¹
	Easting	Northing					
Turbine/Hardstanding							
1							
2							
etc.							
etc.							
9							
10							
11							
Borrow Pit							
1							
2							
etc.							
Other							
Construction Compound							
Energy Storage Unit							
Substation							
Etc.							

¹ This can be informed by reference to: *Carbon-rich soils, deep peat and priority peatland habitat mapping Consultation analysis report* <https://www.nature.scot/sites/default/files/2018-05/Carbon%20and%20Peatland%20map%20consultation%20analysis%20report.pdf>

Nationally Important: peat > 50 cm deep and supports priority peatland habitat (in this case Blanket Bog as defined in UK Biodiversity Action Plan, Priority Habitat Descriptions, Blanket Bog: <https://data.incc.gov.uk/data/aadfff3d-9a67-467a-ac65-45285e123607/UKBAP-BAPHabitats-03-BlanketBog.pdf>)



By email to: Nicola.Kennedy@gov.scot

Nicola Kennedy
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EH9 1SH

Enquiry Line: 0131-668-8716
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Our case ID: 300058986
Your ref: ECU00004509
18 August 2022

Dear Nicola Kennedy

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017
Watten Wind Farm, Caithness
EIA Scoping Report (26 May 2022)

Thank you for your consultation which we received on 07 June 2022 about the above EIA Scoping Report (26 May 2022). We have reviewed the details in terms of our historic environment interests. This covers world heritage sites, scheduled monuments and their settings, category A-listed buildings and their settings, inventory gardens and designed landscapes, inventory battlefields and historic marine protected areas (HMPAs).

The Highland Council's archaeological and cultural heritage advisors will also be able to offer advice on the scope of the cultural heritage assessment. This may include heritage assets not covered by our interests, such as unscheduled archaeology, and category B- and C-listed buildings.

Proposed Development

We understand that the proposals comprise the development of up to 8 wind turbines with a maximum tip height of up to 220m, battery storage and associated infrastructure on a site approximated 3km southwest of Watten in Caithness.

Our View on the Proposals

Based on the information provided within the EIA Scoping Report (26 May 2022), we consider that the proposals are likely to give rise to significant adverse impacts on the setting of nearby heritage assets. We therefore recommend that mitigation by design is undertaken to reduce and avoid these impacts where possible. Any mitigation measures should be informed by a robust environmental impact assessment (EIA) supported by visualisations. We would be happy to review any visualisations prepared for the proposals and to provide further advice on mitigation measures where possible. In line with this, we would welcome dialogue with the applicant and their team as the proposals are progressed.

Historic Environment Scotland – Longmore House, Salisbury Place, Edinburgh, EH9 1SH
Scottish Charity No. **SC045925**
VAT No. **GB 221 8680 15**



Scope of Assessment

We note that several heritage assets in our remit are located in the vicinity of the proposals and may be subject to setting impacts. We therefore recommend that any Environmental Impact Assessment (EIA) undertaken in support of the proposals should include an assessment of impacts on heritage assets and their settings. This assessment should be undertaken by a suitably experienced professional and meet the requirements of [Scottish Planning Policy](#) (SPP, 2014), the [Historic Environment Policy for Scotland](#) (HEPS, 2019) and associated Managing Change Guidance Notes. Guidance can also be found in the Cultural Heritage Appendix to the [EIA Handbook](#) (SNH, HES, 2018).

Any assessment should pay particular attention to impacts on the setting of the below heritage assets. We have provided further information on these heritage assets in the attached **Annex**.

- **Achingale Mill**
(Category A listed building, [LB14976](#))
- **Bail a' Chairn, broch**
(Scheduled Monument, [SM13634](#))
- **Carn a' Chladha, broch**
(Scheduled Monument, [SM13632](#))
- **Scouthal Burn, chapel & The Clow**
(Scheduled Monument, [SM721](#))
- **Gallow Hillock, cairn on Backlass Hill**
(Scheduled Monument, [SM450](#))

This list is not exhaustive, however, and we recommend that a systematic and robust approach is undertaken to identifying heritage assets for detailed assessment. We note from the EIA Scoping Report (26 May 2022) that an 'outer study area' of 10km will be used to identify potential heritage assets for assessment including scheduled monuments and historic battlefields. While we are broadly content with this study area, we are unsure why scheduled monuments and historic battlefields have been assigned a different level of importance to category A listed buildings and inventory designed landscapes in this analysis. We therefore recommend that some additional consideration should be given to potential impacts on scheduled monuments located at a greater distance from the proposals.

These scheduled monuments are likely to include the **Grey Cairns of Camster** which, although stated to be outside the Zone of Theoretical Visibility (ZTV) for the proposals in the EIA Scoping Report, appear to share some visibility with the proposals based on the submitted ZTV (Figure 7.2.2). This ZTV suggests that all turbines would be visible from

Historic Environment Scotland – Longmore House, Salisbury Place, Edinburgh, EH9 1SH
Scottish Charity No. **SC045925**
VAT No. **GB 221 8680 15**



at least the two southernmost scheduled areas, and the scheduled stone rows to the south. We also suggest that consideration is given to the grouping of scheduled monuments located around the **Loch of Yarrows** to the east of Camster. This is an important prehistoric landscape containing several scheduled monuments.

We would expect any potentially significant impacts to be assessed in line with our Managing Change Guidance Note on [Setting](#) (2016, 2020). This assessment should recognise that a range of factors apply and that these need to be considered and assessed on a site-by-site basis. An assessment should also clearly demonstrate where potential setting impacts have been reduced or avoided and, also, consider where any residual effects may occur.

We recommend that impacts on the setting of heritage assets should be assessed using photomontage and wireframe visualisations where impacts are likely to be highest. We note, for example, that Section 7.6.6 of the EIA Scoping Report (26 May 2022) suggests the preparation of visualisations from **Bail A'Chairn, broch** ([SM13634](#)) and **Carn A' Chladha, broch** ([SM13632](#)), as well as their relationship with other brochs in the region. Visualisations from the **Gallow Hillock, cairn on Backlass Hill** ([SM450](#)) are also proposed. We welcome the visualisations suggested here and, also, the proposal to include visualisations from monuments with potentially reciprocal views.

We also recommend that other visualisations are prepared. These should include views from the north-north eastern approach towards **Carn A' Chladha, broch** ([SM13632](#)) as well as views between **The Clow** ([SM721](#)) and **Gallow Hillock, cairn on Backlass Hill** ([SM450](#)). Visualisations should also be considered to illustrate the likely impact of the proposals on **Grey Cairns of Camster** and the monuments around **Loch of Yarrows**. We would be happy to engage further on the location and format of any visualisations as necessary.

There is also a potential for cumulative impacts caused by the proposals in combination with other nearby existing, consented and proposed wind energy developments. We therefore recommend that cumulative impacts are described and assessed, and these should be examined using cumulative visualisations.

Further information

Guidance about national policy can be found in our 'Managing Change in the Historic Environment' series available online at www.historicenvironment.scot/advice-and-support/planning-and-guidance/legislation-and-guidance/managing-change-in-the-historic-environment-guidance-notes. Technical advice is available on our Technical Conservation website at <https://conservation.historic-scotland.gov.uk/>.

Historic Environment Scotland – Longmore House, Salisbury Place, Edinburgh, EH9 1SH
 Scottish Charity No. **SC045925**
 VAT No. **GB 221 8680 15**

We hope this is helpful. Please contact us if you have any questions about this response. The officer managing this case is Alison Baisden and she can be contacted by phone on 0131 668 8575 or by email on Alison.Baisden@hes.scot.

Yours sincerely

Historic Environment Scotland

Historic Environment Scotland – Longmore House, Salisbury Place, Edinburgh, EH9 1SH
 Scottish Charity No. **SC045925**
 VAT No. **GB 221 8680 15**



Annex

- **Achingale Mill**
(Category A listed building, [LB14976](#))

This is an early mid-19th century, tall 3-storey L-plan water mill. It is disused and currently on the Building at Risk Register (892811). The mill was described by the industrial historian John Hume as "One of the best Caithness mills" and it is located around 2km to the northeast of the proposed wind farm.

We would expect any Environmental Impact Assessment (EIA) undertaken in support of the proposals to consider the potential for impacts on views to and from the mill and how this might affect the cultural significance of the building. Any such assessment should be supported by visualisations, and we would be happy to engage on the format and location of these as necessary.

- **Bail a' Chairn, broch**
(Scheduled Monument, [SM13634](#))

This broch survives as a massive grass-covered mound positioned on the edge of the large, broad plateau on which the proposals would be located. The substantial size of the monument, combined with the flat land on which it is sited, makes it a highly visible and consistently present feature within this landscape.

The broch provides panoramic views in all directions, with these being particularly good in an arc extending from the north-west to the east across the lower-lying land around Sinclair's Bay. The broch also has good views to the east across the Burn of Acharole, though from here, in an arc round to the west, the views gradually become more restricted as the ground gently rises in these directions. The broch does, however, retain panoramic views in all outward directions. T3 of the scheme would be closest to the monument, located approximately 1.25km to the west. It is possible that this proximity and scale of the development as a whole could overwhelm the broch's presence in the landscape as a prominent, conspicuous feature.

Bail a' Chairn and Carn a' Chladha are two of several brochs in the wider area situated in similar positions above the Wick River and its tributaries. The positioning of brochs close to watercourses is characteristic of these monuments in Caithness. Often monuments in these locations share a visual relationship with each other, possibly allowing them to aid in navigation when using nearby watercourses as routeways. Bail a' Chairn and Carn a' Chladha may share such a relationship, and this could extend to a number of other brochs in the wider

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landscape. Designated examples that may share a relationship with these brochs include:

- Green Hill broch, 40m W of Grant Hall ([SM551](#))
- Nether Banks, broch 220m NNE of ([SM609](#))
- Spittal Farm, broch 180m E of ([SM582](#))
- Ballachly, broch 360m S of, Stemster ([SM520](#))

The proposals therefore have the potential to disrupt the relationship between these monuments. This aspect of the brochs' setting is particularly susceptible to impacts here due to the relatively flat and open nature of the Caithness landscape.

We would therefore expect any Environmental Impact Assessment (EIA) undertaken in support of the proposals to give close consideration to the potential for impacts on the setting of this scheduled monument. Any such assessment should be supported by visualisations, and we would be happy to engage on the format and location of these as necessary.

- **Carn a' Chladha, broch**
(Scheduled Monument, [SM13632](#))

Carn a' Chladha broch lies beneath the brow of the large, broad plateau on which the proposals would be located. It appears as a substantial mound, its prominence enhanced by its positioning atop an artificially altered mound at the southwest end of a natural spur that rises from lower-lying ground at its northeast end. This spur appears to have formed the approach to the broch. From this position the broch gives commanding views to the north and north-east, especially along the narrow gully carrying the Scouthal Burn. In this direction the flatter, lower-lying land around Sinclair's Bay can be seen in the distance.

Besides its obvious use as a natural resource, it is likely that the Scouthal Burn provided a useful navigational aid when travelling between the brochs in this area. The spur on which Carn a' Chladha is positioned strongly suggests the site would have been approached from the north-east. There is therefore a risk that the proposals could produce a significant and imposing backdrop effect when the broch is approached from this direction, with the possibility that the broch's presence and prominence within the landscape would be undermined. T3 of the scheme would be closest to the monument, located approximately 1.65km to the west.

We would therefore expect any Environmental Impact Assessment (EIA) undertaken in support of the proposals to give close consideration to the potential

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for impacts on the setting of this scheduled monument. Any such assessment should be supported by visualisations, and we would be happy to engage on the format and location of these as necessary.

- **Scouthal Burn, chapel & The Clow**
(Scheduled Monument, [SM721](#))

This monument is significant as a multi-period site having produced evidence of occupation spanning the 13th to 19th Centuries. Its setting appears to me more enclosed than that of the brochs, being positioned on a low plateau immediately adjacent to the Scouthal Burn. The proximity of the settlement activity here to Carn a'Chladha may be indicative of a continuity of settlement in this area from the Iron Age onwards. The visual relationship between these two monuments may therefore contribute to the significance of the remains at The Clow. The proposals have the potential to significantly distract from this visual relationship by backdropping Carn a' Chladha, and overwhelming its visual prominence, when viewed from The Clow.

Unusual burial evidence has been found at The Clow in the form of groups of skulls buried together. It was determined that these were removed as a result of executions, with records suggesting the burial ground was used only for strangers and unbaptised children. It is therefore possible the site was used to bury victims of execution, possibly those who were tried at Gallows Hillock to the west. This relationship and its potential setting implications for both monuments should therefore be explored as part of any assessment.

- **Gallow Hillock, cairn on Backlass Hill**
(Scheduled Monument, [SM450](#))

This monument comprises the remains of a roughly circular prehistoric cairn measuring 24m at its widest point and rising to 1.2m in height. It is of national importance for its potential to contribute to our understanding of prehistoric society, environmental conditions, and ritual and funerary practices.

The cairn lies close to the summit of Backlass Hill on its southern side. It is likely that the monument has open, commanding views to the south where the development site is located. Several other prehistoric cairns are known to the east and north of the monument. There may be a degree of intervisibility between any of these sites, and this may make a significant contribution to the setting of this cairn and to those within its field of view. The monument's name, along with the presence of a market stance nearby in the 19th Century, indicates that the site may have been used as a place for holding markets and administering justice.

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The proposals would be close to the monument on its southern side, with T1 being closest at a distance of 1.5km. The proximity and size of the turbines could therefore produce a distracting and overwhelming presence in the monument's setting. The proposals could also result in a backdropping effect when viewing the monument from other sites to the north.

We would therefore expect any Environmental Impact Assessment (EIA) undertaken in support of the proposals to give close consideration to the potential for impacts on the setting of this scheduled monument. Any such assessment should be supported by visualisations, and we would be happy to engage on the format and location of these as necessary.

Historic Environment Scotland
18 August 2022

Historic Environment Scotland – Longmore House, Salisbury Place, Edinburgh, EH9 1SH
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VAT No. **GB 221 8680 15**



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Highland and Islands Conservancy
"Woodlands", Fodderty Way
Dingwall, Ross-shire, IV15 9XB

Glèidhteachas na Gàidhealtachd's nan Eilean
"Fearann – coilleach"
Rathad Fodderty
Inbhir Pheadhearan
Sgìre Rois, IV15 9XB

Tel/Fòn 0300 067 6950
Highland.cons@forestry.gov.scot

Conservator/Neach Dion Arainneachd
John Risby

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consent is required. For more information please see: <https://forestry.gov.scot/support-regulations/environmental-impact-assessment>

Any additional felling which is not part of the planning application will require permission from SF under the Forestry and Land Management (Scotland) Act 2018 (the Act). For areas covered by an approved Long Term Forest Plan (LTFP), the request for additional felling (and subsequent restocking) areas needs to be presented in form of LTFP amendment. Please see: <https://forestry.gov.scot/support-regulations/felling-permissions>

All proposed compensatory planting, felling and restocking proposals need to be compliant with requirements of UK Forestry Standard (UKFS). <https://forestry.gov.scot/sustainable-forestry/ukfs-scotland>

Please don't hesitate to contact me if you wish to discuss Scottish Forestry's response.

Yours Sincerely

REDACTED

Jonathan Hawick
Regulations and Development Manager
Jonathan.hawick@forestry.gov.scot

12th July 2022

Nicola Kennedy
Energy Consents Unit
The Scottish Government
Econsents_Admin@gov.scot

**ELECTRICITY ACT 1989
THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS
2017**

**REQUEST FOR SCOPING OPINION FOR PROPOSED SECTION 36 APPLICATION FOR WATTEN WIND
FARM**

Thank you for consulting Scottish Forestry on the proposed Watten Wind Farm.

Scottish Forestry (SF) is the Scottish Government agency responsible for policy, support and regulation of forestry sector in Scotland. As such SF comments on possible impact of development proposals on forests and woodlands.

As the proposed development area includes woodland, SF recommends that all impacts on woodland are set out in one section of the Environmental Impact Assessment Report (EIA Report) for the proposed development.

Any woodland removal for development purposes will be subject to Scottish Governments' Policy on Control of Woodland Removal (CoWRP). This policy seeks to avoid the removal of woodland, but where permanent removal is essential for development purposes the area must be replaced elsewhere by compensatory planting.

For more information please see: <https://forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal/viewdocument>

and <https://forestry.gov.scot/publications/349-scottish-government-s-policy-on-control-of-woodland-removal-implementation-guidance/viewdocument>

The EIA Report should set out how this policy has been applied and quantify any permanent woodland removal. Any proposed compensatory planting areas will be the subject of the Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017, and therefore a separate application will be required to be submitted to SF for a formal opinion on whether

Scottish Forestry is the Scottish Government agency responsible for forestry policy, support and regulation

S e Coilltearachd na h-Alba a' bhuidheann-ghnìomha aig Riaghaltas na h-Alba a tha an urra ri poileasaidh, taic agus riaghladh do choilltearachd



Development Management and Strategic Road Safety
Roads Directorate

Buchanan House, 58 Port Dundas Road, Glasgow G4 0HF
Direct Line: 0141 272 7379, Fax: 0141 272 7350
gerard.mcphillips@transport.gov.scot

Nicola Kennedy
Energy Consents Unit
The Scottish Government
5 Atlantic Quay
150 Broomielaw
Glasgow
G2 8LU

Econsents_Admin@gov.scot



Your ref:
ECU00004509

Our ref:
GB01T19K05

Date:
28/06/2022

Dear Sirs,

ELECTRICITY ACT 1989

THE ELECTRICITY (APPLICATIONS FOR CONSENT) REGULATIONS 2017

REQUEST FOR SCOPING OPINION FOR PROPOSED SECTION 36 APPLICATION FOR WATTEN WIND FARM

With reference to your recent correspondence on the above development, we acknowledge receipt of the Scoping Report (SR) prepared by Natural Power Consultants Limited in support of the above development.

This information has been passed to SYSTRA Limited for review in their capacity as Term Consultants to Transport Scotland – Roads Directorate. Based on the review undertaken, we would provide the following comments.

Proposed Development

The proposed development comprises up to 8 wind turbines with a maximum tip height of 220m, located approximately 3 km to the south-west of Watten in Caithness. The nearest trunk road to the site is the A9(T) which lies approximately 6.5km to the west at Mybster, while the A99(T) lies approximately 18km to the west at Wick.

Assessment of Environmental Impacts

Section 7.8 of the SR presents the proposed approach to assessing the potential environmental impacts associated with increased development traffic. This states that the thresholds as indicated within the Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Road Traffic are to be used as a screening process for the assessment. These specify that road links should be taken forward for assessment if:

- Traffic flows will increase by more than 30%, or
- The number of HGVs will increase by more than 30%, or
- Traffic flows will increase by 10% or more in sensitive areas.

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Study Area

We note that the location of the site entrance has yet to be established, however, given the limited route options in the surrounding area, it is considered that deliveries will arrive at the site via the A9(T), A882 or B870. The proposed study area for the assessment is, therefore, identified as:

- The A9(T) between Latheron and its junction with the A882 near Georgemas;
- The A882 between Wick and its junction with the A9(T) near Georgemas; and
- The B870 between the A9(T) and A882.

Transport Scotland considers this to be acceptable, however, we would add that in the event that turbine components are to be landed at Wick Harbour, any section of the A99(T) to be used in the Abnormal Load Route will also require to be included within the study area.

We are content that no further detailed assessment of effects is required if the IEMA thresholds indicated above are not exceeded.

Base Traffic Data

We note that the SR seeks confirmation as to the availability of traffic count data in the area. We can confirm that Transport Scotland can provide ATC data from two sites located on the north-west and south-east arms of the A9(T)/ A882 junction. Further traffic data will require to be sourced either via traffic surveys, The Highland Council (THC) or the Department for Transport (DfT) database. Transport Scotland would also add that National Road Traffic Forecast (NRTF) Low Growth factors should be applied to any base traffic flows on the trunk road to obtain construction year base traffic flows.

Borrow Pits

The SR states that the proposals include for on-site borrow pits to source stone and it is proposed to account for this within the estimation of traffic numbers. The SR states that an allowance will be included for the import of stone as a finished surfacing to the infrastructure within the traffic numbers to provide a “conservative approach”. Transport Scotland would seek a worst-case scenario be used, whereby it is assumed that all construction materials are sourced from off-site locations.

It is noted that any impacts associated with the operational and decommissioning phases of the development are to be scoped out of the EIAR. We would consider this to be acceptable in this instance.

Abnormal Loads Assessment

The SR states that an Access Route Assessment (ARA) and a preliminary Traffic Management Plan (TMP) will be provided. We would consider this to be appropriate and would add that Transport Scotland will require to be satisfied that the size of turbines proposed can negotiate the selected route and that transportation of components will not have any detrimental effect on structures within the trunk road route path.

The ARA should identify key pinch points on the trunk road network and swept path analysis should be undertaken with details provided regarding any required changes to street furniture or structures along the trunk road route.

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It should be noted that any proposed changes to the trunk road network must be discussed and approved (via a technical approval process) by the appropriate Area Manager(s) prior to the movement of any abnormal load.

I trust that the above is satisfactory and should you wish to discuss any issues raised in greater detail, please do not hesitate to contact me or alternatively, Alan DeVenny at SYSTRA's Glasgow Office on 0141 343 9636.

Yours faithfully

REDACTED

Gerard McPhillips

Transport Scotland
Roads Directorate

cc Alan DeVenny – SYSTRA Ltd.

A57

From: #ABZ Safeguarding
To: Kennedy N (Nicola)
Subject: RE: Request for Scoping Opinion – Watten Wind Farm
Date: 23 June 2022 08:40:51
Attachments: image001.png
image528921.jpg
image360805.png
image739043.png
image056911.png
image175142.png
image145655.png
image819457.png
image564734.png

This proposal is located outwith our consultation zone. We therefore have no comment to make and need not be consulted further.

Kind regards

Kirsteen

 **#ABZ Safeguarding**
 abzsafeguard@airport.com
 www.aberdeairport.com
 Aberdeen International Airport Limited, Dyce, Aberdeen, AB21 7DU

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From: radionetworkprotection@bt.com
To: [Kennedy N \(Nicola\)](#)
Cc: [Econsents Admin](#); radionetworkprotection@bt.com
Subject: RE: Request for Scoping Opinion – Watten Wind Farm **REPLY BY 28/6** WID11885**
Date: 27 June 2022 11:26:50
Attachments: [image002.jpg](#)
[image003.png](#)
[image004.png](#)



OUR REF: WID11885

Dear Sir/Madam

Thank you for your email dated 07/06/2022.

We have studied this Watten Wind Farm proposal with respect to EMC and related problems to BT point-to-point microwave radio links.

The conclusion is that, the location of the 8 turbines provided in the scoping report should not cause interference to BT's current and presently planned radio network.

Please direct all queries to radionetworkprotection@bt.com

Kind regards
Laura Taylor
 Engineering Services - Radio Planning
 Networks



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Caithness District Salmon Fishery Board

Nicola Kennedy

Case Officer | Energy Consents Unit

The Scottish Government

Dear Nicola,

Re: REQUEST FOR SCOPING OPINION FOR PROPOSED SECTION 36 APPLICATION FOR WATTEN WIND FARM

CDSFB is the statutory body charged with protecting migratory salmonids within the rivers of its area which includes the catchment of Wick River and therefore of the Burn of Acharole/ Snottergill Burn, the Loch Burn and the Black Burn which lie within, adjacent to, or near to the boundaries of the proposed Watten development site.

The Wick River supports an extremely productive salmon fishery (> 1000 fish in some years), driven, in large part, by the contribution made to juvenile production and smolt output from the sub-catchment above Achingale Mill (ie. the Scouthal Burn) which includes the streams around the development site. The Board's past survey work has shown that all of the streams in question support spawning adult fish and, subsequently, high densities of juvenile salmon and trout. So, this is a matter of importance to the Board. The Flow Country Rivers Trust may hold addition survey information for the streams in question.

CDSFB will want to be assured that the proposed development will not impinge on the continued good status of the various streams. In particular, measures must be put in place to ensure that none of the proposed site works impacts on the stream system.

In addition, while CDSFB recognises that the cited lay-out is provisional and the height of the proposed turbine structures may well change, it should be noted that the direct visual impact of moving turbines on fish populations has been raised as an issue in CDSFB's previous responses to proposed windfarm developments and, in particular, to the proposed Tormsdale Windfarm which is presently being considered by the ECU.

Visual impact is a technically complex matter that has not been addressed previously and the matter of potential impacts of moving turbines on fish populations has not yet been resolved. Potential impacts can be reduced or eliminated by positioning turbines away from streams.

Rather than rehearse all the background to this again, the Board's views can be established by referring to the various documents available on the ECU website under ECU00001879 and ECU00003335, both of which refer to the Tormsdale proposal. The Board will also wish these same issues to be considered at the EIA stage in the context of the current Watten proposal.

Please get back to us if the Board can provide any further information.

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From: [Olivia Morrad](#)
To: [Kennedy N \(Nicola\)](#)
Cc: [Econsents Admin](#)
Subject: 20220712 Request for Scoping Opinion – Watten Wind Farm Email to GovScot
Date: 12 July 2022 15:40:10
Attachments: [image001.png](#)

Good afternoon,

Thank you for your email.

I write to confirm that the assets of Crown Estate Scotland are not affected by this proposal and we therefore have no comments to make.

Kind regards

Olivia Morrad
Assistant Portfolio Co-ordinator
Crown Estate Scotland

t: 0131 376 1506

Our team are currently working from home. Mail is occasionally being collected from our offices (addresses are at www.crownestatescotland.com/contact-us). Where possible, please email or call us rather than post mail.

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Teena Oulaghan
 Safeguarding Manager
 Ministry of Defence
 Safeguarding Department
 St George's House
 DIO Headquarters
 DMS Whittington
 Lichfield
 Staffordshire
 WS14 9PY

Telephone [MOD]: 07970 170934

E-mail: teena.oulaghan100@mod.gov.uk

Your Reference: ECU00004509

Our Reference: DIO10055289

Nicola Kennedy
 Energy Consents Unit
 Scottish Government
 4th Floor
 5 Atlantic Quay
 150 Broomielaw
 G2 8LU

By email only

22 June 2022

Dear Nicola,

Application reference: ECU00004509
 Site Name: Watten Wind Farm.
 Proposal: Electricity Act 1989 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Request for scoping opinion for proposed Section 36 application for Watten Wind Farm.
 Site address: 3km southwest of Watten.

Thank you for consulting the Ministry of Defence (MOD) in relation to the scoping through your communication dated 07 June 2022.

The Defence Infrastructure Organisation (DIO) Safeguarding Team represents the MOD as a consultee in UK planning and energy consenting systems to ensure that development does not compromise or degrade the operation of defence sites such as aerodromes, explosives storage sites, air weapon ranges, and technical sites or training resources such as the Military Low Flying System.

I am writing to advise you that the MOD has concerns with the proposal.

The proposal concerns a development of 8 turbines with maximum blade tip heights of 220.00 metres above ground level. The proposed development has been assessed using the location data (Grid References) below provided in Watten Wind Farm Scoping Report dated 26 May 2022.

Turbine no.	Easting	Northing
1	320987	952728
2	321126	952090
3	321537	951859

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4	320921	951062
5	320470	951529
6	320410	952101
7	319849	951479
8	319953	950803

The principal safeguarding concerns of the MOD with respect to this development of wind turbines relates to the development being detectable by one or more MOD radars as specified and their potential to create a physical obstruction to air traffic movements.

Air Traffic Control (ATC) Radar

The turbines will be approximately 83 km from, detectable by, and will cause unacceptable interference to the ATC radar used by RAF Lossiemouth.

Wind turbines have been shown to have detrimental effects on the performance of Primary Surveillance Radars. These effects include the desensitisation of radar in the vicinity of the turbines, shadowing and the creation of "unwanted" aircraft returns which air traffic controllers must treat as aircraft returns. The desensitisation of radar could result in aircraft not being detected by the radar and therefore not presented to air traffic controllers. Controllers use the radar to separate and sequence both military and civilian aircraft, and in busy uncontrolled airspace radar is the only sure way to do this safely. Maintaining situational awareness of all aircraft movements within the airspace is crucial to achieving a safe and efficient air traffic service, and the integrity of radar data is central to this process. The creation of "unwanted" returns displayed on the radar leads to increased workload for both controllers and aircrews. Furthermore, real aircraft returns can be obscured by a turbine's radar return, making the tracking of both conflicting unknown aircraft and the controllers' own traffic much more difficult.

Physical Obstruction

In this case the development falls within Low Flying Area 14 (LFA 14), an area within which fixed wing aircraft may operate as low as 250 feet or 76.2 metres above ground level to conduct low level flight training. The addition of turbines in this location has the potential to introduce a physical obstruction to low flying aircraft operating in the area.

To address the impact up on low flying given the location and scale of the development, the MOD would require that conditions are added to any consent issued requiring that the development is fitted with aviation safety lighting and that sufficient data is submitted to ensure that structures can be accurately charted to allow deconfliction.

As a minimum the MOD would require that the development be fitted with MOD accredited aviation safety lighting in accordance with the Air Navigation Order 2016.

Summary

The MOD has concerns with this proposal due to the potential impact to the ATC radar at RAF Lossiemouth and low flying aircraft operating in the development area.

The MOD must emphasise that the advice provided within this letter is in response to the information detailed in the developer's document titled "Watten Wind Farm Scoping Report" dated 26 May 2022. Any variation of the parameters (which include the location, dimensions, form, and finishing materials) detailed may significantly alter how the development relates to MOD safeguarding requirements and cause adverse impacts to

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safeguarded defence assets or capabilities. In the event that any amendment, whether considered material or not by the determining authority, is submitted for approval, the MOD should be consulted and provided with adequate time to carry out assessments and provide a formal response.

I hope this adequately explains our position on the matter. If you require further information or would like to discuss this matter further, please do not hesitate to contact me.

Further information about the effects of wind turbines on MOD interests can be obtained from the following websites:

MOD: <https://www.gov.uk/government/publications/wind-farms-ministry-of-defence-safeguarding>

Yours sincerely

REDACTED

Teena Oulaghan
Safeguarding Manager

From: Safe Guarding <safeguarding@edinburghairport.com>
Sent: 14 June 2022 13:29
To: Econsents Admin <Econsents_Admin@gov.scot>
Cc: Safe Guarding <safeguarding@edinburghairport.com>
Subject: ECU00004509 - Watten Wind Farm

A64

Good afternoon,

In respect of the above, I can confirm the location of this development falls out with our Aerodrome Safeguarding zone for Edinburgh Airport therefore we have no objection/comment.

With best regards,
 Claire

Claire Brown
 Aerodrome Safeguarding & Compliance Officer



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www.edinburghairport.com

Edinburgh Airport Limited
 Room 3/54, 2nd Floor Terminal Building
 EH12 9DN, Scotland

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A65

From: [Brian Davidson](#)
To: [Kennedy N \(Nicola\)](#)
Cc: [alan.youngson@btinternet.com](#); [Meghan Blackwood \(cdsfb@outlook.com\)](#); [Eleanor Dunbar Constable \(flowcountryriverstrust@gmail.com\)](#)
Subject: RE: Request for Scoping Opinion – Watten Wind Farm
Date: 30 June 2022 17:00:58
Attachments: [image001.png](#)

Dear Nicola,

Thank you for your correspondence concerning the Watten Wind Farm, my apologies for the delay in response.

Fisheries Management Scotland (FMS) represents the network of Scottish District Salmon Fishery Boards (DSFBs) including the River Tweed Commission (RTC), who have a statutory responsibility to protect and improve salmon and sea trout fisheries and the network of fishery trusts who provide a research, educational and monitoring role for all freshwater fish.

FMS act as a convenient central point for Scottish Government and developers to seek views on local developments. However, as we do not have the appropriate local knowledge, or the technical expertise to respond to specific projects, we are only able to provide a general response with regard to the potential risk of such developments to fish, their habitats and any dependent fisheries. Accordingly, our remit is confined mainly to alerting the relevant local DSFB/Trust to any proposal. The proposed development falls within the area relating to the Caithness DSFB and Flow Country Rivers Trust. It is important that the proposals are conducted in full consultation with the Board/Trust, and I should be grateful if they could be involved in the project proposals. I have also copied this response to the relevant personnel at both organisations.

Due to the potential for such developments to impact on migratory fish species and the fisheries they support, FMS have developed, in conjunction with Marine Scotland Science, advice for DSFBs and Trusts in dealing with planning applications. We would strongly recommend that these guidelines are fully considered throughout the planning, construction and monitoring phases of the proposed development.

- [LINK TO ADVICE ON TERRESTRIAL WINDFARMS](#)
- [LINK TO DSFB & TRUST CONTACT DETAILS](#)

Regards,

Brian

Brian Davidson | Dir Communications & Administration
 Fisheries Management Scotland
 11 Rutland Square, Edinburgh, EH1 2AS
 Tel: 0131 221 6567 | 075844 84602
www.fms.scot

A66

A67

From: [#GLA Safeguarding](#)
To: [Kennedy N \(Nicola\)](#)
Subject: RE: Request for Scoping Opinion – Watten Wind Farm
Date: 17 June 2022 10:32:54
Attachments: [image001.png](#)
[image363251.png](#)
[image065886.png](#)
[image967972.png](#)
[image051853.png](#)
[image351415.png](#)
[image446278.png](#)
[image900315.png](#)
[image620690.png](#)
[image701795.png](#)
[image053655.png](#)
[image843328.jpg](#)

This proposal is located outwith our consultation area. As such we have no comment to make and need not be consulted further.

Kind regards

Kirsteen



#GLA Safeguarding
#GLA Safeguarding

- 07808 115 881
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From: [Steve Thomson](#)
To: [Kennedy N \(Nicola\)](#); [Econsents Admin](#)
Cc: [Windfarm; Safeguarding](#)
Subject: Request for Scoping Opinion – Watten Wind Farm - formal response from Glasgow Prestwick Airport - 28th June 2022
Date: 28 June 2022 08:39:27
Attachments: [image002.jpg](#)
[image003.png](#)

Nicola

We have examined the Scoping Opinion consultation documents available on the Energy Consents Unit (ECU) Portal under **ECU00004509** in respect of Watten Wind Farm proposal.

On behalf of Glasgow Prestwick Airport (GPA) – the proposed development lies outwith the Airport’s safeguarding area - and consequently should this development be submitted as a full Section 36 Planning Application - GPA would have no aviation grounds to object to such a development.

With Kind Regards

Steve Thomson



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 United Kingdom

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 Manager Air Traffic Services

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A68

From: [JRC Windfarm Coordinations](#)
To: [Kennedy N \(Nicola\)](#)
Subject: Watten Wind Farm - Request for Scoping Opinion [WF218503]
Date: 08 June 2022 11:57:29

Dear nicola,

A Windfarms Team member has replied to your co-ordination request, reference **WF218503** with the following response:

Please do not reply to this email - the responses are not monitored.

If you need us to investigate further, then please use the link at the end of this response or login to your account for access to your co-ordination requests and responses.

Dear Nicola,

REF: ECU00004509

Name: Watten Wind Farm

Hub height: 139 m

Rotor diameter: 162 m

Turbines at NGR:

Turbine	Easting	Northing
1	320987	952728
2	321126	952090
3	321537	951859
4	320921	951062
5	320470	951529
6	320410	952101
7	319849	951479
8	319953	950803

JRC analyses proposals for wind energy developments on behalf of the UK Energy Industry. We assesses the potential of such developments to interfere with radio systems operated by UK and Irish Energy Industry companies in support of their regulatory operational requirements.

The Energy Industry considers that any wind energy development within:
 * 100m of a link operating below 1GHz; or
 * 500m of a link operating above 1GHz, requires detailed coordination.

For turbines with a blade diameter of 32m or less this distance is reduced to:
 * 500m for links below 1GHz; and
 * 300m for links above 1GHz before a detailed coordination is required.

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There is an EXCLUSION ZONE around most Base Station sites of 500m, i.e. no development is permitted. This will be evaluated on a case by case basis for smaller turbines.

Unfortunately, part (or all) of the proposed development breaches one or more of these limits.

The affected links are:

460MHZ: Telemetry and Telecontrol:

JESHCS1 to JESHCO14
 JESHCS1 to JESHCO17
 JESHVS1 to JESHVO04

Microwave Point to Point:

SCHY 0929295/1
 SCP25K BEN-A-CHIELT WIG
 SSE 0929295/2

Operated by: S&S Scottish Hydro, Scottish Gas Networks

Therefore **JRC OBJECTS TO THE PROPOSED DEVELOPMENT.**

Unfortunately, since these links form part of our critical national infrastructure, no details apart from the link identifiers can now be supplied, due to previous breaches in confidentiality.

However, JRC are still willing to work with developers in order to clear as many turbines as possible, including those that may initially fall within the coordination zone. For more information about what to do next, please contact us using the link at the bottom of this email.

The JRC objection shall be withdrawn after simple analysis shows no issues; when a satisfactory coordination has been achieved and the zone of protection is implemented; or when an appropriate mitigation agreement is in place.

NOTE:

The protection criteria determined for Energy Industry radio systems can be found at [Wind Farm Coordination | Joint Radio Company | JRC](#)

Regards

Wind Farm Team

Friars House
 Manor House Drive
 Coventry CV1 2TE
 United Kingdom

Office: 02476 932 185

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*JRC Ltd. is a Joint Venture between the Energy Networks Association (on behalf of the UK Energy Industries) and National Grid.
Registered in England & Wales: 2990041
[About The JRC | Joint Radio Company | JRC](#)*

We maintain your personal contact details in accordance with GDPR requirements for the purpose of 'Legitimate Interest' for communication with you. However, you have the right to be removed from our contact database. If you would like to be removed, please contact anita.lad@jrc.co.uk.

We hope this response has sufficiently answered your query. If not, please **do not send another email** as you will go back to the end of the mail queue, which is not what you or we need. Instead, **reply to this email by clicking on the link below or login to your account** for access to your co-ordination requests and responses.

<https://breeze.jrc.co.uk/tickets/view.php?auth=01xs2faaab1nmaaaY68lDoQyfsKGO%3D%3D>

A71



Nicola Kennedy
Energy Consents Unit
Scottish Government

Email: Econsents_admin@gov.scot

Date: 13th July 2022

Dear Nicola,

ELECTRICITY ACT 1989

THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017

REQUEST FOR SCOPING OPINION FOR PROPOSED SECTION 36 APPLICATION FOR WATTEN WIND FARM

Thank you for consulting RSPB Scotland on the above scoping report. RSPB Scotland is supportive of the development of renewable energy, but wind farms must be carefully sited to avoid negative impacts on sites and species of conservation importance.

We would like to make the following comments, which we hope will inform the EIA.

Designated Sites and Birds of Conservation Concern

The proposed development site is adjacent to the Caithness and Sutherland Peatlands Special Protection Area (SPA), Special Area of Conservation (SAC) and Ramsar site and the Shielton Peatlands Site of Special Scientific Interest (SSSI). The site is also within connectivity distance for all the qualifying species of the Caithness Lochs SPA. A number of the qualifying species of these sites could be affected by the proposal due to their use of the proposed site and surrounding area. There are also other species that are red or amber listed Birds of Conservation Concern¹, including curlew, redshank, oystercatcher, lapwing and snipe which are present in the area and could be affected by the development.

From the information available at this stage, it appears that there would be likely significant effects on the qualifying interests of Caithness and Sutherland Peatlands SPA and SAC and Caithness Lochs SPA from the proposed windfarm alone or in combination with other projects. Therefore, the EIA Report must include sufficient information to inform an Appropriate Assessment, as required by the [Conservation of Habitats and Species Regulations 2017](#).

Ornithological surveys and assessment

In general, we are content with the surveys undertaken and assessment proposed. However, we note that more than two years of field surveys has already been completed. A scoping exercise should help inform survey design. It is therefore disappointing to note that surveys have already been undertaken prior to this exercise.

¹ <https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/uk-conservation-status-explained/>

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The RSPB is part of BirdLife International, a partnership of conservation organisations working to give nature a home around the world.

Patron: Her Majesty the Queen Chairman of Council: Kevin Cox President: Miranda Krestovnikoff
Chairman, Committee for Scotland: Professor Colin Galbraith Director, RSPB Scotland: Anne McCall Operations Director, North Scotland: George Campbell
The Royal Society for the Protection of Birds (RSPB) is a registered charity: England and Wales no. 207076, Scotland no. SC037654

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Figure 7.4.1 shows that T1 is located outwith the viewshed of VP2 and therefore it seems that there is no recent flight activity data covering this location. This limitation should be recognised and justified within the EIAR. If this is not possible, the turbine should be removed from the final design as collision risk modelling will be underestimated.

Information should be provided within the EIA report to demonstrate that the survey data are adequate, robust and accurate including:

- Full information on the VP work undertaken, including dates, times and weather conditions.
- Maps showing VP locations that also denote viewsheds.
- Maps showing wader and raptor territory and roost centres and foraging areas.
- Worked example(s) of collision risk calculations.
- Provision of raw data in order independent verification of collision risk calculations.

The EIA should consider all the components of the proposal including turbines, battery compounds, borrow pits, access roads (including the route on public roads to get the turbines on site), on site tracks, drainage, grid connection, substation and temporary construction buildings/storage compounds. It should also assess the impacts of all phases of the project including site selection, design, construction, operation and maintenance.

Disturbance, displacement, loss of suitable habitat (breeding, wintering and foraging) and collision risk should be assessed for all scoped in species, both during construction and operation. This should not only include impacts from the wind turbines but also new tracks and infrastructure as well as any existing road widening or upgrades.

Herring gull and East Caithness Cliffs SPA

We note the high level of herring gull activity over the site (Table 7.4.1) and suggest impacts on this red-listed Bird of Conservation Concern should be considered in the EIAR in isolation and in-combination with other projects. There is also potential connectivity to the East Caithness Cliffs SPA which is designated for its breeding population of herring gull and so we suggest impacts are assessed against this population with regards to collision risk and barrier effects. Therefore, we do not agree that East Caithness Cliffs SPA can be scoped out of the EIA at this stage.

Curlew and other wading birds

The high number of curlew territories identified on the site to date (12) is notable. Curlew was identified as a high conservation priority in a paper authored by RSPB and statutory agencies in 2015². This highlights that the UK supports 19-27% of the global population and the long-term trend shows a 64% decline from 1970 to 2014 (from BTO Breeding Bird Survey data³). This, combined with the bird's global status of Near Threatened, indicates that the curlew is one of the most pressing bird conservation priorities in the UK. This was emphasised by its classification as a red listed species of conservation concern in December 2015⁴ and the recent publication of the updated version⁵ sadly confirms it remains in this category.

Curlews are territorial and habitually return to breed in the same areas of open ground dominated by rough damp grassland or heath, which are abundant on and around this site. They show behavioural

² Brown, D., Wilson, J., Douglas, D., Thompson, P., Foster, S., McCulloch, N., Phillips, J., Stroud, D., Whitehead, S., Crockford, N., & Sheldon, R. 2015. The Eurasian Curlew – the most pressing bird conservation priority in the UK? *Brit. Birds* 108: 660–668.

³ <https://www.bto.org/volunteer-surveys/bbs/latest-results/population-trends>

⁴ Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* 108, 708–746

⁵ https://britishbirds.co.uk/sites/default/files/BB_Dec21-BoCC5-IUCN2.pdf

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avoidance up to 800m from turbines⁶ and breeding densities may be reduced by up to 42% within a 500m buffer and there is currently no evidence of recovery to pre-construction levels during operation^{9,7}.

A displacement assessment of breeding pairs should be undertaken, and infrastructure should avoid the areas with highest breeding density. The mitigation hierarchy should be followed and mitigation and compensatory actions for this species should be suggested within a Habitat Management Plan if avoidance of impacts is not possible.

We note other farmland wader species such as snipe, lapwing and oystercatcher were also recorded breeding on the site. These species should also be included in the assessment due to their declining populations.

It is not clear if golden plovers commute to the site to feed from breeding sites in the designated peatlands to the south of the proposed development. Golden plovers are also known to use traditional feeding sites during the breeding season and will commute long distances from breeding sites on blanket bog to these in-bye areas to feed, often at night^{8,9}. In-bye fields are very important for pre-breeding birds and 'off-duty' breeding birds in terms of helping them attain and maintain body condition for successful breeding. This should be examined as part of the assessment.

Other assessment comments

We note that section 7.3.8 states that the Caithness and Sutherland Peatlands SAC will be scoped out of the assessment due to the river boundary. However, otter is a qualifying species of the SAC with potential connectivity to the site and signs of them found on the site. Therefore, we do not agree that Caithness and Sutherland Peatland SAC should be scoped out.

Cumulative Impacts

We are increasingly concerned about the cumulative effects on birds as a result of the high number of operational, consented and planned wind farm developments across the Flow Country.

A robust cumulative assessment of collision risk, disturbance, displacement and barrier effects should take account of **all operational, consented and proposed wind energy schemes** that could impact on bird populations of both the relevant NHZ (5: The Peatlands of Caithness and Sutherland), the Caithness and Sutherland Peatlands SPA, Caithness Lochs SPA and East Caithness Cliffs SPA. The in-combination effect of other relevant plans or projects such as grid connection and forestry projects should also be considered.

Cumulative impacts of habitat loss of Annex 1 habitats such as blanket bog should also be assessed.

Peatland and Carbon Assessment

The Proposed Development lies on areas of Class 1, Class 3, Class 4 and Class 5 peatland (Figure 7.5.2). Class 1 peat indicates nationally important carbon-rich soils, deep peat and priority peatland habitat and is likely to be of high conservation value. We note, however, that much of the Class 1 peat on site is overlain by commercial forestry.

⁶ Pearce-Higgins, J.W., S.L., Langston, R.H.W., Bainbridge, I.P. and Bullman, R. (2009), The distribution of breeding birds around upland wind farms, *Journal of Applied Ecology*, 46: 1323-1331.

⁷ Pearce-Higgins, J.W., Stephen, L., Douse, A. and Langston, R.H.W. (2012) Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology*, 49:386-394.

⁸ Osgathorpe, L. The use of in-bye farmland and fields by breeding golden plover at RSPB Forsinard, Sutherland (MSc research project)

⁹ O'Connell, M.J., Thomas, C.J., Twiss, S.D., Downie, I.S., Evans, P.R. & Whitfield, D.P. (1996). Functional Ecology of Peatland Animals in the Flow Country of Northern Scotland. I. Habitat Requirements of Breeding Waders (Charadrii). RASD Report. Scottish Natural Heritage, Edinburgh.

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In such carbon rich, peatland areas, Scottish Planning Policy states that further consideration will be required to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation.

The mitigation hierarchy must be followed, with impacts on peat and peatland habitats avoided and minimised where possible. The final infrastructure design should avoid deep peat over 50cm and any sensitive Annex 1 habitats. Suitable track construction should be planned across peatland areas.

Mitigation, Compensation and Habitat Management Plan

The Scoping Report indicates that a number of Schedule 1 and 1A bird species nest or roost in the vicinity of the development. The final design should ensure that there is an appropriate buffer from these important sites and that any Breeding Bird Protection Plan for the construction period should ensure the maximum safe working distances outlined in Ruddock & Whitfield (2007)¹⁰ and any relevant NatureScot guidance is adhered to i.e., at least 500m from merlin nests, 750m from osprey nests and 750m from hen harrier roost sites as per the maximum safe distances. NatureScot guidance¹¹ also suggests that "risk of "harassment" of roosting [hen harriers] can be minimised by avoiding activity overnight and within two hours of dusk (two hours before official sunset time) and dawn (two hours after official sunrise time)."

We note that the Applicant intends to investigate opportunities for habitat restoration or enhancements and that a Habitat Management Plan will be developed. We strongly support the production of an outline Habitat Management Plan (HMP) and Species Protection Plan (SPP), including any proposals for mitigation and/or enhancement in relation to important habitats and species, and an indication of size of any areas to be restored. This should have sufficient detail to allow consideration of its feasibility and effectiveness in providing any proposed mitigation and/or compensation and enhancement. The HMP, or other document, should also include information on post-construction monitoring of birds, including reporting of collision mortality.

Once impacts are mitigated, opportunities to enhance the site for biodiversity should be taken. We believe that development should leave nature in a better state than before it took place and welcome draft NPF4's commitment to deliver positive effects for biodiversity through development. Draft Policy 3 states that, 'Development proposals for national, major and of EIA development ... should only be supported where it can be demonstrated that the proposal will conserve and enhance biodiversity, including nature networks within and adjacent to the site, so that they are in a demonstrably better state than without intervention, including through future management.'

Although at the time of writing, the final wording in NPF4 is yet to be approved, it may be finalised by the time the application is determined and early consideration of how positive effects for biodiversity will be delivered is encouraged.

Without prejudice to any future position, we note that there seems to be potential for forest-to-bog restoration on the site (forestry located on Class 1 peatland) and we would strongly recommend this is considered as part of the applicant's enhancement proposals. This would be in line with current forestry policy¹² to withdraw forest edges 800m from the Caithness and Sutherland Peatlands SPA.

The HMP must also include a comprehensive monitoring programme for any habitat improvements, breeding birds on the site and SPA-featured species.

If you wish to discuss any of the above, please do not hesitate to contact me.

¹⁰ <https://www.nature.scot/sites/default/files/2018-05/A%20Review%20of%20Disturbance%20Distances%20in%20Selected%20Bird%20Species%20-%20Natural%20Research%20Ltd%20-%202007.pdf>

¹¹ <https://www.nature.scot/doc/implications-additional-protection-hen-harrier-red-kite-and-golden-eagle-under-schedules-a1-1a>

¹² <https://forestry.gov.scot/publications/3-guidance-to-forest-managers-preparing-forest-plans-within-the-caithness-and-sutherland-peatlands-sac-spa>

A75

Yours sincerely,

REDACTED

Bea Ayling
Conservation Officer
bea.ayling@rspb.org.uk

A76

Marine Scotland Science advice on freshwater and diadromous fish and fisheries in relation to onshore wind farm developments.

July 2020 updated April 2022

Marine Scotland Science (MSS) provides internal, non-statutory, advice in relation to freshwater and diadromous fish and fisheries to the Scottish Government's Energy Consents Unit (ECU) for onshore wind farm developments in Scotland.

Atlantic salmon (*Salmo salar*), sea trout and brown trout (*Salmo trutta*) are of high economic value and conservation interest in Scotland and for which MSS has in-house expertise. Onshore wind farms are often located in upland areas where salmon and trout spawning and rearing grounds may also be found. MSS aims, through our provision of advice to ECU, to ensure that the construction and operation of these onshore developments do not have a detrimental impact on the freshwater life stages of these fish populations.

The Electricity Works (Environmental Impact Assessment) (EIA) (Scotland) Regulations (2017) state that the EIA must assess the direct and indirect significant effects of the proposed development on water and biodiversity, and in particular species (such as Atlantic salmon) and habitats protected under the EU Habitats Directive. Salmon and trout are listed as priority species of high conservation interest in the Scottish Biodiversity Index and support valuable recreational fisheries.

A good working relationship has been developed over the years between ECU and MSS, which ensures that these fish species are considered by ECU during all stages of the application process of onshore wind farm developments and are similarly considered during the construction and operation of future onshore wind farms. It is important that matters relating to freshwater and diadromous fish and fisheries, particularly salmon and trout, continue to be considered during the construction and operation of future onshore wind farms.

In the current document, MSS sets out a revised, more efficient approach to the provision of our advice, which utilises our generic scoping and monitoring programme guidelines (<https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/Freshwater/Research/onshoreren>). This standing advice provides regulators (e.g. ECU, local planning authorities), developers and consultants with the information required at all stages of the application process for onshore wind farm developments, such that matters relating to freshwater and diadromous fish and fisheries are addressed in the same rigorous manner as is currently being carried out and continue to be fully in line with EIA regulations. At the request of ECU, MSS will still be able to provide further and/or bespoke advice relevant to freshwater and diadromous fish and fisheries e.g. site specific advice, at any stage of the application process for a proposed development, particularly where a development may be considered sensitive or contentious in nature.

MSS will continue undertaking research, identifying additional research requirements, and keep up to date with the latest published knowledge relating to the

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impacts of onshore wind farms on freshwater and diadromous fish populations. This will be used to ensure that our guidelines and standing advice are based on the best available evidence and also to continue the publication of the relevant findings and knowledge to all stakeholders including regulators, developers and consultants.

MSS provision of advice to ECU

- MSS should not be asked for advice on pre application and application consultations (including screening, scoping, gate checks and EIA applications). Instead, the MSS scoping guidelines and standing advice (outlined below) should be provided to the developer as they set out what information should be included in the EIA report;
- if new issues arise which are not dealt with in our guidance or in our previous responses relating to respective developments, MSS can be asked to provide advice in relation to proposed mitigation measures and monitoring programmes which should be outlined in the EIA Report (further details below);
- if new issues arise which are not dealt with in our guidance or in our previous responses, MSS can be asked to provide advice on suitable wording, within a planning condition, to secure proposed monitoring programmes, should the development be granted consent;
- MSS cannot provide advice to developers or consultants, our advice is to ECU and/or other regulatory bodies.
- if ECU has identified specific issues during any part of the application process that the standing advice does not address, MSS should be contacted.

MSS Standing Advice for each stage of the EIA process

Scoping

MSS issued generic scoping guidelines (<https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/Freshwater/Research/onshoreren>) which outline how fish populations can be impacted during the construction, operation and decommissioning of a wind farm development and informs developers as to what should be considered, in relation to freshwater and diadromous fish and fisheries, during the EIA process.

In addition to identifying the main watercourses and waterbodies within and downstream of the proposed development area, developers should identify and consider, at this early stage, any areas of Special Areas of Conservation where fish are a qualifying feature and proposed felling operations particularly in acid sensitive areas.

If a developer identifies new issues or has a technical query in respect of MSS generic scoping guidelines then ECU should be informed who will then co-ordinate a response from MSS.

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Gate check

The detail within the generic scoping guidelines already provides sufficient information relating to water quality and salmon and trout populations for developers at this stage of the application.

Developers will be required to provide a gate check checklist (annex 1) in advance of their application submission which should signpost ECU to where all matters relevant to freshwater and diadromous fish and fisheries have been presented in the EIA report. Where matters have not been addressed or a different approach, to that specified in the advice, has been adopted the developer will be required to set out why.

EIA Report

MSS will focus on those developments which may be more sensitive and/or where there are known existing pressures on fish populations (<https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/fishreform/licence/status/Pressures>). The generic scoping guidelines should ensure that the developer has addressed all matters relevant to freshwater and diadromous fish and fisheries and presented them in the appropriate chapters of the EIA report. Use of the gate check checklist should ensure that the EIA report contains the required information; the absence of such information may necessitate requesting additional information which may delay the process:

Developers should specifically discuss and assess potential impacts and appropriate mitigation measures associated with the following:

- any designated area, for which fish is a qualifying feature, within and/or downstream of the proposed development area;
- the presence of a large density of watercourses;
- the presence of large areas of deep peat deposits;
- known acidification problems and/or other existing pressures on fish populations in the area; and
- proposed felling operations.

Post-Consent Monitoring

MSS recommends that a water quality and fish population monitoring programme is carried out to ensure that the proposed mitigation measures are effective. A robust, strategically designed and site specific monitoring programme conducted before, during and after construction can help to identify any changes, should they occur, and assist in implementing rapid remediation before long term ecological impacts occur.

MSS has published guidance on survey/monitoring programmes associated with onshore wind farm developments (<https://www2.gov.scot/Topics/marine/Salmon-Trout-Coarse/Freshwater/Research/onshoreren>) which developers should follow when drawing up survey and/or monitoring programmes.

3

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If a developer considers that such a monitoring programme is not required then a clear justification should be provided.

Planning Conditions

MSS advises that planning conditions are drawn up to ensure appropriate provision for mitigation measures and monitoring programmes, should the development be given consent. We recommend, where required, that a Water Quality Monitoring Programme, Fisheries Monitoring Programme and the appointment of an Ecological Clerk of Works, specifically in overseeing the above monitoring programmes, is outlined within these conditions and that MSS is consulted on these programmes.

Wording suggested by MSS in relation to water quality, fish populations and fisheries for incorporation into planning consents:

1. No development shall commence unless a Water Quality and Fish Monitoring Plan (WQFMP) has been submitted to and approved in writing by the Planning Authority in consultation with Marine Scotland Science and any such other advisors or organisations.
2. The WQFMP must take account of the Scottish Government's Marine Scotland Science's guidelines and standing advice and shall include:
 - a. water quality sampling should be carried out at least 12 months prior to construction commencing, during construction and for at least 12 months after construction is complete. The water quality monitoring plan should include key hydrochemical parameters, turbidity, and flow data, the identification of sampling locations (including control sites), frequency of sampling, sampling methodology, data analysis and reporting etc.;
 - b. the fish monitoring plan should include fully quantitative electrofishing surveys at sites potentially impacted and at control sites for at least 12 months before construction commences, during construction and for at least 12 months after construction is completed to detect any changes in fish populations; and
 - c. appropriate site specific mitigation measures detailed in the Environmental Impact Assessment and in agreement with the Planning Authority and Marine Scotland Science.
3. Thereafter, the WQFMP shall be implemented within the timescales set out to the satisfaction of the Planning Authority in consultation with Marine Scotland Science and the results of such monitoring shall be submitted to the Planning Authority on a 6 monthly basis or on request.

Reason: To ensure no deterioration of water quality and to protect fish populations within and downstream of the development area.

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Sources of further information

NatureScot (previously “SNH”) guidance on wind farm developments - <https://www.nature.scot/professional-advice/planning-and-development/advice-planners-and-developers/renewable-energy-development/onshore-wind-energy/advice-wind-farm>

Scottish Environment Protection Agency (SEPA) guidance on wind farm developments – <https://www.sepa.org.uk/environment/energy/renewable/#wind>

A joint publication by Scottish Renewables, NatureScot, SEPA, Forestry Commission Scotland, Historic Environment Scotland, MSS and Association of Environmental and Ecological Clerks of Works (2019) Good Practice during Wind Farm Construction - <https://www.nature.scot/guidance-good-practice-during-wind-farm-construction>.

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Annex 1

Marine Scotland Science advice on freshwater and diadromous fish and fisheries in relation to onshore wind farm developments.

July 2020, updated April 2022

MSS – EIA Checklist

The generic scoping guidelines should ensure that all matters relevant to freshwater and diadromous fish and fisheries have been addressed and presented in the appropriate chapters of the EIA report. Use of the checklist below should ensure that the EIA report contains the following information; the absence of such information **may necessitate requesting additional information** which could delay the process:

MSS Standard EIA Report Requirements	Provided in application YES/NO	If YES – please signpost to relevant chapter of EIA Report	If not provided or provided different to MSS advice, please set out reasons.	ECU/MSS use - comments
1. A map outlining the proposed development area and the proposed location of: <ul style="list-style-type: none"> ○ the turbines, ○ associated crane hard standing areas, ○ borrow pits, ○ permanent meteorological masts, ○ access tracks including watercourse crossings, ○ all buildings including substation, battery storage; ○ permanent and temporary construction compounds; ○ all watercourses; and ○ contour lines; 				

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2. A description and results of the site characterisation surveys for fish (including fully quantitative electrofishing surveys) and water quality including the location of the electrofishing and fish habitat survey sites and water quality sampling sites on the map outlining the proposed turbines and associated infrastructure;				
3. An outline of the potential impacts on fish populations and water quality within and downstream of the proposed development area;				
4. Any potential cumulative impacts on the water quality and fish populations associated with adjacent (operational and consented) developments including wind farms, hydro schemes, aquaculture and mining;				
5. Any proposed site specific mitigation measures as outlined in MSS generic scoping guidelines and the joint publication "Good Practice during Wind Farm Construction" (https://www.nature.scot/guidance-good-practice-during-wind-farm-construction);				

6. Full details of proposed monitoring programmes using guidelines issued by MSS and accompanied by a map outlining the proposed sampling and control sites in addition to the location of all turbines and associated infrastructure (see wording suggested by MSS for planning conditions).				
7. A decommissioning and restoration plan outlining proposed mitigation/monitoring for water quality and fish populations.				

Developers should specifically discuss and assess potential impacts and appropriate mitigation measures associated with the following:	Provided in application YES/NO	If YES – please signpost to relevant chapter of EIA Report	If not provided or provided different to MSS advice, please set out reasons.	ECU/MSS use - comments
8. Any designated area (i.e. SAC), for which fish is a qualifying feature, within and/or downstream of the proposed development area;				
9. The presence of a large density of watercourses;				
10. The presence of large areas of deep peat deposits;				
11. Known acidification problems and/or other existing pressures on fish populations in the area; and				
12. Proposed felling operations.				

Technical Appendix

A6.1

Landscape and Visual Impact Assessment Methodology

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Glossary

Term	Definition
Baseline studies	<i>'Work done to determine and describe the environmental conditions against which future changes can be measured or predicted and assessed.'</i> **
Characteristics	<i>'Elements or combinations of elements, which make a contribution to distinctive landscape character.'</i> **
Cumulative Landscape & Visual Impact Assessment	To identify, predict and evaluate potential key effects arising from the addition of the Proposed Development to a theoretical baseline which includes the existing baseline situation of operational wind farms, those under construction, consented schemes and additionally wind farms currently being considered within the planning system that may or may not be present in the landscape in the future.
Direct effect	<i>'An effect that is directly attributable to the proposed development.'</i> **
Environmental Impact Assessment	Environmental Impact Assessment (EIA) is a means of drawing together by the developer, in a systematic way, a description of the development and information relating to the likely significant environmental effects arising from the Proposed Development.
Environmental Impact Assessment Regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5
Geographical Information System	<i>'A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.'</i> **
Indirect effects	<i>'Indirect effects that result indirectly from the proposed project as a consequence of the direct effects., often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.'</i> **
Key characteristics	<i>'Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place'</i> **
Landcover	<i>'The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.'</i> **
Land Use	<i>'What land is used for, based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.'</i> **
Landform	<i>'The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.'</i> **
Landscape	<i>'An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.'</i> **
Landscape & Visual Impact Assessment	<i>'A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.'</i> **
Landscape character	<i>'A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.'</i> **

Landscape Character Areas (LCAs)	<i>'A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.'</i> **
Landscape Character Assessment	<i>'The process of identifying and describing variation in the character of the landscape and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscape distinctive. The process results in the production of a Landscape Character Assessment.'</i> **
Landscape Character Types	<i>'These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.'</i> **
Landscape effects	<i>'Effects on the landscape as a resource in its own right.'</i> **
Landscape quality (condition)	<i>'A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.'</i> **
Landscape receptors	<i>'Defined aspects of the landscape resource that have the potential to be affected by a proposal'</i> **
Landscape value	<i>'The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.'</i> **
Magnitude (of effect)	<i>'A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is reversible or irreversible and whether it is short or long term in duration.'</i> **
Panorama	<i>'An image covering a horizontal field of view wider than a single 50mm frame. Wirelines and photomontages may also be produced as panoramas.'</i> **
Perception	<i>'Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources an experiences).'</i> **
Photomontage	<i>'A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs'</i> **
Protected and designated landscapes	<i>'Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.'</i> **
Receptors	<i>'See Landscape receptors and Visual receptors.'</i> **
Scoping	<i>'The process of identifying the issues to be addressed by an EIA. It is a method of ensuring that an EIA focuses on the important issues and avoids those that are considered to be less significant.'</i> **
Sensitivity	<i>'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 receptor.'</i> **
Significance	<i>'A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to environmental topic'</i> **
Susceptibility	<i>'The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences.'</i> **
The 'Applicant'	The Applicant is 'EDF Energy Renewables Limited' and will be referred to as the 'Applicant'
The Proposed Development	The proposed Watten Wind Farm development

The Proposed Development Area	The area within the red line boundary where the Proposed Development will be located (application area)
Tranquillity	<i>'A state of calm and quietude associated with peace, considered to be a significant asset of landscape.'</i> *
Visual amenity	<i>'The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.'</i> *
Visual effects	<i>'Effects on specific views and on the general visual amenity experienced by people.'</i> *
Visual receptors	<i>Individuals and/or defined groups of people who have the potential to be affected by a proposal.'</i> *
Visualisation	<i>'A computer simulation, photomontage or other technique illustrating the predicted appearance of a development.'</i> *

List of Abbreviations

Abbreviation	Description
AGL	Above Ground Level
CMLI	Chartered Member of the Landscape Institute
CLVIA	Cumulative Landscape & Visual Impact Assessment
DSLR	Digital Single Lens Reflex
DTM	Digital Terrain Model
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ELC	European Landscape Convention
EOS	Electro-Optical System
FoV	Field of View
GIS	Geographical Information Systems
GLVIA3	Guidelines for Landscape and Visual Impact Assessment, Third Edition
HES	Historic Environment Scotland
IEMA	Institute of Environmental Management and Assessment
km	Kilometre
LCA	Landscape Character Area
LCT	Landscape Character Type
LVIA	Landscape & Visual Impact Assessment
m	Metre
NPC	Natural Power Consultants Limited
OS	Ordnance Survey
PLI	Public Local Inquiry
RVAA	Residential Visual Amenity Assessment
SNH	Scottish Natural Heritage (now NatureScot)
THC	The Highland Council
ZTV	Zone of Theoretical Visibility

A6.1. Introduction

A6.1.1. This Technical Appendix sets out in detail the methodology that has been applied to undertake the Landscape and Visual Impact Assessment (LVIA). The aim of the LVIA is to identify, predict and evaluate potential effects arising from the addition of Watten Wind Farm (herein referred to as the Proposed Development) on landscape and visual amenity.

A6.1.2. The LVIA has been prepared in accordance with the principles set out in the *Guidelines for Landscape and Visual Impact Assessment, Third Edition* (GLVIA3)¹ (Landscape Institute, Institute of Environmental Management and Assessment (IEMA), 2013), and professional judgement is applied to the assessment of effects and a reasoned justification presented in respect of the findings.

A6.1.3. GLVIA3 describes LVIA as:

'Landscape and Visual Impact Assessment is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and people's views and visual amenity.' (GLVIA3, paragraph 1.1).

Definition of Landscape & Visual Amenity

A6.1.4. Although closely related, landscape and visual amenity are considered separately in the LVIA in accordance with best practice (GLVIA3, 2013) and are distinguished as follows:

- **Landscape:** Is defined by the European Landscape Convention (ELC)² as “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”. (ELC, 2000) Factors contributing to landscape character include the interaction of both natural (geology, soils, climate, flora, and fauna) and cultural (historical and current impacts of land use, settlement, enclosure, and other human interventions), which are perceived by people; and
- **Visual Amenity:** Relates to the views people have, and their visual amenity *'meaning the overall pleasantness of the views they enjoy of their surroundings.'* (GLVIA3, paragraph 2.20).

A6.1.5. This methodology is structured as follows:

- Assessment Guidance;
- Key Stages of the LVIA;
- Landscape and Visual Amenity Baseline;
- Landscape and Visual Effects;

- Cumulative Assessment;
- Effects from Aviation Lighting;
- Judging the Levels of Significance; and
- Supporting Figures and Visualisations.

A6.2. Assessment Guidance

A6.2.1. In addition to GLVIA3, the LVIA takes account of the following guidance documents:

- *GLVIA3 Statement of Clarification 1/13 10-06-13* (Landscape Institute, 2013)³;
- *Siting and Designing Wind Farms in the Landscape, Guidance, Version 3a* (SNH, 2017)⁴;
- *Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland.* (SNH, Historic Environment Scotland, 2018)⁵;
- *General pre-application and scoping advice for onshore wind farms, Guidance* (NatureScot, 2022)⁶;
- *Landscape Character Assessment, Guidance for England and Scotland,* (The Countryside Agency and Scottish Natural Heritage (SNH) 2002 Edition)⁷;
- *Technical Guidance Note 02/21, Assessing landscape value outside national designations* (Landscape Institute, 2021)⁸;
- *Technical Information Note 01/2017 (Revised), Tranquillity – An overview* (Landscape Institute, 2017)⁹;
- *Assessing impacts on Wild Land Areas – Technical Guidance* (NatureScot, 2020)¹⁰;
- *Assessing the Cumulative Impact of Onshore Developments* (SNH, 2021)¹¹;

¹ Landscape Institute, Institute of Environmental Management and Assessment. (2013) *Guidelines for Landscape and Visual Impact Assessment, Third Edition*. Routledge. London.

² Council of Europe. Council of Europe Landscape Convention (2000) *European Landscape Convention*. Strasbourg: Council of Europe.

³ Landscape Institute. (2013) *GLVIA3 Statement of Clarification 1/13 10-06-13* Available from – <https://www.landscapeinstitute.org/technical-resource/glvia3-clarifications/> [Accessed 02/08/2023]

⁴ SNH (2017) *Siting and Designing Wind Farms in the Landscape, Guidance, Version 3a* Available from - <https://www.nature.scot/doc/siting-and-designing-wind-farms-landscape-version-3a> [Accessed 02/08/2023]

⁵ SNH, Historic Environment Scotland (2018) *Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland.* Available from - <https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf> [Accessed 02/08/2023]

⁶ NatureScot (2022) *General pre-application and scoping advice for onshore wind farms, Guidance* Available from - <https://www.nature.scot/doc/general-pre-application-and-scoping-advice-onshore-wind-farms> [Accessed 02/08/2023]

⁷ Land Use Consultants., Swanwick. C. (2002) *Landscape Character Assessment Guidance for England and Scotland*. Cheltenham. The Countryside Agency, Scottish Natural Heritage.

⁸ Landscape Institute (2021) *Technical Guidance Note 02/21, Assessing landscape value outside national designations.* Available from – <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2021/05/tgn-02-21-assessing-landscape-value-outside-national-designations.pdf> [Accessed 02/08/2023]

⁹ Landscape Institute (2017) *Technical Information Note 01/2017 (Revised) Tranquillity – An overview.* Available from - <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2017/02/Tranquillity-An-Overview-1-DH.pdf> [Accessed 02/08/2023]

¹⁰ NatureScot (2020) *Assessing impacts on Wild Land Areas – technical guidance* Available from - <https://www.nature.scot/doc/assessing-impacts-wild-land-areas-technical-guidance> [Accessed 02/08/2023]

¹¹ NatureScot (2021) *Assessing the Cumulative Impact of Onshore Developments* Available from - <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments> [Accessed 02/08/2023]

- *Technical Guidance Note 2/19, Residential Visual Amenity Assessment (RVAA)* (Landscape Institute, 2019)¹²;
- *Visual Representation of Wind Farms, Version 2.2*, (SNH, 2017)¹³;
- *Technical Guidance Note 06/19, Visual Representation of Development Proposals* (Landscape Institute, 2019)¹⁴;
- *Visualisation Standards for Wind Energy Developments* (The Highland Council, 2016)¹⁵;
- *Guidance on Undertaking Environmental Lighting Impact Assessments* (Institution of Lighting Professionals, 2013)¹⁶; and
- *Guidance Note 01/21 The Reduction of Obtrusive Light* (Institution of Lighting Professionals, 2021)¹⁷.

A6.3. Key Stages of the LVIA

A6.3.1. Assessing the potential effects of the Proposed Development on landscape and visual amenity requires a number of stages. These are broadly summarised as follows:

- Establish a suitable study area for undertaking the assessment of the Proposed Development;
- Identify the landscape and visual receptors affected by the Proposed Development;
- Determine the sensitivity of each receptor or group by evaluating the value and susceptibility of the receptor to the Proposed Development;
- Establish the magnitude of change that would result from the Proposed Development considering factors such as the size and scale of the proposed change, the geographical extent, duration, and reversibility of the change; and
- Determine and evaluate the nature of the effect, ultimately forming a judgement with respect to the significance of the effect in the context of the Electricity Works (Environmental Impact Assessment (Scotland) Regulations (2017). An EIA Report is required where significant effects are considered likely and therefore the focus of the LVIA. This does not however mean that non-significant effects are not considered.

A6.3.2. GLVIA3 sets out the steps for undertaking the assessing of landscape effects (see Diagram A6.1) and visual effects (see Diagram A6.2) as follows:

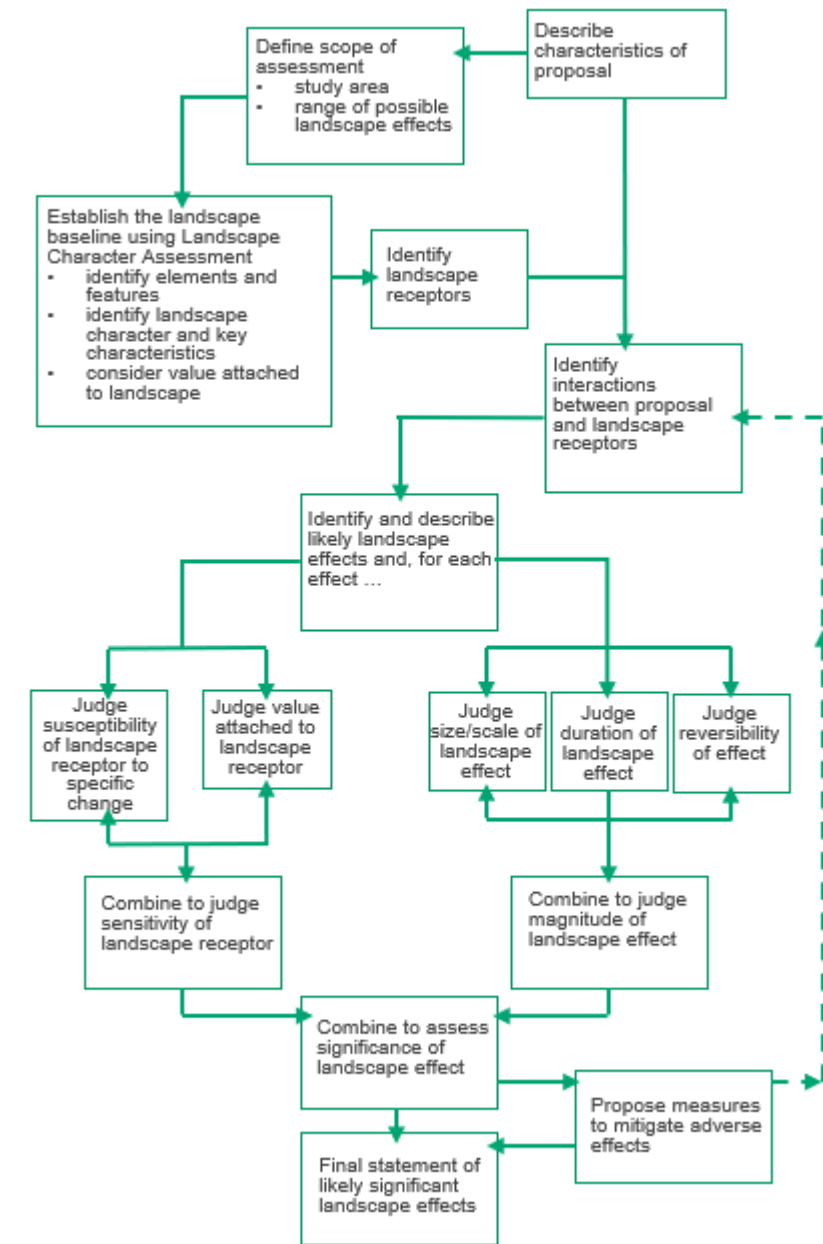


Diagram A6.1: Steps in assessing landscape effects (GLVIA3, 2013 – Figure 5.1)

Source: GLVIA, 2013

¹² Landscape Institute (2019) *Technical Guidance Note 2/19 Residential Visual Amenity Assessment (RVAA)*. Available from - <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/03/tgn-02-2019-rvaa.pdf> [Accessed 02/08/2023]

¹³ Scottish Natural Heritage (2017) *Visual Representation of Wind Farms, Guidance*. Available from - <https://www.nature.scot/sites/default/files/2019-09/Guidance%20-%20Visual%20representation%20of%20wind%20farms%20-%20Feb%202017.pdf> [Accessed 02/08/2023]

¹⁴ Landscape Institute (2019) *Technical Guidance Note 06/19 Visual Representation of Development Proposals*. Available from - https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf [Accessed 02/08/2023]

¹⁵ The Highland Council (2016) *Visualisation Standards for Wind Energy Developments*. Available from – <https://www.highland.gov.uk/downloads/file/12880/visualisation-standards-for-wind-energy-developments> [Accessed 02/08/2023]

¹⁶ Institution of Lighting Professionals (2013) *Professional Lighting Guide 04: Guidance on undertaking Environmental Lighting Impact Assessments..* Rugby. Institution of Lighting Professionals.

¹⁷ Institution of Lighting Professionals (2021) *Guidance Note GN01/21 The Reduction of Obtrusive Light*. Rugby. Institution of Lighting Professionals

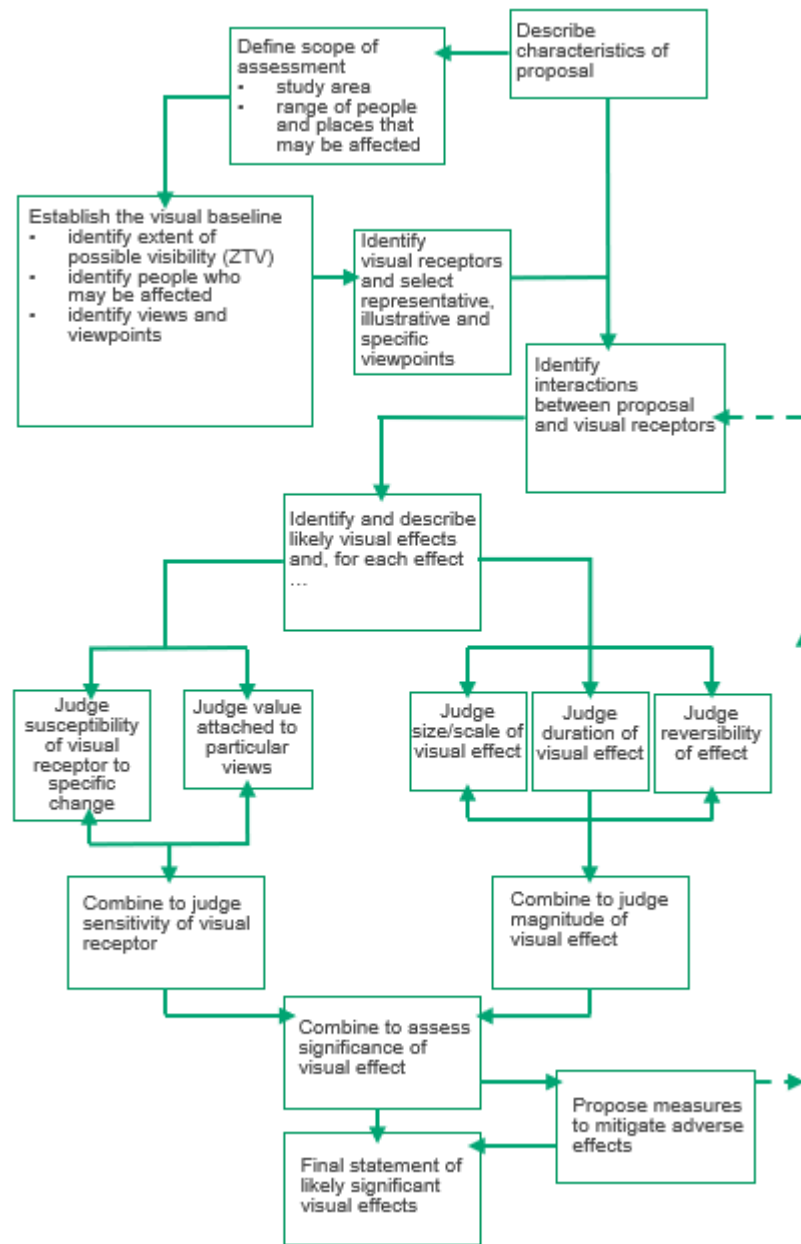


Diagram A6.2: Steps in assessing visual effects (GLVIA3, 2013 – Figure 6.1)

Source: GLVIA, 2013

A6.3.3. Diagrams A6.1 and A6.2 show an iterative process as the design of the Proposed Development evolves and further information becomes available during the EIA.

Scope of Assessment

LVIA Study Area

A6.3.4. The first step of the LVIA is to establish the extent of the study area where significant landscape and visual effects are likely to arise. NatureScot guidance (2017)¹⁸, recommends an initial study area based on the maximum turbine tip-height. For turbines in excess of 150 m, a 45 km study area is recommended from the outermost turbines. Figure 6.1 of the EIA shows the extent of the LVIA study area for the Proposed Development. .

A6.3.5. It should be noted that the boundary of the study area is not the limit of potential visibility of the Proposed Development.

Cumulative Study Area

A6.3.6. For the cumulative assessment, an initial study area of 60 km has been identified in accordance with NatureScot guidance (2021)¹⁹. Data has been collected for sites within 60 km and a review undertaken of sites that are likely to be experienced in conjunction with the Proposed Development through analysis of Zone of Theoretical Visibility (ZTV) mapping and wirelines. Following a site visit, the cumulative study area has been refined to 20 km (see Figure 6.2 and Technical Appendix A6.2) as it is within this area that it was considered that significant cumulative effects are likely to occur.

A6.3.7. The extent of the LVIA study area was agreed through consultation with The Highland Council (THC) at Scoping stage.

Identification of Landscape and Visual Receptors

A6.3.8. Once the study area has been defined, the next step is to establish how the Proposed Development may give rise to landscape and visual effects. This is established through an understanding of the following:

- **Integrated design:** evolution of the design and layout of the Proposed Development (see Chapter 4: Site Selection and Design Evolution);
- **ZTV mapping:** to establish the extent of theoretical visibility (see Figures 6.3a – b, 6.4, and 6.5);
- **Desk-based Study:** a desk-based study has been undertaken to identify landscape and visual receptors, using data listed in Section A6.4 of this Technical Appendix, and ZTV figures noted above;
- **Field work:** to verify landscape and visual receptors identified in the desk-based study;
- **Understanding of project components:** through construction, operation, and maintenance, and decommissioning phases (see Chapter 5: Project Description); and
- **Consultation:** with THC and NatureScot through scoping, a pre-application design meeting and subsequent post-scoping correspondence (see Table 6.4, Chapter 6: Landscape and Visual).

A6.3.9. This forms the basis of the assessment and aids the identification of the landscape and visual baseline likely to be affected, referred to as landscape and visual receptors.

Zone of Theoretical Visibility Mapping

A6.3.10. ZTVs have been generated to aid the understanding of the extent of theoretical visibility of the Proposed Development from the initial feasibility stages, through the evolution of the layout design, and have informed the extent of the study area and identification of landscape and visual receptors that are likely to be affected.

¹⁸ Scottish Natural Heritage (2017) Visual Representation of Wind Farms, Guidance. Available from - <https://www.nature.scot/sites/default/files/2019-09/Guidance%20-%20Visual%20representation%20of%20wind%20farms%20-%20Feb%202017.pdf> [Accessed 02/08/2023]

¹⁹ NatureScot (2021) Assessing the Cumulative Impact of Onshore Developments Available from - <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments> [Accessed 02/08/2023]

- A6.3.11. ZTVs have been produced to show the maximum overall tip height and hub height of the proposed turbines, and to predict where aviation lighting will potentially be visible. The ZTVs are based on bare-ground and takes no account of the potential screening effects of intervening factors such as buildings, vegetation, recent modifications to landform, or weather conditions.
- A6.3.12. This represents the worst-case scenario and over represents the extent of visibility of the Proposed Development. It is important to note, ZTVs indicate areas from where the Proposed Development is theoretically visible within the study area and does not indicate the nature or magnitude of change to landscape or visual amenity.
- A6.3.13. A series of ZTV maps have also been produced to support the night-time assessment (see Figures 6.6 and 6.6a-g). The ZTVs provide an illustration of potential light intensities from the aviation lights, both as an overview, and individually for each lit turbine.

Field Survey

- A6.3.14. Site visits were undertaken periodically between September 2022 and April 2023 during periods of good visibility and included visits to the following locations:
- Proposed Development Area to verify landscape features within the application boundary;
 - Publicly accessible locations within the wider 45 km study area to identify and assess landscape character and protected and designated landscapes;
 - Viewpoint locations to micro-site for photography, undertake baseline photography, record baseline views, and assess the potential changes to the view (including those selected for night-time assessment). These were supported by wirelines showing the proposed turbines;
 - Settlements identified by the ZTV as potentially receiving theoretical visibility;
 - Route receptors including driving on roads and walking on Core Paths; and
 - Residential properties within 3 km of the Proposed Development where access was granted, and where access was denied from the nearest publicly accessible location.

Viewpoints

- A6.3.15. A selection of viewpoints has been chosen in consultation with THC and NatureScot to represent the views experienced towards the Proposed Development within the study area by various groups of people.
- A6.3.16. Day and night time viewpoint photography was undertaken by a professional photographer between September 2022 and April 2023 during periods of good visibility and is detailed further in Section A6.9 of this Technical Appendix.
- A6.3.17. Selected viewpoints include representative, specific, and illustrative views from publicly accessible locations, which are defined in GLVIA3 (paragraph 6.19) as:
- 'Representative viewpoints':** selected to represent the experience of different types of visual receptors, where larger number of viewpoints cannot all be included individually and where the significant effects are unlikely to

differ. For example, certain points may be chosen to represent the views of users of public footpaths and bridleways;

- Specific viewpoints:** chosen because they are key views and sometimes promoted viewpoints within the landscape, including for example scenic viewpoints from roads, specific local visitor attractions, viewpoints in areas that are particular noteworthy for visual and/or recreational amenity, such as landscapes with statutory landscape designations, or viewpoints with particular cultural landscape associations; and
- Illustrative viewpoints:** chosen specifically to demonstrate a particular effect or specific issue, which might be the restricted visibility at certain locations.'

- A6.3.18. Viewpoints are selected to take account of the viewing experience (such as static views from settlements and sequential views from routes), cumulative views of other developments and as far as possible are representative of the range of key visual receptors and view types (including panoramas, vistas, glimpsed views), as well as being located at varying distances, elevations, and orientations from the Proposed Development.

A6.4. Landscape and Visual Amenity Baseline

Landscape Baseline

- A6.4.1. Landscape is defined by the relationship between people and place and how different components of the natural environment such as geology, soils, climate, flora, and fauna; interact and are perceived alongside cultural and social components of historical and cultural land use, settlement, enclosure, and other human interventions.
- A6.4.2. Landscape is made up of individual features which, can be defined at a broad scale, as a distinct, recognisable, and consistent pattern of elements that makes one landscape different from another. NatureScot (2019)²⁰ database recognises this as Landscape Character Types (LCTs), which comprise geographical areas of particular combinations of landform, landcover and pattern conveying a sense of place defined at a scale of 1:50,000 and include a list of key characteristics.
- A6.4.3. Designated landscapes at national and local level are also included as broad-scale landscape receptors and include the special qualities which contributed to their reasons for designation.
- A6.4.4. The landscape receptors have also been identified through review of the following information:
- Landscape Character Assessment: Caithness and Sutherland – Landscape Evolution and Influences* (NatureScot, 2019)²¹;
 - Caithness and Sutherland landscape character assessment* (SNH, 1998)²²;
 - Supplementary Guidance Onshore Wind Energy Guidance* (THC, 2016)²³;
 - Supplementary Guidance, Landscape Sensitivity Appraisal: Black Isle, Surrounding Hills, and Moray Firth Coast Caithness* (THC, 2017)²⁴;
 - The special qualities of the National Scenic Areas* (SNH, 2010)²⁵;
 - Inventory of Gardens and Designed Landscapes* (Historic Environment Scotland);

²⁰ NatureScot (2021) *Scottish Landscape Character Types Map and Descriptions*. Available from - <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions> [Accessed 02/08/2023]

²¹ NatureScot (2019) *Landscape Character Assessment: Caithness and Sutherland - Landscape Evolution and Influences* Available from - <https://www.nature.scot/doc/landscape-character-assessment-caithness-and-sutherland-landscape-evolution-and-influences> [Accessed 02/08/2023]

²² Stanton, C. (1998) *Caithness and Sutherland landscape character assessment*. Scottish Natural Heritage. Battleby

²³ THC (2016) *Onshore Wind Energy Supplementary Guidance*. Available from - https://www.highland.gov.uk/downloads/file/16949/onshore_wind_energy_supplementary_guidance_nov_2016 [Accessed 02/08/2023]

²⁴ THC (2017) *Appendix 2, Landscape Sensitivity Appraisal, Black Isle, Surrounding Hills and Moray Coast Caithness*. Available from - https://www.highland.gov.uk/download/meetings/id/72331/item_11_booklet_a_-_landscape_sensitivity_appraisal [Accessed 02/08/2023]

²⁵ Scottish Natural Heritage (2010) *The special qualities of the National Scenic Areas*. Scottish Natural Heritage Commissioned Report No. 374 (iBids and Projectn. 648).

- *Wild Land Area Descriptions and Maps* (SNH, 2017)²⁶; and
- *Assessment of Highland Special Landscape Areas* (THC, 2011)²⁷.

A6.4.5. Legislation, policy, and guidance relevant to landscape and visual amenity are set out in Chapter 2: Legal and Policy.

Visual Amenity Baseline

A6.4.6. Visual amenity relates to people's views from static locations or when moving through the landscape and are usually grouped by what they are doing such as residents, road and recreational users, walkers, visitors, and workers etc. They include people living and working in the area, people travelling through the area on foot, road, rail or other forms of transport, people visiting promoted tourist attractions and landscapes, and people pursuing other recreational activities.

A6.4.7. The following have been considered in the visual baseline:

- Views from viewpoint locations;
- Settlements;
- Roads including A, B, and minor roads;
- Railway lines;
- Walking routes including archaeological trails and Core Paths;
- Selected hill tops;
- Promoted visitor attractions;
- Settlements; and
- Residential properties within 3 km of the Proposed Development.

A6.4.8. Operational wind farms and those under construction are considered in both the landscape and visual assessments and are referred to as **Scenario 1** developments and listed in Technical Appendix A6.2 and shown on Figures 6.13 and 6.14.

Night-time Baseline

A6.4.9. Night-time baseline lighting has been informed by the New World Atlas of Artificial Night Sky Brightness (2016)²⁸ and fieldwork from a number of landscape and visual receptor locations during twilight and hours of darkness. Additionally, viewpoint photography has been taken from a select number of viewpoints 30 minutes after sunset.

A6.5. Landscape and Visual Effects

A6.5.1. The terms 'impact' and 'effect' are distinguished in GLVIA3 (para, 1.15) as follows:

'impact', defined as the action being taken, and 'effect', defined as the change resulting from that action, and recommends that the terms should be used consistently in this way'

A6.5.2. The methodologies that are used to assess the potential effects on landscape and visual amenity are broadly similar but set out separately in this Technical Appendix to distinguish the differences between the two.

A6.5.3. Landscape and visual effects are defined in GLVIA3 as follows:

- **Landscape effects:** *'An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern here is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.'* (GLVIA3, Para 5.1); and
- **Visual effects:** *'An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity. The concern here is with assessing how the surroundings of individuals or groups of people may specifically be affected by the changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements.'* (GLVIA3, Para 6.1).

A6.5.4. In addition, this LVIA also considers the cumulative effect of the Proposed Development on the landscape and visual resource. In the LVIA, cumulative effects are defined as:

'the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments, taken together.' (SNH, 2021)

A6.5.5. The SNH guidance also defines the difference between landscape and visual cumulative effects as follows:

- **Cumulative landscape effects:** *'can impact on either the physical fabric or character of the landscape, or any special values attached to it'* (SNH, 2021); and
- **Cumulative visual effects:** *'occurs where the observer is able to see two or more developments from one viewpoint'* resulting in combined visibility or *'occur when the observer has to move to another viewpoint to see different developments'* (SNH, 2021).

A6.5.6. In the LVIA, potential effects are classified into one or more of the following:

- **Direct effects** to the physical landscape and restricted within the Proposed Development site boundary that arise from activities that form an integral part of the project. For example, the effects upon landform and vegetation that may be physically altered by the Proposed Development;
- **Indirect or Secondary effects** that arise from activities not explicitly forming part of the project or which arise subsequently as a result of an initial effect of the scheme. For example, effects on landscape character from the introduction of new elements that alter the recognisable pattern of elements that occurs consistently in a particular type of landscape;
- **Short-term effects** that persist for a limited period only, due for example to particular construction activities;
- **Medium to Long-term effects** which would persist for the foreseeable future, or which would give rise to an irreversible change to the baseline environment;
- **Residual effects** resulting from the scheme once the final design has been adopted and mitigation measures have been considered; and
- **Cumulative effects** associated with consented sites and those currently within the planning system.

A6.5.7. As a precautionary approach, effects on landscape character and visual amenity are considered in the LVIA to be adverse but it should be noted that not all people would experience effects on landscape character, views, and visual amenity as adverse, as people's perception of wind turbines vary between negative and positive attitudes. An additional point is that simply because wind turbines are visible from a particular location or receptor, this does

²⁶ NatureScot (2017) *Wild land map and descriptions*. Available from – <https://www.nature.scot/doc/wild-land-areas-map-and-descriptions-2014> [Accessed 02/08/2023]

²⁷ THC (2011) *Assessment of Highland Special Landscape Areas*. Available from – https://www.highland.gov.uk/downloads/file/2937/assessment_of_highland_special_landscape_areas [Accessed 02/08/2023]

²⁸ Falchi, Fabio., Cinzano, Pierantonio., Duriscoe, Dan., Kyba, Christopher C.M., Elvidge, Christopher D., Baugh, Kimberly., Portnov, Boris., Rybnikova, Nataliya A., Furgoni, Riccardo. (2016) *Supplement to: The New World Atlas of Artificial Night Sky Brightness*. Available from – <http://doi.org/10.5880/GFZ.1.4.2016.001> [Accessed 02/08/2023]

not mean that the effect is significant. In some instances, there may be likely significant effects on the landscape resource, but the Proposed Development may be in a location that does not affect visual amenity in a significant way. It is also possible that there may be likely significant effects on visual amenity without effects on the landscape resource.

Landscape Effects

- A6.5.8. Assessing effects of the Proposed Development on the landscape requires a number of steps broadly summarised as identifying sensitivity of the landscape receptor, establishing the magnitude or scale of the change likely as a result of the Proposed Development and ultimately forming a judgement with respect to the significance of the effect in the context of The Electricity Works (EIA) (Scotland) Regulations 2017). The identification of significant effects is important because those are the effects that are likely to carry more weight in the decision making (or often referred to as the planning balance). This does not however mean that non-significant effects are not considered.

Sensitivity of Landscape Receptors

- A6.5.9. GLVIA3 states that sensitivity of the landscape should be defined by analysing the susceptibility of the landscape receptor to the proposed change (the Proposed Development) and the value of the landscape receptor.

Landscape Value

- A6.5.10. Landscape value can be indicated by designation with reference to their importance (international, national, regional, and local level), or with reference to a specific feature or element of the landscape. Landscape value may also be expressed by other factors described in Box 5.1 (GLVIA3, page 84) which can aid the identification of valued landscapes as follows:

- **Landscape quality (condition):** *A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, intactness of the landscape and the condition of individual elements;*
- **Scenic quality:** *The term used to describe landscapes that appeal primarily to the senses (primarily but not wholly the visual senses);*
- **Rarity:** *The presence of rare elements or features in the landscape or the presence of a rare Landscape Character Type;*
- **Representativeness:** *Whether the landscape contains a particular character, and/or features or elements which are considered particularly important examples;*
- **Conservation interests:** *The presence of features of wildlife, earth science or archaeological or historical and cultural interest can add to the value of the landscape as well as having value in their own right;*
- **Recreation value:** *Evidence that the landscape is valued for recreational activity where experience of the landscape is important;*
- **Perceptual aspects:** *A landscape may be valued for its perceptual qualities, notably wildness and/or tranquillity; and*
- **Associations:** *Some landscapes are associated with particular people, such as artists or writers, or events in history that contribute to perceptions of the natural beauty of the area. (Based on Swanwick and Land Use Consultants (2002)).*

- A6.5.11. Non designated landscapes or elements and features still have value, but this will be given less weight.

- A6.5.12. With regard to the value of dark skies, landscapes can be recognised as places of exceptional dark night skies where people have committed to keep skies dark through the control of light pollution. Similar to landscape

designations, this can be recognised through designation at international level such as Dark Sky Parks, or at a local level through the special qualities of a national or local landscape designation. Similarly, some landscapes may not be formally designated for their dark skies but may be promoted as tourist destinations based on their dark sky attributes or through community led projects.

- A6.5.13. Definitions of Very High, High, Medium, Low and Very Low are used in the LVIA to evaluate landscape value based on professional judgement.

Landscape Susceptibility to Change

- A6.5.14. Landscape susceptibility is defined in GLVIA3 as *'the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies.'* (GLVIA3, para 5.41).

- A6.5.15. Indicators that influence the susceptibility of landscape receptors to different types of development being proposed are as follows and include examples that generally indicate a lower susceptibility to wind farm development:

- **Landscape scale and geographical extent:** Large-scale landscapes generally indicate a lower susceptibility to wind farm development;
- **Landform:** Flat plateau/gently undulating land without distinctive topographical features;
- **Skylines:** Screened or less prominent skylines punctuated by modern man-made features;
- **Landscape pattern and complexity:** Landscapes with a simple and regular pattern;
- **Settlement and man-made influences:** Presence of modern, man-made structures such as infrastructural/ industrial features;
- **Inter-visibility with adjacent landscapes and key vistas:** inward looking areas with no strong vistas or interconnectivity with adjacent landscapes; and
- **Perceptual aspects:** Non remote areas, close to human activity or development (including light pollution).

- A6.5.16. The following examples generally indicate a higher susceptibility to wind farm development:

- **Landscape scale:** small scale landscapes generally indicate a higher susceptibility to wind farm development;
- **Landform:** Variations in topography with distinctive or iconic topographical features;
- **Skylines:** highly visible, generally undeveloped skylines often punctuated by important landmarks;
- **Landscape pattern and complexity:** Landscapes with a complex, rugged, and irregular pattern;
- **Settlement and man-made influences:** Presence of small-scale features, historic/vernacular settlement, and lack of modern development;
- **Inter-visibility with adjacent landscapes:** Landscapes which are integral to the character of adjacent landscapes and feature strongly in views from sensitive landscapes and/or have strong vistas and principal directions of view; and
- **Perceptual aspects:** Remote areas with no visual or audible signs of human activity, development, or light pollution.

- A6.5.17. Definitions of Very High, High, Medium, Low and Very Low are used in the LVIA to evaluate landscape susceptibility based on professional judgement.

- A6.5.18. GLVIA3 advises that an individual assessment of the susceptibility of receptors to the specific development proposal is a key process and should not be replaced by existing landscape sensitivity and capacity studies.

However, such studies have been reviewed to provide a useful guide to inform the evaluation of susceptibility of landscape receptors.

Determination of Landscape Sensitivity

A6.5.19. Sensitivity is determined by combining the assessment of the value of the landscape receptor and its susceptibility to change. Landscape sensitivity is defined in the LVIA as **Very High, High, Medium, Low** and **Very Low**. Professional judgement is used to evaluate the complex relationship between value and susceptibility to determine the overall sensitivity of the landscape receptor to the Proposed Development. Landscape Magnitude of Change

Landscape Magnitude of Change

A6.5.20. GLVIA3 advises that judgements of magnitude of change are assessed in terms of the size and scale, geographical extent, duration, and reversibility of the change likely to result from the Proposed Development. However, the process of combining all three considerations can lead to a distortion of significant effects. For example, a significant effect may be downgraded if a higher rating of magnitude of change based on size and scale is applied, combined with a small geographical area being affected across a short duration. Therefore, for the purposes of this LVIA, the magnitude of change will focus on the size and scale of the change occurring and geographical extent over which the change occurs. The duration and reversibility will be stated separately when reporting effects.

A6.5.21. The worst-case scenario is considered for the assessment of magnitude of change of all landscape effects. All changes to visibility are considered as they would occur in winter conditions with minimal screening by vegetation and deciduous trees.

Size & Scale

A6.5.22. The size and scale of the proposed change can refer to individual elements and features (including aesthetic and perceptual elements) that will be lost or changed and the proportion this represents of the total extent within the landscape, and the contribution that the feature or element makes to the character of the landscape. At a broader scale, the size and scale of the change to landscape character is dependent on the degree to which the character of the landscape is changed or alteration to the key characteristics and is subject to the distance from the Proposed Development.

Geographical Extent

A6.5.23. This refers to the geographical extent over which the landscape change will occur. It is described as being limited at site level, to the immediate site setting (or local area) and to the wider area, across some or all of the Proposed Development Area, LCTS or protected and designated landscape affected.

Determination of Magnitude of Landscape Change

A6.5.24. The relationship between the size, scale and geographical extent are assessed to determine the overall nature of the change resulting from the introduction of the Proposed Development. The duration and reversibility of the change are stated separately.

A6.5.25. Six levels of magnitude. High, High-medium, Medium, Medium-low, Low and Negligible/No Change are outlined in Table A6.1.

Table A6.1: Levels of Landscape Magnitude of Change

Level of Magnitude	Definition of Magnitude
High	The introduction of the Proposed Development would lead to large-scale changes and/or major losses of key landscape features / characteristics, or the addition of large scale or new uncharacteristic features or elements that would alter the character of the landscape or affect the special qualities of a designated landscape. A large geographical extent or area close to the Proposed Development would be affected.
High-medium	An intermediate rating where both the High and Medium magnitude of change criteria apply.
Medium	The introduction of the Proposed Development would lead to a medium scale change or loss of some key landscape features / characteristics, or the addition of some new medium scale uncharacteristic features or elements that would partially alter the character of the landscape or affect the special landscape qualities of a designated landscape. A localised geographical extent at an intermediate distance from the Proposed Development would be affected.
Medium-low	An intermediate rating where both the Medium and Low magnitude of change criteria apply.
Low	The introduction of the Proposed Development would lead to a small-scale change and minor loss of a few landscape features / non key characteristics, or the addition of some new small-scale uncharacteristic features or elements of limited characterising influence on the character of the landscape or special qualities of a designated landscape. A small partial change to a localised geographical extent at some distance from the Proposed Development.
Negligible/No Change	The introduction of the Proposed Development would result in a very small-scale change that may include the loss or addition of some landscape features of limited characterising influence. The landscape characteristics and character would be unaffected. A very small geographical extent at greater distances from the Proposed Development would be affected.

A6.5.26. The determination of the magnitude of effect additionally considers the distance from the site at its closest point, potential changes to principal views from within and towards the LCT and designated landscape, and potential effects on the integrity of the designated landscape, including the extent to which it could affect the for the key characteristics of the LCT and special qualities/attributes of the designation.

Assessing Visual Effects

A6.5.27. Assessing the significance of visual effects of the Proposed Development requires several steps including identifying the sensitivity of the visual receptor, identifying the magnitude or scale of the change to the receptors view, prior to forming a judgement with respect to the significance of the effect in the context of the Electricity Works (EIA) (Scotland) Regulations 2017.

Sensitivity of Visual Receptors

A6.5.28. The sensitivity or nature of visual receptors is defined by the professional judgement of the interaction between the value of the view experienced by the visual receptor and the susceptibility of the visual receptor (or viewer not the view) to the particular form of change likely to result from the Proposed Development.

Value of View

A6.5.29. Different groups of people attach different levels of value to particular views. Determining the value of a view therefore takes account of the following factors:

- Formal recognition of the view through the presence of planning designations;
- Importance in relation to heritage assets (such as designed views);
- Popularity of the viewpoint; and
- Indicators of the value attached to views by visitors through appearances in promotional tourist literature and the provision of tourist facilities.

A6.5.30. Value can also be attributed to the numbers of people using a route receptor or visiting an attraction. For example, a popular attraction is often considered more sensitive than a less visited attraction. However, there are exceptions to this such as motorways and some railway lines which have a higher number of people but are considered to be of lower value; or more remote locations with fewer people visiting but are considered to be of higher sensitivity.

A6.5.31. Views from individual private residential properties are considered to be highly valued by residents (and discussed separately in Technical Appendix A6.9).

A6.5.32. Definitions of Very High, High, Medium, Low, and Very Low are used in this LVIA to evaluate the value of view.

Susceptibility of Visual Receptors to Change

A6.5.33. This aspect of the nature of the receptor refers to the susceptibility of the viewer to the proposed change, not the view. The susceptibility of visual receptors to changes in views is a function of the occupation or activity of people experiencing the view and the extent to which their attention is focused on views.

A6.5.34. Viewers of higher susceptibility to changes in views are generally those whose attention or interest is focused on their surroundings, such as residents, walkers, and visitors to attractions.

A6.5.35. Viewers of lower susceptibility to changes in views include people travelling on non-scenic routes and people at their place of work whose attention is not on their surroundings and where setting is not important to their quality of working life.

Determination of Visual Sensitivity

A6.5.36. Professional judgement is used to evaluate the complex relationship between value and susceptibility to determine the overall sensitivity of the visual receptor to the Proposed Development. Visual sensitivity is defined as **Very High, High, Medium, Low** and **Very Low**.

Magnitude of Visual Change

A6.5.37. In accordance with the principles set out in GLVIA3, the nature or magnitude of the change on visual receptors considers the size and scale, geographical extent, duration, and reversibility of the change likely to result from the Proposed Development.

A6.5.38. Similar to the landscape assessment of magnitude of change, the visual assessment focusses on the size and scale of the change occurring within the view and the geographical extent over which the change occurs. Duration and reversibility are stated separately in significance of effects.

A6.5.39. A worst-case scenario is considered for the assessment of magnitude of visual change. All changes to views are considered as they would occur in winter conditions with minimal screening by vegetation and deciduous trees. ZTVs and wireframes are similarly displayed on the basis of bare ground and therefore demonstrate the maximum extent of visibility possible, in the absence of buildings or vegetation.

Size & Scale

A6.5.40. The size and scale of a visual change refers to the amount of change that is likely to occur as a result of the Proposed Development and depends on the following factors:

- The scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the Proposed Development;
- Distance of the view, the greater the distance the lower the magnitude of change will be;
- The degree of contrast or integration of any new features or changes in the view with the existing elements in the view and their characteristics in terms of form, scale and mass, line, height, colour, and texture;
- The nature of the view of the Proposed Development, in terms of the extent of the view along sequential routes and whether views will be full, partial or glimpses; and
- The angle of view of the Proposed Development, either direct view or oblique view including the horizontal field of view and movement.

A6.5.41. Existing wind farms (Scenario 1 – operational and under construction) form part of the existing view and the size and scale of change also considers the relationship between the Proposed Development and these other wind farms. This considers issues such as the arrangement of wind farms in the view e.g. developments seen in one direction or part of the view (combined views), or seen in different directions (successive views in which the viewer must turn) or developments seen sequentially along a route; the relationship between the scale of the different wind farms in terms of turbine height and number; the position of the wind farms (e.g. on the skyline); distances between wind farms and from the viewer; and ultimately whether the Proposed Development fits comfortably with the overall existing pattern of wind farm development or whether it intensifies the presence of wind farms by 'infilling' a gap and leading to a greater combined effect.

A6.5.42. Visual receptors which experience no change to the view as a result of the Proposed Development are not assessed in the LVIA.

Geographical extent

A6.5.43. This refers to the geographical extent over which the changes in view will be visible and is described in terms of the physical area or location over which it would be experienced. This is assessed through analysis of ZTV mapping, viewpoints, and field verification to establish the extent of visibility experienced by visual receptors.

Determination of Magnitude of Visual Change

A6.5.44. The relationship between the above factors is assessed to determine the overall nature of the visual change resulting from the introduction of the Proposed Development. Six levels of visual magnitude of change: High, High-medium, Medium, Medium-low, Low and Negligible/No Change.

Table A6.2: Levels of visual magnitude of change

Level of Magnitude	Definition of Magnitude
High	Major visual change which causes a complete or substantial change in the view as a result of loss of important features or the addition of significant new ones, to the extent that the composition of the view is substantially altered. The change is experienced from many locations across the study area, from the majority of a linear route or from most areas within a specific location and/or by a large number of viewers.
High-medium	An intermediate rating where both the High and Medium magnitude of change criteria apply.
Medium	Moderate visual change which causes a noticeable change in the view as a result of the loss of features or the addition of new ones, to the extent that the composition of the view is altered to a moderate degree. The change is experienced from a moderate number of locations across the study area, from a moderate part of a linear route or proportion of an area within a specific location and/or by a moderate number of viewers.
Medium-low	An intermediate rating where both the Medium and Low magnitude of change criteria apply.
Low	Minor visual change which causes a perceptible change in the view as a result of the loss of features or the addition of new ones, to the extent that this partially alters the composition of the view. The change is experienced from a small number of locations across the study area, from only limited sections of a linear route or from a small proportion of an area within a specific location and/or by a small number of viewers.
Negligible/No Change	Negligible visual change which causes a barely perceptible change or no change in the view as a result of the loss of features or the addition of new ones, to the extent that this barely alters the composition of the view. The change is either not visible or seen by viewers from only one or two locations across the study area, from very limited sections of a linear route or from hardly any locations within a specific area and/or by only a very small number of viewers.

A6.6. Cumulative Assessment

A6.6.1. The aim of the Cumulative Landscape and Visual Impact Assessment (CLVIA) is to identify, predict and evaluate potential key effects arising from the addition of the Proposed Development to a theoretical baseline which includes the existing baseline situation of operational wind farms, those under construction and additionally wind farms currently being considered within the planning system that may or may not be present in the landscape in the future.

Differences between LVIA and CLVIA

A6.6.2. Although both LVIA and CLVIA look at the effects of the Proposed Development on landscape character and visual amenity, there are differences in the baseline against which the assessments are carried out. For the LVIA, the baseline includes operational wind farm developments which are present in the landscape at the time of undertaking the assessment, which may be either operational or under construction. In CLVIA the baseline is partially speculative.

A6.6.3. For the purposes of this assessment, the cumulative baseline is divided into different scenarios which reflect which groups of wind farm developments are assumed to be present in the landscape. The existing scenario of operational wind farms and those under construction is assessed in the LVIA and is referred to as **Scenario 1**. The CLVIA considers the following scenarios:

- **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, and consented schemes, together with undetermined planning applications i.e., a less certain future scenario.

Cumulative Approach

A6.6.4. The methodology for CLVIA follows good practice guidance as set out in the GLVIA3 and *Assessing the Cumulative Effects of Onshore Wind Energy Developments* (NatureScot, 2021) .

A6.6.5. NatureScot guidance defines cumulative effects as ‘*the additional changes caused by a proposed development in conjunction with other similar developments or as the combined effect of a set of developments, taken together.*’ This highlights the two possible ways of reporting cumulative effects. The first is to consider only the additional effect that would occur in the cumulative baseline, meaning those effects over and above the effects identified in the LVIA assessment. The second is to redo the LVIA assessment but using the theoretical cumulative baseline, so a combined effect is determined.

A6.6.6. This CLVIA takes the first approach resulting in a stand-alone assessment which identifies the additional effects of introducing the Proposed Development into the cumulative baseline scenario. It is clearly set out whether the effect has increased or decreased relative to the LVIA assessment or whether the effects will be the same as in the LVIA assessment.

Types of Cumulative Effect

A6.6.7. As with the LVIA, the CLVIA deals with the effects on landscape and visual receptors separately.

Cumulative Landscape Effects

A6.6.8. Cumulative landscape effects are defined as effects on either the physical fabric, aesthetic aspects of the landscape or overall character of the landscape, or any special values attached to it as follows:

- **Cumulative effects on the physical fabric of the landscape** arise when two or more developments affect the landscape components or features such as woodland, dykes or hedgerows;
- **Cumulative effects on the aesthetic aspects of the landscape** arise when two or more developments affect the aesthetic or perceptual components of landscape character including scale, sense of enclosure, diversity, pattern, and colour and perceptual or experiential attributes such as naturalness, remoteness, or tranquillity.
- **Cumulative effects on the landscape character** can arise when a new proposal results in a progression from a landscape which contains one development which forms an individual, isolated feature, to a landscape in which two or more developments are evident and may form a significant or dominant characteristic.

Cumulative Visual Effects

A6.6.9. Cumulative visual effects are defined as effects that can be caused by combined visibility, which occurs where the observer is able to see two or more developments from one viewpoint or sequential effects which occur when the observer has to move to another viewpoint to see different developments. (i.e., along linear routes or journeys)

- **Combined visibility:** can occur as simultaneous visibility, where more than one development is visible in the same angle of view or successive visibility where two or more developments are present in views from the same viewpoint but cannot be seen at the same time as they are not in the same angle of view. (i.e., the viewer has to turn their head to see the other developments which become visible in succession.); and
- **Sequential visibility:** occurs where two or more developments are not present in views from the same viewpoint and cannot, therefore, ever be seen at the same time. The observer has to move to another viewpoint to see the other developments so they will then appear in sequence. Sequential effects are most common along linear routes and journeys. Sequential effects range from frequently sequential when the developments keep appearing regularly and with short time lapses between, depending on speed of travel and distance between the viewpoints, to occasionally sequential, where there may be long time lapses between appearances, because the observer is moving very slowly and/or there are large distances between the areas of visibility.

Significance of Cumulative Effects

- A6.6.10. NatureScot guidance considers that the concept of a ‘*threshold of acceptable change*’ beyond which turbine developments in a particular area become unacceptable, is a crucial element in identifying significance adverse cumulative effects. In other words, the effect of the present proposal is limited, but when added to the effect of what has already been permitted, or to new proposals which have been submitted for planning permission, it can become over-dominant in planning terms.

Cumulative Baseline

- A6.6.11. For the purposes of this CLVIA, cumulative sites consist of other wind farm developments only. These are listed in Technical Appendix A6.2.
- A6.6.12. An initial search area of 60 km from the Proposed Development (see Figure 6.13) was delineated and a list was prepared including all operational, those schemes under construction, consented schemes, those schemes in the planning system as valid applications. Recently withdrawn sites have not been included and those sites registered with a Pre-Application Notice (PAN), are not finalised applications and have therefore not been included as a valid application.
- A6.6.13. The windfarm developments identified in the initial Cumulative Search Area are mapped in the Cumulative Search Area map, Figure 6.13 and are up to date as of 1st March 2023.
- A6.6.14. Using this initial Search Area list of developments, an initial cumulative desktop and site assessment was carried out by a CMLI to identify a suitable cumulative baseline (or Cumulative Study Area). In accordance with NatureScot guidance (2021), the initial Search Area list was therefore refined to establish which turbine developments were of most relevance to the cumulative assessment for the proposal. As the guidance states ‘*the key principle for all cumulative impact assessments is to focus on the likely significant effects and in particular those which are likely to influence the outcome of the consenting process*’. (NatureScot, 2021).
- A6.6.15. The Cumulative Study Area or cumulative baseline for windfarms was therefore defined to include those developments it was considered required further cumulative assessment. These included all consented, and valid planning applications within an approximate 20 km radius (see Figure 6.14) from the proposed site with additional developments to reflect potential sequential and cumulative viewpoints.
- A6.6.16. It should be noted that the cumulative baseline represents the ‘*maximum development scenario*.’ It considers the effects of the Proposed Development in addition to other developments that do not yet exist in the current

landscape, but which may exist in the future. This results in a high level of uncertainty in the cumulative baseline as not all of the other undetermined proposals will necessarily gain planning approval.

- A6.6.17. Owing to this uncertainty with regard to the maximum development scenario, the cumulative baseline is split into different scenarios with a decreasing likelihood of becoming operational.

Assessing Cumulative Effects

- A6.6.18. The methodology for the CLVIA follows that of the LVIA as set out in this Technical Appendix. The key additional steps in the CLVIA are as follows:
- Preparation of ZTV maps for each of the other existing or proposed wind farms and combining them to inform the assessment of scenarios and relationships (see Figures 6.15 – 6.16b); and
 - Particular attention to the relationships between wind farms in the baseline for each scenario, and how those relationships will change with the addition of the Proposed Development.
- A6.6.19. The susceptibility of receptors may be affected by the presence of other wind energy developments. Some viewers may consider that susceptibility is reduced because other wind farms are ‘*already there*’, but for others it may be that sensitivity is increased because more development would be ‘*too much*’. However, to retain a consistent and objective approach, the susceptibility of receptors used for the cumulative assessment is taken to be the same as that identified in the LVIA. The value of the receptor would also remain the same in the cumulative assessment and therefore the overall sensitivity of the receptor is considered to be the same as judged in the LVIA.
- A6.6.20. In this CLVIA, cumulative effects are reported as the additional effects of the introduction of the Proposed Development, should other cumulative schemes be present in the different baseline scenarios, over and above the effects identified in the LVIA (Scenario 1). For each receptor, it is clarified as to whether the effect has increased or decreased relative to the LVIA assessment, and where necessary the CLVIA states where there will be no cumulative effects over and above those identified in the LVIA assessment.

Assessing Cumulative Landscape Effects

- A6.6.21. Assessing the significance of cumulative landscape effects requires the identification of the landscape receptors, the consideration of the nature of the landscape receptors (sensitivity) as identified in the LVIA and the determination of the nature of the change (magnitude) which would be experienced by each landscape receptor as a result of the addition of the Proposed Development to each baseline scenario.

Landscape Receptors of Cumulative Effects

- A6.6.22. The cumulative landscape assessment considers all the LCTs, and protected and designated landscapes assessed in the LVIA.

Overall significance of cumulative landscape effects

- A6.6.23. An overall judgement is made on the nature of the receptor and the likely change resulting from the addition of the Proposed Development. This judgement is based on evaluations of the individual aspects of value and susceptibility of the receptor as identified in the LVIA and the size and scale, geographical extent, duration and reversibility of the cumulative change.
- A6.6.24. There are varying degrees of cumulative landscape effect. These are as follows;
- Multiple wind farms are seen as separate isolated features within the landscape character type, too infrequent and of insufficient significance to be perceived as a characteristic of the area;

- Multiple wind farms are seen as a key characteristic of the landscape, but not of sufficient dominance to be a defining characteristic of the area;
- Multiple windfarms appear as a dominant characteristic of the area, seeming to define the character type as a 'wind farm landscape character area; and
- Wind farms cross different character types, reducing the distinction between the different types.

A6.6.25. The appropriateness of such effects will depend on the value of a landscape, the objectives for change as defined in local capacity studies and scale of that effect, i.e., whether affecting a local character type or occurring at a regional level.

Assessing Cumulative Visual Effects

A6.6.26. Assessing the significance of cumulative visual effects requires the identification of the visual receptors, the consideration of the nature of the visual receptors (sensitivity) as identified in the LVIA and the determination of the nature of the effect (magnitude) which would be experienced by each visual receptor as a result of the addition of the Proposed Development to each baseline scenario.

Visual Receptors of Cumulative Effects

A6.6.27. The cumulative visual assessment considers all the sequential routes and static locations such as viewpoints or settlements that have theoretical visibility (as shown in the ZTVs) of cumulative wind farm developments and were considered in the LVIA.

A6.6.28. Cumulative wind farms are shown in the visualisations as required by NatureScot good practice guidance (SNH, 2017). In addition, a ZTV to blade tip height of each wind farm considered in the detailed cumulative assessment has been prepared and then combined with the ZTV of the Proposed Development to create 'paired ZTVs' which illustrate the areas of mutual visibility, i.e., where the Proposed Development and other proposals are both visible from. ZTVs showing the combined visibility of each cumulative baseline scenario have also been prepared to illustrate the total visibility for each scenario (see Figures 6.15 – 6.16b).

Magnitude of Cumulative Change

A6.6.29. The nature or magnitude of the cumulative effect on visual receptors as with the LVIA considers the size and scale, geographical extent, duration, and reversibility of the change likely to result from the addition of the Proposed Development to the different baseline scenarios. With particular regard to cumulative effects, the following factors are also considered in determining the magnitude of cumulative visual change from each visual receptor:

- The number of wind energy developments visible;
- The prominence of the developments likely to be seen;
- The arrangement of wind energy developments e.g., developments seen in one direction or in only part of the view, or seen in all directions;
- The relationship of the scale of the wind energy developments including size and number of turbines which may also be expressed as the horizontal and vertical angle occupied by turbines;
- The position of the turbine developments in the view e.g., on the skyline, against the backdrop of land;
- The distances from the viewer and between developments;
- The landscape setting, context and separation or coalescence / overlapping of wind energy developments; and
- Potential screening by landcover such as vegetation and local variations in topography.

Overall Significance of Cumulative Visual Effects

A6.6.30. An overall judgement is made on the nature of the receptor and the likely change resulting from the addition of the Proposed Development. This judgement is based on evaluations of the individual aspects of value and susceptibility of the receptor as identified in the LVIA (sensitivity), and the size and scale, geographical extent, duration, and reversibility of the cumulative change (magnitude).

A6.7. Effects from Aviation Lighting

A6.7.1. The International Civil Aviation Organisation (ICAO) set out the recommended standards and practices for aviation which is implemented in European airspace by the European Aviation Safety Agency (EASA) and includes the practices for lighting of obstacles such as wind turbines. ICAO (2018) indicates a requirement for no lighting to be switched on until 'Night' has been reached, as measured at 50cd/m² or darker.

A6.7.2. Aviation lighting requirements will be discussed and agreed with the Irish Aviation Authority (IAA) and will give due consideration to the most up to date IAA guidance in relation to marking of offshore wind farms. Therefore, the Proposed Development will require aviation lighting to be deployed on the nacelles of the wind turbines. For the purposes of the LVIA, all turbines are assumed to be lit.

A6.7.3. The assessment of aviation lights mounted on wind turbines on the night-time baseline follows the same methodology used for the assessment of landscape, visual and cumulative effects. This includes the study area, and combines the sensitivity of the receptor at night-time, with the magnitude of change to determine the level of effect likely to result from the aviation warning lights. The evaluation of significance and the nature of these effects is also described following the methodology set out in this appendix.

A6.7.4. The only difference is that the assessment is conducted during periods of dawn to dusk and assesses the baseline night-time environment against the proposed aviation warning lights, fitted to the Proposed Development wind turbines. It is important to note, the LVIA night-time assessments are not technical lighting assessments based on quantitative measurements of light levels but rely on professional judgement of what the human eye can perceive.

A6.7.5. GLVIA 3 (para 6.12, page 103) provides the following guidance on the assessment of lighting effects:

A6.7.6. *'For some types of development the visual effects of lighting may be an issue. In these cases it may be important effects of lighting and these effects need to be taken into account in generating the 3D model of the scheme. Quantitative assessment of illumination levels, and incorporation into models relevant to visual effects assessment, will require input from lighting engineers, but the visual effects assessment will also need to include qualitative assessments of the effects of the predicted light levels on night-time visibility.'*

A6.7.7. Guidance published by the Institute of Lighting Professionals (ILP) has also been considered in this assessment, in particular, two documents:

- *Guidance on Undertaking Environmental Lighting Impact Assessments* (Institution of Lighting Professionals, 2013)²⁹; and
- *Guidance Note 01/21 The Reduction of Obtrusive Light* (Institution of Lighting Professionals, 2021)³⁰.

A6.7.8. These documents provide useful guidance in the undertaking of night-time assessment as well as providing some context of the different types of light pollution encountered as follows:

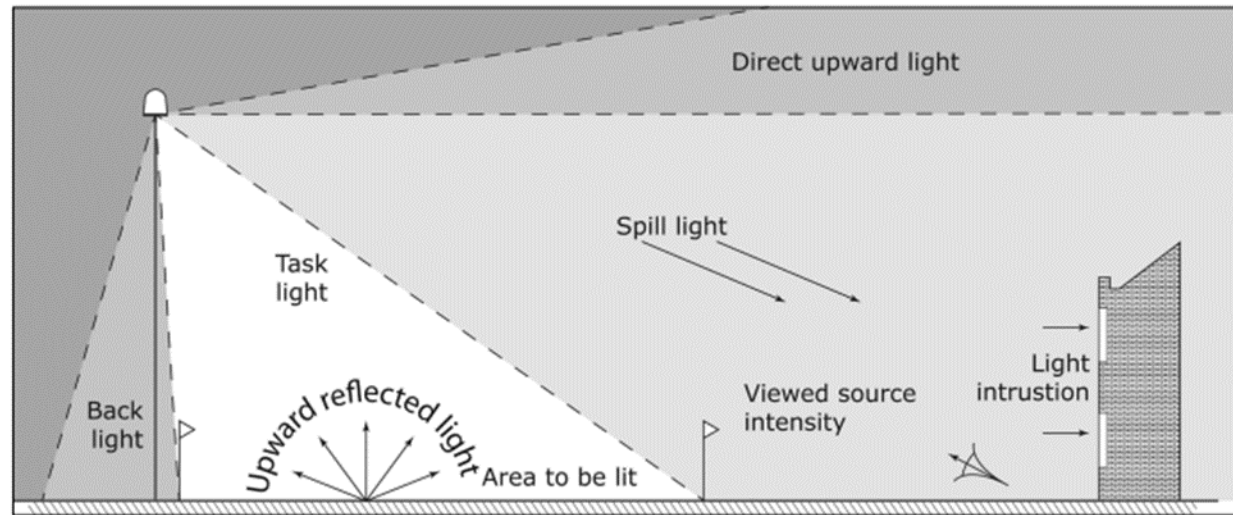
A6.7.9. *'Obtrusive light, whether it keeps you awake through a bedroom window, impedes your view of the night sky or adversely affects the performance of an adjacent lighting installation, is a form of pollution. It may also be a nuisance in law and can be substantially mitigated without detriment to the requirements of the task.'*

²⁹ Institution of Lighting Professionals (2013) Professional Lighting Guide 04: Guidance on undertaking Environmental Lighting Impact Assessments. Rugby. Institution of Lighting Professionals.

³⁰ Institution of Lighting Professionals (2021) Guidance Note GN01/21 The Reduction of Obtrusive Light. Rugby. Institution of Lighting Professionals

A6.7.10. ‘**Skyglow**, the brightening of the sky, **Glare**, the uncomfortable brightness of a light source when viewed against a darker background, **Light spill** the spilling of light beyond the boundary of the area being lit and **Light intrusion** (‘**Nuisance**’) are all forms of obtrusive light which may cause nuisance to others, or adversely affect fauna & flora as well as waste money and energy.’ (ILI, 2021)’

Illustration: A6.1: Types of obtrusive light (Figure 1 from ILI, 2021)



Night-time Baseline

A6.7.11. To inform the night-time assessment of aviation lights, dark skies and night-time light pollution conditions have been informed by the New World Atlas of Artificial Night Sky Brightness (2016) and fieldwork from a number of landscape and visual receptor locations during twilight and hours of darkness. Additionally, viewpoint photography has been taken from a select number of viewpoints 30 minutes after sunset in accordance with NatureScot visualisation guidance (SNH, 2017).

A6.7.12. Site visits were undertaken during night-time to several landscape, and visual receptors throughout the study area to verify dark-sky mapping.

Night-time Sensitivity

A6.7.13. Landscapes can be recognised as places of exceptional dark night skies where people have committed to keep skies dark through the control of light pollution. Similar to landscape designations, this can be recognised through designation at international level such as Dark Sky Parks, or at a local level through the special qualities of a national or local e designation. Similarly, some landscapes may not be formally designated for their dark skies but may be promoted as tourist destinations based on their dark sky attributes or through community led projects.

At night-time, the existing baseline lighting will influence the susceptibility of people experiencing the landscape. For example, receptors within settlements or travelling along roads where artificial lighting occurs in the form of street lighting, lights on properties and travelling vehicles is likely to be lower than from rural areas where artificial lighting is limited.

Night-time Magnitude of Change

A6.7.14. Changes occurring at night-time assume a worst-case scenario during clear moonlight or summer nights when the levels of darkness are at the lightest. Table A6.3 provides a detailed description of night-time magnitude of change.

Table A.6.3: Magnitude of Change for Night-time Assessment

Level of Night-time Magnitude of Change	Definition of Magnitude of Change
Very High	A complete or substantial change to the night-time baseline as a result of experiencing aviation/navigation lights at close distances where light intensities will be greatest, and/or where there is a high degree of contrast. The addition of aviation lights will be obtrusive and diminish the night-time baseline.
High	A high to moderate scale change to the night-time baseline as a result of experiencing aviation/navigation lights at relatively close distances, and/or where there is a high degree of contrast. The addition of aviation lights will be obtrusive and diminish the night-time baseline.
Medium	A moderate scale change to the night-time baseline as a result of experiencing aviation/navigation lights at middle distances where light intensities will be greatest, and/or where there is a moderate degree of contrast. The addition of aviation lights may diminish the night-time baseline.
Low	A small-scale change to the night-time baseline as a result of experiencing aviation/navigation lights at longer distances where light intensities will be reduced, and/or where there is a small degree of contrast. The addition of aviation lights will not be obtrusive or diminish the night-time baseline.
Very Low	There would be no or barely perceptible change to the night-time baseline as a result of aviation/navigation lights being distant, or partially screened, and/or where there is no degree of contrast. The addition of aviation lights is not considered to be obtrusive.

Night-time Effects

A6.7.15. Night-time effects are assessed through a combination of night-time sensitivity, combined with a night-time magnitude of change. Significant effects will occur where the aviation lights would substantially to moderately change the character of the current baseline environment.

A6.8. Judging the Levels of Significance of Effects

A6.8.1. Landscape Institute advice, contained in GLVIA3 statement of clarification 1/13 (June 2013), states that following the determination of magnitude and sensitivity, ‘the assessor should then establish (and it is for the assessor to decide and explain) the degree or level of change that is considered to be significant’. In accordance with this advice, this LVIA establishes at what level in the assessor’s opinion, ‘significant’ effects arise.

A6.8.2. An overall judgement is made on the nature of the receptor and the likely change resulting from the Proposed Development. This judgement is based on evaluations of the individual aspects of value, susceptibility (sensitivity), size and scale and geographical extent, (magnitude).

A6.8.3. Table A6.4 describes each of the six levels of effect that are used in this LVIA.

Table A6.4: Describing the Significance of Effects

Level of Effect	Definition
Major	An effect which, by its character, significantly alters the key characteristics, special qualities of the landscape receptor or quality of the view experienced by visual receptors.
Major-moderate	An intermediate rating where both the Major and Moderate effects criteria apply.
Moderate	An effect that partially alters the key characteristics or special qualities of a landscape receptor, or quality of the view experienced by a visual receptor.
Moderate-minor	An intermediate rating where both the Moderate and Minor effects criteria apply.
Minor	An effect which causes some noticeable changes in key characteristics and special qualities of a landscape receptor, or quality of view by visual receptors
Negligible / No Change	A barely perceptible effect or no effect to the key characteristics or special qualities of a landscape receptor, or quality of view from a visual receptor.

A6.8.4. Table A6.5 sets out a significance matrix of showing the complex relationship between sensitivity, magnitude of change and judgement of effects. The table is not a prescriptive tool, and the evaluation of potential effects makes allowance for the use of professional judgement and experience. The matrix considered as a guide only, and any deviation is clearly explained in the assessment.

Table A6.5: Determination of Significance of Effect Matrix

Sensitivity of Receptor	Magnitude of Change					Negligible/No Change
	High	High-medium	Medium	Medium-low	Low	
Very High	Major (significant)	Major (significant)	Major-moderate (significant)	Moderate (significant / not significant)	Moderate-minor (not significant)	Minor (not significant)
High	Major (significant)	Major-moderate (significant)	Moderate (significant / not significant)	Moderate (not significant)	Moderate-minor (not significant)	Minor (not significant)
Medium	Major-moderate (significant)	Moderate (significant / not significant)	Moderate (significant / not significant)	Moderate-minor (not significant)	Minor (not significant)	Minor (not significant)
Low	Moderate (significant / not significant)	Moderate (significant / not significant)	Moderate-minor (not significant)	Minor (not significant)	Minor (not significant)	Negligible / No Change (not significant)
Very Low	Moderate (significant / not significant)	Moderate-minor (not significant)	Minor (not significant)	Minor (not significant)	Negligible / No Change (not significant)	Negligible / No Change (not significant)

A6.8.5. Once the level of effect has been established, a judgement is then made as to whether the level of effect is considered significant or non-significant as required by the EIA Regulations. For the purposes of this LVIA, effects of Major, Major-moderate and some Moderate are all considered significant in the context of the EIA Regulations. Levels of effect judged to be Moderate shown in the light green boxes have the potential to be either significant or not significant. This is dependent on the level of sensitivity and magnitude of change and based on professional judgement. A full justification for level of significance is provided where this occurs.

A6.8.6. As a precautionary approach, effects on landscape character and visual amenity are considered in this LVIA to be adverse. It should be noted that not all people would experience effects on landscape character, views, and visual amenity as adverse, as people's perception of wind turbines vary between negative and positive attitudes. An additional point is that simply because wind turbines are visible from a particular location or receptor, this does not mean that the effect is significant. In some instances, there may be likely significant effects on the landscape resource, but the Proposed Development may be in a location that does not affect visual amenity in a significant way. It is also possible that there may be likely significant effects on visual amenity without effects on the landscape resource.

Duration & Reversibility

A6.8.7. The duration and reversibility of landscape and visual effects is based on the period over which the Proposed Development is likely to exist (during construction and operation), and the extent to which it would be removed

(during decommissioning) and the effects reversed at the end of that period. Long-term, medium-term, and short-term landscape effects are defined as follows:

- Permanent: The introduction of project components that will not be decommissioned, removed, or reinstated;
- Temporary: The introduction of project components that will be time limited such as during construction or decommissioning works as follows:
- Long-term: more than 10 years;
- Medium-term: six to 10 years; and
- Short-term: one to five years.

A6.8.8. Reversibility is related to whether the change can be reversed at the end of the development's lifecycle (including the end of construction or decommissioning which would be short term reversible). For example, operational effects related to the presence of turbines are considered to be reversible as they will be removed during decommissioning at the end of the operational lifespan.

A6.9. Supporting Figures and Visualisations

Zone of Theoretical Visibility

A6.9.1. ZTVs have been generated to aid the understanding of the extent of theoretical visibility of the Proposed Development. ZTVs have been used through the different stages of the Proposed Development from the initial feasibility study, through the evolution of the layout design, and have informed the extent of the study area and identification of landscape and visual receptors that are likely to be affected.

A6.9.2. ZTVs takes no account of the potential screening effects of intervening factors such as forestry/woodland, vegetation, buildings, recent modifications to landforms, or weather conditions. Therefore, ZTVs represent the 'worst case scenario' and over represent the extent of visibility of the Proposed Development. It is important to note, NatureScot guidance states: '*ZTVs indicate areas from where a wind farm is theoretically visible within the study area, but they cannot show what it would look like, nor indicate the nature or magnitude of landscape or visual impacts*'.

A6.9.3. ZTV maps have been created using QGIS 3.4.4 Software and Ordnance Survey (OS) Square Grid Terrain 50 m Digital Terrain Model (DTM) by experienced GIS Analysts. In accordance with best practice, the viewer height of the ZTV has been set at 2 m Above Ground Level (AGL) and the tool outputs were coloured in transparent bands to represent the number of turbines visible at tip and hub heights, aviation lighting intensity and interaction with operational/under construction and cumulative developments.

A6.9.4. A series of ZTVs have been produced to provide an illustration of potential light intensities from the aviation lights, both as an overview, and individually for each lit turbine.

Assumptions

A6.9.5. ZTVs have the following assumptions and limitations:

- The DTM data from which the ZTV has been calculated from is Ordnance Survey Terrain 50 (12/02/2020) 50 m resolution and has not been down sampled;
- No non-bare-ground ZTVs have been used in this LVIA;
- The viewer height has been set at 2 m AGL;
- Earth curvature correction parameters have been applied with a light refractivity coefficient of 0.13;

- The ZTV has been created to an extent of 45 km from the outermost turbines with 10 km distance rings;
- Turbine heights were based on the candidate turbine described in Chapter 5: Project Description;
- The software used to create the ZTV does not use mathematically approximate methods;
- A ZTV is only accurate as the data on which it is based, and the algorithm used in its calculation;
- A ZTV alone cannot indicate the potential visual impacts of a development, nor show the likely significance of impacts, therefore it shows theoretical visibility only;
- It is not easy to test the accuracy of a ZTV in the field, although some verification will occur during the assessment from viewpoints; and
- The accuracy of most DTMs is limited and they do not include accurate representation of minor topographic features and may not represent areas of recent topographic change, such as opencast coal mines, spoil heaps and road cuttings.

A6.9.6. Analysis of the ZTV identified areas where the proposed turbines would be theoretically visible within the 45 km study area. This process also identified those areas where there would be limited or no visibility of the Proposed Development, which allowed some landscape and visual receptors to be scoped out of the assessment.

Supporting Figures

A6.9.7. Supporting figures have been produced to show the extent of the study areas considered, LCTs, protected and designated landscapes, visual receptors and cumulative developments located within the study area. The data for these figures has been obtained from publicly accessible websites, fieldwork and a desk review of relevant literature and guidance concerning the identified landscape and visual receptors likely to be affected by the Proposed Development.

Photography

A6.9.8. Baseline photography has been undertaken by a professional photographer for viewpoint locations used in the LVIA and Cultural Heritage assessments, and for the Residential Visual Amenity Assessment.

A6.9.9. Photography was undertaken using a Canon EOS 1ds MkIII full frame sensor, Digital Single Lens Reflex (DSLR) camera with a 50 mm f1.4 lens mounted on a Calumet CK8157 tripod with Manfrotto 303 Plus. Grid coordinates and elevation were recorded on a Garmin Etrex GPS. Camera settings were RAW -ISO 400 except for low-light conditions with minimal adjustment.

A6.9.10. A 360-degree panorama was undertaken at 1.5 m AGL ensuring a 50% overlap between photographs to minimise distortion when stitching the photographs together. Photographs are taken in landscape format unless locations are close where photographs are then taken in portrait format to enable the vertical extent of the turbines to be included in the photograph.

A6.9.11. At night-time, baseline photography is recorded at either dawn (approximately 30 minutes prior to sunrise) or dusk (approximately 30 minutes after sunset). The objective for night-time viewpoint photography is to represent, as far as is practical, the baseline lighting levels as they would be perceived by the human eye. To achieve this, camera settings are used to meet this requirement, and settings which artificially brighten the image are not used.

A6.9.12. During the visit to each viewpoint, the grid reference was recorded, ground level and camera viewing height along with a brief description of the nature of the view, weather conditions and visibility. Details of the time and date, camera make and model, lens focal length, shutter speed, f-number and ISO speed rating are recorded as metadata in each photograph file. Additionally, a photograph of the tripod position was also taken at each location.

Wirelines

- A6.9.13. Wirelines have been created using ReSoft Windfarm Software and 50 m plus – or 1 m Terrain DTM data for all viewpoints in the LVIA and Cultural Heritage assessment (see Chapter 10: Cultural Heritage). Turbine data is based on the candidate turbine described in Chapter 5: Project Description and data gathered for the cumulative assessment for Scenarios 1, 2 and 3. Using this information, the software then generated a horizontal view wireline of the Proposed Development from viewpoints. These were exported as images at viewcone angles of 90° and 53.5° for the best representation of what a person will see. Turbines shown on the wirelines are shown to face the viewer with the highest turbine blade pointing directly vertical. It should be noted that similar to ZTVs, wirelines are based on bare ground and do not consider the effects from intervening screening such as vegetation, trees, woodland/forestry, buildings, or minor variations in topography.

Visualisation Production

- A6.9.14. Photomontages have been generated for the same viewpoint locations and comply with the NatureScot guidance. Visualisations have been produced to illustrate a 53.5° horizontal Field of View (FoV) and a vertical field of view of 18.2 degrees to capture the Proposed Development and sufficient landscape and visual context.
- A6.9.15. Viewpoint photography was stitched together using Microsoft ICE software and imported and lined up to match the viewcone defined for the wireline. Once the photos are aligned, the proposed turbines were rendered onto the photo using paint.net and exported as images. Similar to the wirelines, the proposed turbines are shown to face the viewer but with random rotations to provide a greater sense of realism.
- A6.9.16. NatureScot guidance recognise that the production of night-time visualisations to accurately represent aviation lighting is difficult to achieve and is an emerging area of study. This is due to the limitations in being able to model the light intensity over distance whilst considering variable lighting conditions and atmospheric conditions. The rendering or visual representation of the proposed aviation lights has been achieved using paint.net and a comparative study of photography of actual turbine lighting in similar lighting conditions and viewing distances.

Viewing Instructions

- A6.9.17. NatureScot's guidance (2017) states:

'Visualisations, whether they are hand drawn sketches, photographs or photomontages can never exactly match what is experienced in reality. They should, however, provide a representation of the proposal that is accurate enough for the potential impacts to be fully understood.'

The assessor, consultees, decision-makers and any interested parties or members of the public should ideally visit the viewpoint(s) where visualisations can be compared to the 'real life' view. It is acknowledged this is not always possible – time, weather and accessibility will restrict the number of viewpoints which can be visited.

Interpretation of visualisations must take account of additional information specific to the proposal, viewpoint and landscape which cannot be shown on a single 2-dimensional image. Factors include variable lighting, movement of turbine blades, seasonal differences and movement of the viewer through the landscape. Visualisations in themselves can never provide the full picture in terms of potential impacts; they only inform the assessment process by which judgements are made.'

- A6.9.18. The guidance goes on to provide specific guidance to be undertaken when viewing visualisations as follows:

'it is recommended that photomontages are simply viewed at a comfortable arm's length. This will vary depending on the length of the viewer's arms and their eyesight. However, the difference in viewing distance which results will have little impact on the impression of scale / depth in the image due to the increased size of the

images. An instruction to view images at a 'comfortable arm's length' should be included on all visualisations produced. They should also be viewed flat as they are in planar projection.

Planar projection has been chosen for the photomontages as it is easier to use both in print and on screen (a computer screen cannot be curved to view a cylindrical image). Both planar and cylindrical projections have limitations. The main limitation of planar projection is that, if viewed incorrectly, it can slightly increase the scale of turbines at the edge of the image. Ideally the viewer should view the image with their eyes in the centre – however, in practice the difference in scale in most images will be difficult to perceive.'

- A6.9.19. The Highland Council advises that 50 mm single frame and 75 mm photomontages should be viewed as follows:

"The image should be viewed at a comfortable arm's length (approximately 500 mm) and viewed normally with both eyes. The page should obscure any foreground not visible within the photomontage itself. This enables the photomontage to be directly compared within the wider context of the real landscape."

Technical Appendix A6.2

Operational and Cumulative Sites

Contents

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Glossary

Term	Definition
Cumulative Landscape & Visual Impact Assessment (CLVIA)	To identify, predict and evaluate potential key effects arising from the addition of the Proposed Development to a theoretical baseline which includes the existing baseline situation of operational wind farms, those under construction and additionally wind farms currently being considered within the planning system that may or may not be present in the landscape in the future.
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5.
Landscape & Visual Impact Assessment (LVIA)	<i>'A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.'</i> [*]
The Proposed Development	The proposed Watten Wind Farm development.
Developer	In the event of the Proposed Development being granted Section 36 Consent, this is the Company developing the Project.

* Taken from Guidelines for Landscape and Visual Impact Assessment, Third Edition. 2013

** Taken from Visual Representation of Wind Farms, Guidance. 2017

List of Abbreviations

Abbreviation	Description
CLVIA	Cumulative Landscape and Visual Impact Assessment
EIAR	Environmental Impact Assessment Report
LVIA	Landscape and Visual Impact Assessment
PAN	Pre-application Notice
THC	The Highland Council

A6.1. INTRODUCTION

A6.1.1. This Technical Appendix of the Environmental Impact Assessment Report (EIAR) details the operational and cumulative developments considered within 60 km of the proposed Watten Wind Farm (the Proposed Development) for the Landscape and Visual Impact Assessment (LVIA) and Cumulative Landscape and Visual Impact Assessment (CLVIA).

A6.1.2. This Technical Appendix should be read in conjunction with the following EIAR Technical Appendices and figures:

- Technical Appendix A6.1: Landscape and Visual Impact Assessment Methodology;
- Figure 6.1: LVIA Study Area;
- Figure 6.2: Cumulative Study Areas
- Figure 6.13: Cumulative Wind Farms within 60 km; and
- Figure 6.15: Wind Farms within 45 km.

A6.2. OPERATIONAL AND CUMULATIVE SITES

A6.2.1. For the purposes of this CLVIA, cumulative sites consist of other wind farm developments only and are listed in this Technical Appendix (see Table A6.1).

A6.2.2. An initial search area of 60 km from the Proposed Development (see Figure 6.13) was delineated and a list of wind farms was prepared including all operational schemes, those schemes under construction, consented schemes, schemes in the planning system as valid applications.. Recently withdrawn sites have not been included and those sites registered with a Pre-Application Notice (PAN), are not finalised applications and have therefore not been included as a valid application.

A6.2.3. The windfarm developments identified in the initial Cumulative Search Area are mapped in the Cumulative Search Area map, Figure 6.13, and are up to date as of 1st March 2023.

A6.2.4. Using this initial Search Area list of developments, an initial cumulative desktop and site assessment was carried out by a CMLI to identify a suitable cumulative baseline (or Cumulative Study Area). In accordance with NatureScot guidance (2021)¹, the initial Search Area list was therefore refined to establish which turbine developments were of most relevance to the cumulative assessment for the proposal. As the guidance states ‘*the key principle for all cumulative impact assessments is to focus on the likely significant effects and in particular those which are likely to influence the outcome of the consenting process*’. (NatureScot, 2021)

A6.2.5. The Cumulative Study Area or cumulative baseline for windfarms was therefore defined to include those developments it was considered required further cumulative assessment. These included all consented, and valid planning applications within an approximate 20 km radius (see Figure 6.14) from the proposed site with additional developments to reflect potential sequential and cumulative viewpoints.

A6.2.6. It should be noted that the cumulative baseline represents the ‘*maximum development scenario*.’ It considers the effects of the Proposed Development in addition to other developments that do not yet exist in the current landscape, but which may exist in the future. This results in a high level of uncertainty in the cumulative baseline as not all of the other undetermined proposals will necessarily gain planning approval.

A6.2.7. Owing to this uncertainty with regard to the maximum development scenario, the cumulative baseline is split into different scenarios with a decreasing likelihood of becoming operational.

A6.2.8. For the purposes of this assessment, the cumulative baseline is divided into different scenarios which reflect which groups of wind farm developments are assumed to be present in the landscape. The existing scenario of operational wind farms and those under construction is assessed in the LVIA and is referred to as **Scenario 1**. The CLVIA considers the following scenarios:

- **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 and consented schemes, together with undetermined planning applications i.e., a less certain future scenario.

A6.2.9. The following table provides a list of operational and consented sites, as well as sites which are operational, under construction, have been consented or are currently at the application stage within 60 km of the Proposed Development. Wind farm sites are based on a review of The Highland Council (THC) wind database².

A6.2.10. A review of the sites has been undertaken in relation to their interaction to the Proposed Development and a justification provided regarding whether they have been scoped in or out of the LVIA. For ease of reference, wind farms have been grouped together when located in close proximity to one another.

Table A6.1: Operational, Under Construction and Cumulative Sites Considered in the LVIA

Site Name	Number of Turbines	Max. Tip Height (m)	Distance from Proposed Development (km)	Direction from Proposed Development	Group	Included in Assessment
Scenario 1: Operational / Under Construction Sites						
Achairn 1 Wind Turbines	3	100.0	8.3	East	2	Yes – due to proximity to the Proposed Development
Achlachan Wind Farm	5	114.75	4.1	West	1	Yes – due to proximity to the Proposed Development.
Bad a Cheo Wind Farm	13	111.0	3.0	West	1	Yes – due to proximity to the Proposed Development.
Baillie Hill	21	110.0	21.7	North west		No – due to distance from the Proposed Development.
Beatrice Demonstrator Site	2	151.0	41.6	South east	5	Yes – due to potential effects on sequential views when travelling along the A9 road.
Beatrice Offshore Wind Farm	84	148	31.0	South east	5	Yes - due to potential effects on sequential views when travelling along the A9 road.
Bettyhill Wind Turbines	2	119.0	47.3	North west		No – due to distance from the Proposed Development.
Bilbster Wind Turbines	3	93.0	5.5	East	2	Yes – due to proximity to the Proposed Development.
Buolfruch Wind Farm	15	75.0	15.3	South west		Yes – due to proximity to the Proposed Development.
Burn of Whilk Wind Farm	9	116.0	11.9	South east		Yes – due to proximity to the Proposed Development.
Camster Wind Farm	25	120.0	4.7	South east	2	Yes – due to proximity to the Proposed Development.

¹ NatureScot (2021) Assessing the Cumulative Impact of Onshore Developments Available at: <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments> [Accessed 02/08/2023]

² The Highland Council (2022) Highland Wind Turbine Mapping. Available at: <https://highland.maps.arcgis.com/apps/webappviewer/index.html?id=5ec04b13a9b049f798cadbd5055f1787> [Accessed 02/08/2023]

Site Name	Number of Turbines	Max. Tip Height (m)	Distance from Proposed Development (km)	Direction from Proposed Development	Group	Included in Assessment
Causeymire Wind Farm	21	101.0	3.2	West	1	Yes – due to proximity to the Proposed Development.
Forss Wind Turbines	2	76.0	25.5	North west		No – due to distance from the Proposed Development.
Forss Extension	4	78.0	26.1	North west		No – due to distance from the Proposed Development.
Gordonbush	35	121.0	48.6	South west		No – due to distance from the Proposed Development.
Halsary Wind Farm	15	120.0	895 m	South west	1	Yes – due to proximity to the Proposed Development.
Kilbraur Wind Farm	18	115.0	58.2	South west		No – due to distance from the Proposed Development.
Kilbraur II Wind Farm	8	125.0	58.3	South west		No – due to distance from the Proposed Development.
Lochend Wind Farm	4	99.5	17.6	North east	3	Yes – due to proximity to the Proposed Development.
Moray East Offshore Wind Farm	100	204.0	32.9	South east		Yes - due to potential effects on sequential views when travelling along the A9 road.
Stroupster Wind Farm	13	113.0	18.0	North east	4	Yes – due to proximity to the Proposed Development.
Wathegar I Wind Farm	5	100.0	6.2	East	2	Yes – due to proximity to the Proposed Development.
Wathegar II Wind Farm	9	110.0	6.9	East	2	Yes – due to proximity to the Proposed Development.
Scenario 2: Consented Sites						
Achlachan II Wind Farm	3	111	4.1	West	1	Yes – due to proximity to the Proposed Development.
Camster II Wind Farm	11	126.5	6.6	South east	2	Yes – due to proximity to the Proposed Development.
Cogle Moss Wind Farm	12	99.5	7.0	North east		Yes – due to proximity to the Proposed Development.
Golticlay Wind Farm	19	130.0	9.6	South		Yes – due to proximity to the Proposed Development.
Gordonbush II Wind Farm	15	115.0	51.4	South west		No – due to distance from the Proposed Development.
Hesta Head Wind Farm	5	125.0	42.4	North east		No – due to distance from the Proposed Development.
Limekiln Wind Farm	21	126.0 & 135.0	22.1	North west		No – due to distance from the Proposed Development.
Limekiln Extension	21	149.9	22.1	North west		No – due to distance from the Proposed Development.
Lychrobbie Wind Farm	3	74.0	18.9	South west		No – due to distance from the Proposed Development.
Rumster Forest Wind Farm	3	75.0	9.9	South east		No – planning permission expired.
Slickly Wind Farm	11	149.9	17.0	North east	4	Yes – due to proximity to the Proposed Development.

Site Name	Number of Turbines	Max. Tip Height (m)	Distance from Proposed Development (km)	Direction from Proposed Development	Group	Included in Assessment
Strathy South Wind Farm	35	200	39.0	North west		No – due to distance from the Proposed Development.
Tacher Wind Farm	3	135	4.0	South west	1	Yes – due to proximity to the Proposed Development.
Scenario 3: Application Sites						
Bettyhill Wind Farm Phase 2 Wind Farm	10	149.9	47.3	North west		No – due to distance from the Proposed Development.
Hollandmey Wind Farm	10	149.9	17.7	North east	3	Yes – due to proximity to the Proposed Development.
Tormsdale Wind Farm	10	149.9	5.3	South west	1	Yes – due to proximity to the Proposed Development.

Technical Appendix A6.3

Landscape Character Review & Assessment

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Glossary

Term	Definition
Characteristics	<i>'Elements or combinations of elements, which make a contribution to distinctive landscape character.'</i> [*]
Direct effect	<i>'An effect that is directly attributable to the proposed development.'</i> [*]
Environmental Impact Assessment (EIA)	Environmental Impact Assessment (EIA) is a means of drawing together by the developer, in a systematic way, a description of the development and information relating to an assessment of the likely significant environmental effects arising from the Proposed Development.
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5.
Indirect effects	<i>'Indirect effects that result indirectly from the proposed project as a consequence of the direct effects., often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.'</i> [*]
Key characteristics	<i>'Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place'</i> [*]
Landform	<i>'The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.'</i> [*]
Landscape	<i>'An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.'</i> [*]
Landscape & Visual Impact Assessment (LVIA)	<i>'A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.'</i> [*]
Landscape character	<i>'A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.'</i> [*]
Landscape Character Assessment (LCA)	<i>'The process of identifying and describing variation in the character of the landscape, and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscape distinctive. The process results in the production of a Landscape Character Assessment.'</i> [*]
Landscape Character Types	<i>'These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.'</i> [*]
Landscape effects	<i>'Effects on the landscape as a resource in its own right.'</i> [*]
Landscape receptors	<i>'Defined aspects of the landscape resource that have the potential to be affected by a proposal'</i> [*]

Term	Definition
The Proposed Development	The development area within the red line boundary (application area). The area within which the Proposed Development will be located.
The Proposed Development Area	The development area within the red line boundary (application area).

^{*} Taken from *Guidelines for Landscape and Visual Impact Assessment, Third Edition*. 2013

List of Abbreviations

Abbreviation	Description
AOD	Above Ordnance Datum
BESS	Battery Energy Storage System
ca	Candela
EIAR	Environmental Impact Assessment Report
GLVIA3	Guidelines for Landscape and Visual Impact Assessment
LCT	Landscape Character Type
LVIA	Landscape and Visual Impact Assessment
NNR	National Nature Reserve
SNH	Scottish Natural Heritage (now NatureScot)
SAMs	Scheduled Ancient Monuments.
SPA	Special Protection Area
SAC	Special Area of Conservation
SSSI	Site of Special Scientific Interest
WHS	World Heritage Site
WLA	Wild Land Area
ZTV	Zone of Theoretical Visibility

A6.1. Introduction

- A6.1.1. This Technical Appendix of the Environmental Impact Assessment Report (EIAR) reviews and assesses landscape character within the Proposed Development Area and Landscape Character Types (LCTs) within the 45 km study area surrounding the proposed Watten Wind Farm (the Proposed Development).
- A6.1.2. Landscape character is defined as a distinct, recognisable, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse. LCTs refer to distinct types of landscape that are relatively homogenous in character. They are generic in nature and can occur more than once in different parts of the country but wherever they occur they share broadly similar combinations of geology, soils, climate, flora, and fauna, interact and perceived alongside cultural and social components of historical and cultural heritage land use, settlement, enclosure, and other human interventions.
- A6.1.3. Landscape is made up of individual features which, can be defined at a broad scale, as a distinct, recognisable, and consistent pattern of elements that makes one landscape different from another. NatureScot (2019)¹ database recognises this as LCTs, which comprise geographical areas of particular combinations of landform, landcover and pattern conveying a sense of place defined at a scale of 1:50,000 and include a list of key characteristics.
- A6.1.4. Analysis of Zone of Theoretical Visibility (ZTV) mapping established which of the LCTs within 45 km of the Proposed Development would potentially be affected and takes cognisance of the methodology detailed in Technical Appendix A6.1: LVIA methodology.
- A6.1.5. This Technical Appendix should be read in conjunction with the following figures:
- Figure 6.1: LVIA Study Area;
 - Figure 6.2: Cumulative Study Areas;
 - Figure 6.3a : Zone of Theoretical Visibility to Tip Height (A3 Size);
 - Figure 6.3b: Zone of Theoretical Visibility to Tip Height (A0 Size);
 - Figure 6.4: Zone of Theoretical Visibility to Hub Height (A3 Size);
 - Figure 6.5: Horizontal Angle Zone of Theoretical Visibility
 - Figure 6.6: Theoretical Visibility of Aviation Lighting by Intensity (Worst Case);
 - Figures 6.6a-g: Theoretical Visibility of Aviation Lighting by Intensity (by turbine);
 - Figure 6.7: Predicted Light Pollution in Areas of Theoretical Visibility of Aviation Lighting; and
 - Figure 6.8: Landscape Character.

A6.2. Review of Landscape Character Types

- A6.2.1. Table A6.1 provides an overview of the extent of theoretical visibility within each LCT identified in NatureScot's Landscape Character database (2019) and justification for being scoped in or out of the LVIA.

Table A6.1: Review of Landscape Character Types

LCT Ref	Landscape Character Type	Extent of Theoretical Visibility	Included in the Assessment
134	Sweeping Moorland and Flows²	<p>This LCT covers four sub-units within the 45 km study area. This includes a vast continuous swathe of moorland covering the southern and western part of Caithness and eastern extent of Sutherland, smaller sub-units at Dunnet Head 18.8 km to the north, Battens of Brabster located 13.4 km to the north east and Moss of Kirk / Moss of Killimster 6.2 km to the north east of the Proposed Development.</p> <p>The Proposed Development is located within the South and West Caithness sub-unit of this LCT and is likely to receive direct and indirect effects as a consequence.</p> <p>Due to the low-lying nature of the intervening landform, theoretical visibility is predicted in the other three sub-units at varying distances.</p>	<p>Yes – the South and West Caithness sub-unit is included due to the potential for significant direct impacts as a result of the Proposed Development being located within the sub-unit and indirect effects from visibility of the Proposed Developments components in the wider landscape.</p> <p>The Moss of Kirk / Moss of Killimster sub-unit is also included due to its proximity to the Proposed Development and extent of theoretical intervisibility predicted.</p> <p>The Dunnet Head and Battens of Brabster have not been included due to distance from the Proposed Development where it is not considered that a significant effect would occur.</p>
135	Rounded Hills- Caithness & Sutherland³	<p>This LCT covers three sub-units in the south of the study area including the upland area north and south of the Strath of Kildonan between 24.9 – 45 km to the south, and an area east of Strath Naver between 42.2 – 45 km to the west.</p> <p>The ZTV predicts both areas as receiving very limited theoretical visibility on the northern edge of the area to the north of Strath Kildonan, and the summits of Meall Bad na Cuaiche and Beinn a Mhadaidh to the east of Strath Naver.</p>	<p>No - due to the very limited theoretical visibility predicted and distance between the LCT and Proposed Development where it is not considered that significant effects would occur on the key characteristics of the LCT.</p>
136	Rocky Hills and Moorland⁴	<p>Covers an area between Strathy Forest and Strath Naver 39.2 km to the north west of the Proposed Development.</p>	<p>No</p>

¹ NatureScot (2021) *Scottish Landscape Character Types Map and Descriptions*. Available from - <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions> [Accessed 03/08/2023]

² NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 134 SWEEPING MOORLAND AND FLOWS – CAITHNESS & SUTHERLAND. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20134%20-%20Sweeping%20Moorland%20and%20Flows%20-%20Caithness%20&%20Sutherland%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

³ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 135 ROUNDED HILLS – CAITHNESS & SUTHERLAND. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20135%20-%20Rounded%20Hills%20-%20Caithness%20&%20Sutherland%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

⁴ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 136 ROCKY HILLS AND MOORLAND. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20136%20-%20Rocky%20Hills%20and%20Moorland%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

LCT Ref	Landscape Character Type	Extent of Theoretical Visibility	Included in the Assessment
		No theoretical visibility is predicted in this LCT.	
138	Lone Mountains ⁵	This LCT is located in two locations covering the Morven and Scaraben mountain range 25.5 km to the south west, and Ben Griam Beg 35.6 km to the west. Theoretical visibility is predicted from the summits of Scaraben, Sal-vaich, Smean, Maiden Pap, Carn Mor and Morvern to the south, and Ben Griam Beg and Meall a Bhuirich to the west.	No – this LCT has not been included due to a combination of distance and limited theoretical visibility predicted. It is considered that the key characteristics would not be adversely affected by the addition of the Proposed Development due to distance. The view from Scaraben has been included in the visual assessment (see Figure 6.35a-f and assessment in Technical Appendix A6.6).
140	Sandy Beaches and Dunes ⁶	This LCT occurs in four sub-units covering Melvich Bay, Sandside Bay, Dunnet Bay and Sinclair's Bay. The ZTV predicts theoretical visibility occurring in Dunnet Bay at 15.5 km covering the dunes and adjacent fields, and Sinclair's Bay at 12.8 km covering Keiss Links.	No – it is not predicted that the key characteristics would be significantly affected due to a combination of distance and intervening landform which was confirmed during a site visit.
141	High Cliffs and Sheltered Bays ⁷	There are five sub-units of this LCT occurring within the study area between Melvich Bay and Sandside Head, Brims Ness and Holborn Head, Dunnet Head, Duncansby Head, and between Head of Row to Berriedale between 15.3 and 24.7 km from the Proposed Development. Theoretical visibility is predicted in all five areas of the LCT; however, this is limited to elevated areas above the cliffs.	No – due to a combination of the very limited theoretical visibility predicted, distance and the main outlook being towards the sea away from the Proposed Development.
142	Strath - Caithness and Sutherland ⁸	There are two strath sub-units of this LCT within the study area, Strath Halladale 29.6 km to the north west, and Strath Kildonan 37.0 km to the south west.	No

LCT Ref	Landscape Character Type	Extent of Theoretical Visibility	Included in the Assessment
		Neither straths are predicted to receive theoretical visibility of the Proposed Development.	
143	Farmed Lowland Plain ⁹	Approximately 109,851 ha covering the north east and south east corners of the Proposed Development Area are located within this LCT. None of the components of the Proposed Development would be located within these areas and no direct impacts would occur. Due to the LCT low-lying nature, theoretical visibility is predicted to be widespread across the LCT.	Yes – the Proposed Development Area partially lies within this LCT which is also predicted to receive widespread intervisibility at varying distances.
144	Coastal Crofts & Small Farms ¹⁰	There are ten units of this LCT within the study area, all are close to the coastal edge. These range between 10.1 and 45 km from the Proposed Development covering the northern and eastern coastline of Caithness and includes: <ul style="list-style-type: none"> • Armadale; • Strathy; • Baligill; • Melvich; • Dunnet, Huntspow, and Brough; • John o Groats; • Shirza Head to Rough of Stain; • Wick to Berriedale; • Ousdale; and • Helmsdale. Theoretical visibility is predicted to be widespread in the Dunnet – Brough unit, limited in John o Groats, and scattered in the Wick to Berridale sub-units.	No - it is not considered that at the distances involved significant effects would occur to the key characteristics of the LCT.
295	Holms ¹¹	This LCT covers the islands of Switha 40.8 km and Swona 35.7 km to the north east of the Proposed Development.	No – this LCT has not been included due to the distance between the Proposed

⁵ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 138 LONE MOUNTAINS. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20138%20-%20Lone%20Mountains%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

⁶ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 140 SANDY BEACHES AND DUNES. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20140%20-%20Sandy%20Beaches%20and%20Dunes%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

⁷ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 141 HIGH CLIFFS AND SHELTERED BAYS. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20141%20-%20High%20Cliffs%20and%20Sheltered%20Bays%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

⁸ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 142 STRATH – CAITHNESS & SUTHERLAND. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20142%20-%20Strath%20-%20Caithness%20&%20Sutherland%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

⁹ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 143 FARMED LOWLAND PLAIN. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20143%20-%20Farmed%20Lowland%20Plain%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

¹⁰ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 144 COASTAL CROFTS & SMALL FARMS. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20144%20-%20Coastal%20Crofts%20and%20Small%20Farms%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

¹¹ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 295 HOLMS. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20295%20-%20Holms%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

LCT Ref	Landscape Character Type	Extent of Theoretical Visibility	Included in the Assessment
		Theoretical visibility on Swona is predicted to cover the southern side of the island including Keefa Hill and is limited on Switha covering the southern coastline and elevated ground in the north.	Development and LCT where it is considered there would be no significant effect to the key characteristics.
296	Whaleback Islands ¹²	There are two of these LCTs within the study area which are distinctively shaped islands, South Walls 37.4 km and Fara 43.8km to the north east of the Proposed Development which form part of the Orkney archipelago. On South Walls, theoretical visibility is predicted on the southern part of the island from south facing slopes. On Fara, theoretical visibility is predicted to be limited to the summit of Thompson's Hill and a high point to the south east.	No – this LCT has not been included due to the distances involved which would not lead to significant adverse effects on the key characteristics of the LCT as a result of the Proposed Development.
298	Low Island Pastures ¹³	This LCT covers the southern part of South Ronaldsay 38.5 km to the north east of the Proposed Development. Theoretical visibility is predicted to be widespread across the LCT.	No - this LCT has not been included as it is not considered that its key characteristics will be adversely affected by the Proposed Development.
299	Undulating Island Pasture ¹⁴	This LCT covers the eastern side of Flotta 42.8 km to the north east of the Proposed Development. Theoretical visibility is predicted to cover the crofting settlements on either side of Kirk Bay and the headland at Hole of Row.	No - due to the distance between the Proposed Development and LCT which would not result in adverse effects to the key characteristics of the LCT.
301	Coastal Basin ¹⁵	There are two areas of this LCT covering the north and south of South Ronaldsay in the study area. Theoretical visibility is predicted to be limited in both areas to elevated south and west facing slopes.	No - this LCT has not been included due to the distance from the Proposed Development where there would not be any significant adverse effects on the key characteristics of the LCT.

LCT Ref	Landscape Character Type	Extent of Theoretical Visibility	Included in the Assessment
302	Inclined Coastal Pasture ¹⁶	This LCT covers the western coastline of North Bay on Hoy and South Ronaldsay, 36.8 km to the north east of the Proposed Development. Theoretical visibility is predicted on the south eastern slopes of Melsetter Hill, the coastline on the lower eastern slopes of Cairn Hill, an area extending between Ore Farms and Bellevue, and south west of Lyness and the southern coastline between The Witter Quarry and Maggie Mouat's Geo on Hoy, and the western headland of South Ronaldsay.	No - this LCT has not been included due to the distances involved and it is not considered to significantly affect the key characteristics of this LCT.
306	Coastal Hills and Heath ¹⁷	This LCT covers the western side of South Ronaldsay 38.7 km to the north east of the Proposed Development. Theoretical visibility is predicted to occur across the LCT mainly in elevated areas including Burnt Mound, Cairn Hill, and Castle of Burwick.	No - this LCT has not been included as it not considered that its key characteristics will be adversely affected by the Proposed Development due to distance.
307	Cliffs - Orkney ¹⁸	This LCT covers several narrow strips of the coastline around the Orkney archipelago. This includes the western and southern side of Hoy located 36.3 km to the north east of the Proposed Development. Other areas include the western and south western side of side of South Ronaldsay extending between 39.3 – 45 km from the Proposed Development. The ZTV predicts widespread theoretical visibility of the Proposed Development would be widespread along the cliffs at distances between 36.3 – 45 km.	No – this LCT has not been included due to distance from the Proposed Development where it is considered that the key characteristics would not be significantly affected.
311	Low Moorland ¹⁹	This LCT covers the western side of Flotta including the oil terminal 42.4 km to the north east of the Proposed Development. Theoretical visibility is predicted on south west facing slopes of West Hill between 42.4 – 45 km.	No – due to the distance between the LCT and Proposed Development which would not lead to significant effects on the key characteristics of the LCT.

¹² NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 296 WHALEBACK ISLANDS. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT296-WhalebackIslands-Final.pdf.pdf> [Accessed 03/08/2023]

¹³ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 298 LOWLAND ISLAND PASTURES. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20298%20-%20Low%20Island%20Pastures%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

¹⁴ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 299 UNDULATING ISLAND PASTURE. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20299%20-%20Undulating%20Island%20Pasture%20-%20Final%20pdf.pdf> [Accessed 04/08/2023]

¹⁵ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 301 COASTAL BASIN. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20301%20-%20Coastal%20Basin%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

¹⁶ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 302 INCLINED COASTAL PASTURE. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20302%20-%20Inclined%20Coastal%20Pasture%20-%20Final%20pdf.pdf> [Accessed: February 2023]

¹⁷ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 306 COASTAL HILLS AND HEATH. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20306%20-%20Coastal%20Hills%20and%20Heath%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

¹⁸ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 307 CLIFFS – ORKNEY. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20307%20-%20Cliffs%20-%20Orkney%20-%20Final%20pdf.pdf> [Accessed 03/08/2023]

¹⁹ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 311 LOW MOORLAND. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20311%20-%20Low%20Moorland%20-%20Final%20pdf.pdf> [Accessed 04/08/2023]

LCT Ref	Landscape Character Type	Extent of Theoretical Visibility	Included in the Assessment
312	Plateau Heath & Pasture ²⁰	There are two sub-units of this LCT within the study area both of which are located on South Ronaldsay covering Ward Hill and Cleat between 40.8 – 45 km to the north east of the Proposed Development. The ZTV shows that theoretical visibility will be widespread across both areas.	No - at the distances involved, it is not considered that the key characteristics of the LCT will be affected by the Proposed Development.
314	Moorland Hills - Orkney ²¹	This LCT is on the Orkney island of Hoy, approximately 36.4 km north east of the Proposed Development. The ZTV suggests that there will be some limited theoretical visibility predicted on south facing elevated slopes at distances of 36.4 – 45 km.	No - this LCT has not been included in the LVIA due to the distance from the Proposed Development combined with the limited extent of theoretical visibility predicted and is not considered to receive a significant adverse effect to its key characteristics.
Island of Stroma	Isolated Island	This island is not covered by the NatureScot LCT database (2019) and is an uninhabited island 26.8 km to the north east of the Proposed Development in the Pentland Firth. The ZTV predicts theoretical visibility on the elevated central part of the island between Schoolhouse and Uppertown.	No – this island has not been included due to the distance between the island and Proposed Development. It is not considered that the introduction of the Proposed Development would have a detrimental effect on the key characteristics
Pentland Skerries	Isolated Island	The Pentland Skerries forms a group of four uninhabited islands and is not covered by the NatureScot LCT database (2019). The skerries lie 35.3 km to the north east of the Proposed Development in the Pentland Firth. Theoretical visibility is predicted Little Skerry, Louther Skerry and Clettack Skerry of seven turbines, and 1-2 turbines on a small, elevated part of Muckle Skerry.	No – this group of islands has not been included due to the distance between the island and Proposed Development. It is not considered that the introduction of the Proposed Development will have a significant effect on the key characteristics

Source: Figure 6.8: Landscape Character

²⁰NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 312 PLATEAU HEATH AND PASTURE Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20312%20-%20Plateau%20Heath%20and%20Pasture%20-%20Final%20pdf.pdf> [Accessed 04/08/2023]

²¹ NatureScot (2019) SNH National Landscape Character Type 314 MOORLAND HILLS – ORKNEY. Available from - <https://www.nature.scot/sites/default/files/LCA/LCT%20314%20-%20Moorland%20Hills%20-%20Orkney%20-%20Final%20pdf.pdf> [Accessed 04/08/2023]

²² NatureScot (2019) Landscape Character Assessment: Caithness and Sutherland – Landscape Evolution and Influences. Available from - <https://www.nature.scot/doc/landscape-character-assessment-caithness-and-sutherland-landscape-evolution-and-influences>. [Accessed 04/08/2023]

²³ Stanton, C. (1998) Caithness and Sutherland landscape character assessment. Scottish Natural Heritage Review No. 103. Available from <https://www.nature.scot/sites/default/files/2018-01/Publication%201998%20-%20SNH%20Review%20103%20-%20Caithness%20and%20Sutherland%20landscape%20character%20assessment.pdf> [Accessed 04/08/2023]

A6.2.3. Of the 20 LCTs and two isolated islands reviewed within the 45 km study area in Table A6.1, the following have been taken forward for detailed assessment:

- LCT 134: Sweeping Moorland and Flows: due to the Proposed Development being located within the LCT and the widespread theoretical visibility predicted; and
- LCT 143: Farmed Lowland Plain – due to a small part of the LCT being covered by the Proposed Development Area and extensive theoretical visibility predicted.

A6.3. Landscape Assessment

A6.3.1. The assessment of landscape effects of the Proposed Development considers the effect on the landscape as a resource or a group of identifiable receptors. This is undertaken by the establishment of the landscape baseline defined in GLVIA3 as follows:

‘For the landscape baseline the aim is to provide an understanding of the landscape in the area that may be affected – its constituent elements, its character and the way this varies spatially, its geographic extent, its history (which may require its own specialist study), its condition, the way the landscape is experienced, and the value attached to it.’ (Paragraph 3.15, GLVIA3)

A6.3.2. For the purposes of this assessment, the landscape baseline has been informed by the following:

- Desk-top review of LCTs identified in NatureScot’s Landscape Character Database (2019);
- Caithness and Sutherland – Landscape Evolution and Influences (2019)²²;
- Caithness and Sutherland landscape character assessment (1998)²³;
- Causeymire – Knockfin Flows Wild Land Area (2017)²⁴;
- East Halladale Flows Wild Land Area (2017)²⁵;
- Assessment of Highland Special Landscape Areas (2011)²⁶;
- Landscape fabric and character of the Proposed Development Area: confirmed through a site visit and review of Chapters 7: Ecology, Chapter 9: Hydrology, Chapter 10: Cultural Heritage, and Chapter 11: Forestry; and
- Site visit to viewpoint locations shown on Figure 6.10 and assessed in Technical Appendix A6.6..

Proposed Development Area

A6.3.3. The Proposed Development Area covers approximately 509 ha and comprises low-lying and gently undulating acidic grassland, conifer plantation and bog habitat. The majority of the Proposed Development Area is located within the South and West Caithness sub-unit of the Sweeping Moorland and Flows LCT, approximately 107.8 ha of the northern and eastern side being located within the Farmed Lowland Plain LCT. As such, the Proposed

<https://www.nature.scot/sites/default/files/2018-01/Publication%201998%20-%20SNH%20Review%20103%20-%20Caithness%20and%20Sutherland%20landscape%20character%20assessment.pdf> [Accessed 04/08/2023]

²⁴ NatureScot (2017) Causeymire – Knockfin Flows Wild Land Area. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20Causeymire-Knockfin-Flows-July-2016-36.pdf> [Accessed 04/08/2023]

²⁵ NatureScot (2017) East Halladale Flows Wild Land Area. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20East-Halladale-Flows-July-2016-39.pdf> [Accessed 04/08/2023]

²⁶ The Highland Council in partnership with Scottish Natural Heritage (2011) Assessment of Highland Special Landscape Areas. Available from - https://www.highland.gov.uk/downloads/file/2937/assessment_of_highland_special_landscape_areas [Accessed: 04/08/2023]

Development Area forms a transitional landscape that displays characteristics of both LCTs. This was confirmed following a site visit to Proposed Development Area.

Assessment of Landscape Sensitivity

A6.3.4. The following sets out landscape value of the Proposed Development Area.

Table A6.2: Landscape Value of the Proposed Development Area

Landscape Value	
Landscape Quality (Condition):	<p>The Proposed Development Area predominantly comprises a mixture of semi-improved acidic grassland in the north, east and south, with improved grassland occurring around Druimdubh, and Shielton. This follows years of applying fertiliser, lime, grazing, and drainage works which has transitioned the area from heather to grassland.</p> <p>Commercial forestry and woodland occupy 83.99 ha of the western portion of the Proposed Development Area, extending beyond the red line boundary to the west surrounding Loch of Toftingall. Forested areas comprise 72.64 ha Sitka spruce and Lodgepole pine, 2.46 ha of mixed broadleaves, and 8.89 ha of failed woodland (see Chapter 11: Forestry).</p> <p>Overall, landscape quality is considered to be medium to low on account of current management practices for agriculture and forestry.</p> <p>Across the site, there are small areas of higher quality habitats such as birch woodland in the south east corner of Wester Watten Moss which extends north along the edge of the central area of forestry, and pockets of birch and alder woodland, and bog habitat.</p>
Scenic quality:	The Proposed Development Area is not covered by any national or local level landscape designation for scenic quality.
Rarity:	The Proposed Development Area is not considered to be rare, forming part of a larger transitional landscape between the Farmed Lowland Plain, and Sweeping Moorland & Flows LCTs covering the majority of Caithness.
Representativeness:	The Proposed Development Area displays characteristics of both the Farmed Lowland Plain and Sweeping Moorland and Flows LCTs.
Conservation interests:	<p>A small part of the southern periphery of the Proposed Development Area is located within the Shielton Site of Special Scientific Interest (SSSI), and the Caithness and Sutherland Peatlands, Special Area of Conservation (SAC), Special Protection Area (SPA), and Ramsar (see Chapter 7: Ecology), and a Proposed World Heritage Site, no project components would be located within this area.</p> <p>There are several known heritage assets within the Proposed Development Area around the periphery to the north, east, south, and near Shielton (see Chapter 10: Cultural Heritage).</p>
Recreation value:	The minor road leading to Shielton (which a short section is partially within the Proposed Development Area) is regularly used by locals for walking and cycling and terminates at Shielton.

Landscape Value	
Perceptual aspects:	The Proposed Development Area does have a strong sense of remoteness on account of the limited number of properties and distance from the road network within the vicinity.
Associations:	There is some evidence of limited past habitation and small-scale agriculture.
Landscape value is considered to be Medium for the Proposed Development Area due the lack of any formal landscape designation within the red line boundary. The Proposed Development Area forms part of a larger low-lying area that forms a transitional area between the Sweeping Moorland and Flows, and Farmed Lowland Plain LCTs and has limited landscape features of quality.	

The following sets out landscape susceptibility of the Proposed Development Area.

Table A6.3: Landscape Susceptibility of the Proposed Development Area

Landscape Susceptibility	
Landscape scale and geographical extent:	The Proposed Development Area forms part of a larger sub-unit of the Sweeping Moorland and Flows LCT which covers much of south and west of Caithness, and the Farmed Lowland Plain LCT which covers the north east of Caithness. Large in scale and situated in the transitional area between two LCTs that are large in geographical area, the Proposed Development Area has some ability to accommodate the type of development proposed.
Landform:	The Proposed Development Area is between 60-70 m Above Ordnance Datum (AOD) in elevation and is gently undulating, low-lying and simple with no distinct topographical features and has the ability to accommodate larger structures.
Skylines:	The Proposed Development Area is consistent with the surrounding landscape of low-lying ridgelines allowing extensive visibility between the Sweeping Moorlands and Flows and Farmed Lowland Plain LCTs. Skylines are interrupted by coniferous plantations within the Proposed Development Area, and nearby wind turbines to the west beyond the red line boundary.
Landscape pattern and complexity:	Landscape pattern is not distinctive within the Proposed Development Area comprising a mosaic of angular conifer plantations surrounded by improved and semi-improved grazing bounded by fencing, bog habitats and broadleaf woodland. Linear features include post and wire fencing and ditches as well as tracks to access farmland and forestry plantations.
Settlement and man-made influences:	<p>The site boundaries are defined by field boundaries other than to the south where it follows Snottergill Burn and minor road leading to the property of Shielton.</p> <p>The landscape within the Proposed Development Area is influenced by land management practices for forestry and sheep grazing.</p>
Inter-visibility with adjacent landscapes and vistas:	Due to being low-lying, there is extensive visibility across the Proposed Development Area between the Sweeping Moorland and Flows and Farmed Lowland Plain LCTs which includes distant views of the lone mountains to the south west, partially interrupted by forestry and operational wind farms.
Perceptual aspects:	Open and large-scale, the Proposed Development Area has some capability in accommodating the type of development proposed.

Landscape Susceptibility

The Proposed Development Area displays many characteristics that are suitable for accommodating tall vertical structures, these include open, and large in scale, simple landform that has no distinctive pattern, and limited distinctive landscape features. Landscape susceptibility is considered to be **Medium** for the Proposed Development Area.

Landscape Sensitivity

A6.3.5. Overall, the Proposed Development Area is considered to have a Medium sensitivity to change on account of landscape value being assessed as Medium, combined with a Medium landscape susceptibility.

LCT 134: Sweeping Moorland and Flows

A6.3.6. Four sub-units of this LCT are located within the study area as follows:

- South and West Caithness;
- Dunnet Head;
- Battens of Brabster; and
- Moss of Kirk / Moss of Killimster.

A6.3.7. The South and West Caithness sub-unit of the Sweeping Moorland and Flows LCT is predicted to receive widespread theoretical visibility of the Proposed Development. The Moss of Kirk / Moss of Killimster sub-unit has also been included in the assessment due to being located 6.2 km to the north east of the Proposed Development.

A6.3.8. The Dunnet Head sub-unit located 18.8 km to the north, and the Battens of Brabster sub-unit situated 13.4 km to the north east of the Proposed Development have not been included as it was considered in the initial review that significant effects on the key characteristics would not occur due to distance from the Proposed Development.

A6.3.9. Several operational wind farms are located within the South and West Caithness sub-unit of this LCT, this includes Achlachan I, Causeymire, Bad a Cheo, Halsary forming a large cluster to the west of the Proposed Development Area and referred to hereafter as Group 1, and Bilbster, Camster and Burn of Whilk further to the east (forming part of Group 2 developments alongside Achairn, Wathegar I and II located in the neighbouring LCT) and south east. Stroupster and Lochend (Group 4) are also located within the Battens of Brabster unit of the LCT to the north east.

Key Characteristics

A6.3.10. NatureScot identify the key characteristics of Sweeping Moorland and Flows LCT as follows:

- *'Gently sloping or undulating landform which lies generally below 350 metres.*
- *Occasional isolated hills of limited height form local landmark features.*
- *Lochs and mature, meandering rivers.*
- *Very distinct flora, dominated by sphagnum mosses, produced by the wetness and infertility of the flows.*
- *Areas of peat cuttings and haggings.*
- *Pockets of improved grazing, mainly within the outer fringes of sweeping moorland.*
- *Coniferous forest forming a dominant characteristic within some parts of this landscape character type.*
- *Ribbons of broadleaf woodland occasionally run along the water courses and loch edges.*

- *Very sparsely settled with dispersed crofts, farms and estate buildings largely found on the outer edges of this landscape or near a strath.*
- *Vehicular tracks within parts of the landscape.*
- *Wind farms, transmission lines, the A9 and a network of minor roads are key features within the more modified outer fringes within Caithness.*
- *Long, low and largely uninterrupted skylines offering extensive views across this landscape and result in a feeling of huge space.*
- *Consistent views to the distant Lone Mountains and Rugged Mountain Massif – Caithness & Sutherland.*
- *Great sense of exposure on areas of flat peatland on upland plateau.*
- *A strong sense of remoteness is associated within the largely uninhabited, inaccessible core flows and moorlands of this landscape.'* (NatureScot, 2019)²⁷

A6.3.11. The following figures provide baseline context from viewpoint locations within the Sweeping Moorland and Flows LCT:

- Figures 6.22 a-f: Viewpoint 6: Ben Dorrery;
- Figures 6.28 a-f: Viewpoint 12: Westerdale;
- Figures 6.29 a-f: Viewpoint 13: Minor Road North of Grey Cairns of Camster;
- Figures 6.30 a-g: Viewpoint 14: Loch More Cottage;
- Figures 6.32 a-f: Viewpoint 16: A9, North of Rangag; and
- Figures 6.34 a-f: Viewpoint 18: Ben Alisky.

Assessment of Landscape Sensitivity

A6.3.12. The following sets out landscape value of the Sweeping Moorland and Flows LCT.

Table A6.4: Landscape Value of the Sweeping Moorland and Flows LCT

Landscape Value	
Landscape Quality (Condition):	Both sub-units of the LCT are considered to be a landscape of high quality comprising large swathes of intact blanket bog and interlinked pool systems, its importance is recognised at an international and national level for ecology and wetlands. There are some areas where landscape quality reduces, typically occurring along the edges where the adjacent Farmed Lowland Plain LCT merges with the Sweeping Moorland and Flows LCT. In this area forestry plantations, some of which have been clear felled, large-scale drainage works, erosion caused by overgrazing by sheep and deer, and damage by the creation of access tracks reduce landscape quality. The South and West Caithness sub-unit is located within the Causeymire – Knockfin Flows and East Halladale Flows Wild Land Area (WLA) (see Technical Appendix A6.5), and designated at a regional level by the The Flow Country and Berriedale Coast Special Landscape Area (see Technical Appendix A6.4).
Scenic quality:	Scenic quality is considered to be high on account of the large expanse of low-lying predominantly underdeveloped moorland with the occasional lone mountains

²⁷ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 134 SWEEPING MOORLAND AND FLOWS – CAITHNESS & SUTHERLAND. Available from -

<https://www.nature.scot/sites/default/files/LCA/LCT%20134%20-%20Sweeping%20Moorland%20and%20Flows%20-%20Caithness%20&%20Sutherland%20-%20Final%20pdf.pdf> [Accessed 04/08/2023]

Landscape Value	
	providing a stark contrast and key focal point within the South and West Caithness sub-type. As well as being scenically attractive from within, the LCT forms an important backdrop to the settled coastal areas and straths of Caithness.
Rarity:	The South and West Caithness sub-unit forms part of The Flow Country, the most intact and extensive blanket bog system in the world extending over 4,000 km ² . The character of the LCT is considered to be rare, occurring in only a handful of other locations within the Highlands but at smaller scale. The Moss of Kirk / Moss of Killimster sub-unit forms a smaller geographical area surrounded by coastal and agricultural landscapes in the east of Caithness.
Representativeness:	The juxtaposition of low-lying moorland interspersed with Lone Mountains, interconnecting hills and coastal landscapes is very distinctive and recognisable both at local and national levels.
Conservation interests:	<p>The South and West Caithness sub-type is covered by SSSI and include Strathmore Peatlands, Blar nam Faoleag, Coire na Beinne Mires, Dunbeath Peatlands, Morvern & Scaraben, Langwell Water, Berriedale Water, Knockfin Heights and Rumsdale Peatlands.</p> <p>The northern part of the sub-type is covered by the Caithness and Sutherland Peatlands Ramsar, SAC, and SPA.</p> <p>An area on the western side is covered by the Halladale River forms part of the Forsinard Flows National Nature Reserve (NNR).</p> <p>Cultural heritage assets are situated along the periphery in proximity to Dunbeath Water, Raffin Burn, west of Berridale and north of Kelphedir and include prehistoric settlements, shielings, pre-clearance townships, clearance cairns and brochs which are designated as Scheduled Ancient Monuments (SAMs).</p> <p>The sub-type also forms part of the Nominated Flow Country World Heritage Site (WHS) as described in Technical Appendix A6.4.</p> <p>The Moss of Kirk / Moss of Killimster sub-unit is partially covered by a Ramsar, SPA, and SAC in the north east and south east corners, and includes the Kirk o'Moss SAM, the site of Duthac's Chapel on the Moss of Killimster.</p> <p>This LCT is not designated for dark skies qualities but due to the limited development, has limited influence from artificial lighting.</p>
Recreation value:	Several all-terrain vehicle tracks lead into the sub-types, these are mainly located in the north and around the eastern fringes of the South and West Caithness sub-type and surrounding area within the Moss of Kirk / Moss of Killimster sub-unit. Visitors to both sub-types are low and comprise walkers and visitors taking part in field sports such as fishing on the numerous small lochans and shooting.
Perceptual aspects:	Due to its inaccessibility as a result of boggy terrain, numerous watercourses and lochans, combined with the lack of development, there is a strong perception of remoteness and wildness within both sub-types which is recognised by being partially designated as the East Halladale Flows and Causeymire – Knockfin Flows WLA.
Associations:	The Flow Country has extensively been written about both from a scientific perspective and also in literature.

Landscape Value
Overall landscape value for the South and Caithness sub-unit is considered to be Very High on account of the international, national, and local level designations, and High for the Moss of Kirk / Moss of Killimster sub-unit due to only being partially designated for ecology.

A6.3.13. The following sets out landscape susceptibility of the Sweeping Moorland and Flows LCT.

Table A6.5: Landscape Susceptibility of the Sweeping Moorland and Flows LCT

Landscape Susceptibility	
Landscape scale and geographical extent:	Both sub-types of the LCT are considered to be large in scale covering a large proportion of Caithness and the eastern edge of Sutherland and forms part of one of the largest intact blanket bog systems in the world. The large-scale of the landscape creates some opportunities for the type of development considered.
Landform:	Elevations vary between 70 – 291 m AOD of undulating and sweeping low-lying peatland which reduces intervisibility of adjacent landscapes as a result of intervening slopes. NatureScot mapping (see Annex 1, Map A1.6 of Technical Appendix A6.5) suggests the area has limited ruggedness. In reality, there are areas of ruggedness around some of the higher summits; however, generally the LCT is relatively smooth comprising a series of interlocking hills. Where there is a lack of topographical features there are opportunities to create cohesive layouts.
Skylines:	<p>The surrounding landscape comprises low-lying ridgelines which allow extensive visibility across the Sweeping Moorlands and Flows LCT and neighbouring LCTs including distant views of the Lone Mountains.</p> <p>Views across sweeping moorland towards Lone Mountains is an important feature and some interruption occurs in the form of wind turbines and coniferous plantation.</p>
Landscape pattern and complexity:	Both sub-types of the LCT form vast peatland landscapes of rough vegetation, comprising acidic grassland and heather, bogs, lochans and watercourses. Enclosure is limited to the periphery of the LCT and has little influence on landcover vegetation. Fencing is limited, occurring along the periphery within the South and West Caithness sub-type, and found throughout within the Moss of Kirk / Moss of Killimster sub-unit.
Settlement and man-made influences:	<p>Both sub-types are generally uninhabited, although there are some areas of settlement lying close to the LCT boundary, most notably Broubster, Shurrery, Dorrery and Killimster.</p> <p>Wind farms are a common feature within the South and West Caithness sub-type and include Group 1 developments which are all located close to the Proposed Development, and further afield Group 2 developments.</p> <p>The Inverness to Wick/Thurso railway line, A9 road and several minor roads also pass through the South and West Caithness unit forming distinctive linear features.</p> <p>There are a number of access tracks linking lochans for fishing and shooting is practiced within the surrounding uplands.</p> <p>Conifer plantations are visible along the periphery contrasting with the surrounding peatland.</p>

Landscape Susceptibility

During hours of darkness, artificial lighting sources tend to be from the adjacent LCT and include lights from properties and settlement including skyglow from Wick and Thurso, vehicles travelling along the A9 road, and minor roads to the north and east, and distant views of transmitter lights near the coast.

Inter-visibility with adjacent landscapes and vistas:

Due to the low-lying nature, intervisibility of adjacent landscapes can be experienced throughout the LCT. Taller man-made features draw the eye such as wind farms and forestry plantations. Beyond the boundaries in the neighbouring landscape, the LCT forms an important backdrop in receptors views from settled areas, roads, and railway line to the north, east and Strath Halladale to the west. Distant views across the sweeping moorland towards the Lone Mountains is a key feature.

Perceptual aspects:

Open and large-scale, the Sweeping Moorland and Flows LCT has some capability in accommodating the type of development proposed without becoming a dominating feature.

The Sweeping Moorland and Flows LCT displays many characteristics that are suitable for accommodating the Proposed Development, these include the open, large scale, simple landform that has no distinctive pattern. Landscape susceptibility is considered to be **Medium** for the Proposed Development

Landscape Sensitivity

A6.3.14. Overall, the Sweeping Moorland and Flows LCT is considered to have a **High** sensitivity to change. This is due to landscape value being considered to be Very High on account of the international, national, and local level designations which indicates a landscape of high quality.

LCT 143 Farmed Lowland Plain

A6.3.15. This LCT covers the majority of the north and eastern part of Caithness and predominantly comprises agricultural land. The LCT includes both pastoral and arable fields bounded by a combination of hedgerows, Caithness Flags, post, and wire fences creating a pattern of small to medium sized fields, more linear in appearance in coastal locations due to crofting and interspersed by copses, woodland and forestry.

A6.3.16. Approximately 107.8 ha is situated within the northern and eastern side of the Proposed Development Area; however, none of the Proposed Development components would be located in these areas which would remain undisturbed.

A6.3.17. Several operational wind farms are located within this LCT including Baille to the north east, Shebster and Forss to the north west, Wathegar I and II, and Achairn to the east which form Group 2 developments.

Key characteristics

A6.3.18. NatureScot identify the key characteristics for the Farmed Lowland Plain LCT as follows:

- 'A generally open, low-lying plain, gently undulating to form shallow broad valleys, which are often filled with lochs and mosses, and subtle low ridges.
- Occasional smooth hills rise above the more low-lying plain forming local landmarks.

- The broad and shallow valley of the River Wick forming the largest of a series of valleys generally aligned south-east/north-west across the plain.
- Agriculture the predominant land cover.
- More intensively managed farmland near the coast around Thurso and Wick, and close to Loch Watten.
- Distinctive Caithness flagstone fences in some parts, creating low, sharp edges to fields.
- Sparse woodland, mainly comprising small angular coniferous plantations planted for shelter on farms.
- Larger conifer woodlands located at the transition with the Sweeping Moorland and Flows standing out where they are planted on poorer wetter ground on low ridges.
- Farm buildings and houses forming focal points within the landscape.
- Occasional loose clusters of croft houses located on more marginal upper slopes and near the coast.
- A number of historic environment features, including conspicuous castles, Baronial mansions and tall 'Lairds' houses, usually with broadleaf shelter woods planted around them.
- Roads reinforce the settlement pattern, often following the field and property boundaries, running straight and then swinging around sharp corners.
- A number of large settlements, including the towns of Thurso and Wick, situated on the coast, as well as several smaller settlements.
- Many historic features, including brochs and cairns, dotted across farmland and situated on hills within, or adjacent to, this area.
- Small groups of large wind turbines sited on some of the low ridges and hills and prominent visibility of larger wind farms in adjacent Landscape Character Types.
- Extensive views due to the openness of the landscape, and the clarity of northern air and light.
- Dramatic views from the northern part of this landscape to Dunnet Head and the distant Orkney islands, and views from the A9 on the western edge of this landscape of the Lone Mountains of Morven and Scaraben seen across the low-lying Sweeping Moorland and Flows.' (NatureScot, 2019)²⁸

A6.3.19. The following figures provide baseline context from viewpoint locations within the Farmed Lowland Plain LCT:

- Figures 6.17 a-f: Viewpoint 1: Thurso;
- Figures 6.18 a-f: Viewpoint 2: North of Hoy;
- Figures 6.19 a-f: Viewpoint 3: Georgemas;
- Figures 6.20 a-f: Viewpoint 4: North Watten;
- Figures 6.21 a-f: Viewpoint 5: Scotscauder;
- Figures 6.23 a-f: Viewpoint 7: Harpsdale Crossroads;
- Figures 6.24 a-f: Viewpoint 8: Watten;
- Figures 6.25 a-f: Viewpoint 9: A882, east of Watten; and
- Figures 6.27 a-f: Viewpoint 11: North Wick, A99 Road.

Assessment of Landscape Sensitivity

A6.3.20. The following sets out landscape value of Farmed Lowland Plain LCT.

²⁸ NatureScot (2019) SNH National Landscape Character Assessment, Landscape Character Type 134 SWEEPING MOORLAND AND FLOWS – CAITHNESS & SUTHERLAND. Available from -

<https://www.nature.scot/sites/default/files/LCA/LCT%20134%20-%20Sweeping%20Moorland%20and%20Flows%20-%20Caithness%20&%20Sutherland%20-%20Final%20pdf.pdf> [Accessed: February 2023]

Table A6.6: Landscape Value of the Farmed Lowland Plain LCT

Landscape Value	
Landscape Quality (Condition):	This LCT is predominantly agricultural and intensively managed for both arable and pasture and has an overall medium quality. Areas of higher quality include hedgerows, traditional flagstone field boundaries, bogs, lochans and woodland, many of which are recognised by ecological designations.
Scenic quality:	The LCT is not designated for its scenic quality; however due to the low-lying nature, extensive views across neighbouring LCTs are obtained including distant views of the lone mountains to the south which are highly valued at a local level.
Rarity:	The agricultural nature of the LCT is not rare although it does display features that are rare such as the traditional flagstone field boundaries which are distinctive to the north of Scotland.
Representativeness:	This LCT is a good representation of an agricultural landscape in the north of Scotland.
Conservation interests:	There are several SSSIs, SPAs, SACs, Ramsar's and a high number of SAMs reflecting a diverse range of geology, habitats, species, and historical assets located throughout the LCT. Castle of Mey Garden and Designed Landscape (GDL) is located on the northern coastline and the LCT also includes several brochs, cairns, and Castle Girnioe, and Castle Sinclair. The LCT is not designated for dark skies.
Recreation value:	There are several Core Paths located within this LCT, mainly situated close to settlements. A section of the North Coast 500 also passes through the LCT and is a popular tourist route promoted at a national level. Other recreational activities include fishing on lochs and rivers and shooting.
Perceptual aspects:	NatureScot describe the LCT as ' <i>vast, exposed and open, generally dominated by horizontal emphasis. This, as well as the clarity of the air and light, allows for extensive views both within the lowland plain and to the landscapes and seascapes beyond.</i> ' (NatureScot, 2019)
Associations:	This LCT has a long history of documented human habitation dating back to prehistoric times
Overall, landscape value is Medium due to the lack of any formal landscape designations and predominantly agricultural land use.	

A6.3.21. Table A6.7 sets out landscape susceptibility of Farmed Lowland Plain LCT.

Table A6.7: Landscape Susceptibility of Farmed Lowland Plain LCT

Landscape Susceptibility	
Landscape scale and geographical extent:	The LCT is considered to be large in scale covering a large proportion of Caithness and the eastern edge of Sutherland. The large-scale of the landscape creates some opportunities for the type of development considered.
Landform:	The gently undulating landform of this landscape has a wide horizontal emphasis. Occasional smooth hills, such as Spittal Hill and Hill of Orlig, rise above the plain to form local landmarks. The low-lying gently undulating landscape has some ability to accommodate the type of development proposed, although distinct landscape features should be avoided.

Landscape Susceptibility	
Skylines:	Similar to the Sweeping Lowland and Flows LCT, the surrounding landscape comprises low-lying ridgelines which allow extensive visibility across the adjacent Sweeping Moorlands and Flows LCT towards the Lone Mountains. Views across the LCT and adjacent Sweeping Moorland and Flows LCT are an important feature. These views are interrupted in places by wind turbines and coniferous forestry.
Landscape pattern and complexity:	Landcover is predominantly agricultural and includes rectangular fields of arable farming or improved pasture creating a patchwork of grassland and crops. The distinctive geometry is broken by occasional lochs e.g., Loch Watten, and isolated hills which form focal points in the landscape. Field boundaries are often low stone walls made with locally distinctive Caithness flagstone and dykes. This creates low sharp edges to fields. There are very few hedgerows and broadleaf woodlands in more sheltered spots. There is the potential for development of the type proposed to contrast with the uniformity of the landscape.
Settlement and man-made influences:	This is a well settled landscape with modern large farms, and occasional small settlements (Watten and Spittal). The two largest settlements of Thurso and Wick are both located near the coast. Towards the edges of this LCT and on areas of marginal land are clusters of traditional small-scale crofts, increasing in number towards the coast, where the LCT changes to Coastal Crofts and Small Farms LCT. Landscape features, both natural and man-made can act as scale references when experienced in proximity to large turbines. During hours of darkness, there are several sources of artificial lighting within this LCT including vehicles travelling along the network of major and minor roads, lights from properties and settlements, and transmitter masts near the coastline.
Inter-visibility with adjacent landscapes and vistas:	Due to the low-lying nature of the landform, there is extensive visibility with the surrounding lowland landscapes, as well as across neighbouring LCTs towards the Lone Mountains.
Perceptual aspects:	Open and large-scale, this LCT has some capability in accommodating the type of development proposed although this must be weighed against the small-scale features and the settled nature of the landscape.
Landscape susceptibility is Medium due to balance between the large open scale of the landscape, combined with the settled nature and existing small-scale landscape features.	

Landscape Sensitivity

A6.3.22. Overall sensitivity for the Farmed Lowland Plain LCT is **Medium**, due to having a Medium value and susceptibility.

A6.4. Assessment of Landscape Character

A6.4.1. The aim of the landscape assessment is to identify, predict and evaluate potential key effects arising from the addition of the Proposed Development into the landscape. Landscape effects may be caused by changes to the constituent features or elements of the landscape, its aesthetic or perceptual qualities and overall character.

A6.4.2. Landscape effects on designated landscapes are also considered and addressed separately in Technical Appendix A6.4 and Technical Appendix A6.5.

A6.4.3. Assessing the significance of landscape effects requires the identification of the landscape receptors, the consideration of the nature of the landscape receptors (sensitivity) and the nature of the effect (magnitude) which would be experienced by each landscape receptor as a result of the Proposed Development.

A6.4.4. A cumulative landscape impact assessment is also included in the following landscape assessment and considers the level of effect as a result of the addition of the Proposed Development into each cumulative baseline scenario separately.

Proposed Development Area

A6.4.5. All of the proposed components of the Proposed Development would be located within the Sweeping Moorland and Flows LCT.

During Construction / Decommissioning Phases (Scenario 1)

A6.4.6. During the construction phase of the Proposed Development, there will be potential for short-term direct impacts of activities associated with the construction of infrastructure and turbines. Potential impacts during this phase are reversible unless otherwise stated (e.g., creation of permanent new features such as earthworks, access tracks, hardstandings and components of the Proposed Development that will be retained post decommissioning).

A6.4.7. The construction and decommissioning phases of the Proposed Development would result in the following activities:

- Construction/decommissioning of 4,985 m x 4.5 – 6 m wide access track (including upgrades);
- Construction/decommissioning of seven temporary lay down areas and a 35 x 13 m permanent hardstanding;
- Transportation of material to site to form access tracks and hardstandings;
- Construction of seven turbine foundations 30 m in diameter;
- Construction/decommissioning of a temporary construction and storage compound 50 x 50 m;
- Construction/decommissioning of a permanent Control Building 16 x 16 m;
- Construction/decommissioning Battery Energy Storage System (BESS) 47 x 29 m;
- Installation/decommissioning of seven wind turbines at 220 m to tip height;
- Creation of seven external transformer housing 3 x 3 m;
- Excavation/reinstatement of cable trenches;
- General reinstatement works; and
- Vehicular/personnel movements on site.

Magnitude of Change

A6.4.8. Such operations would result in direct impacts on the landscape fabric of the Proposed Development Area. This will include vegetation clearance, excavation of soil, earthworks, the introduction of new elements and activity associated with construction which would contrast with the existing land use and context. Overall, land use within the Proposed Development Area would not change during construction and decommissioning phases and would be limited to the areas identified on Figure 5.1.

A6.4.9. It is considered the magnitude of change on the landscape resource of the Proposed Development Area would be **High** resulting from the temporary and permanent direct and indirect loss of blanket bog and modified bog (addressed in detail in Chapter 7: Ecology).

A6.4.10. This would cover a small geographical extent of the overall Proposed Development Area where the size and scale of the change would be large.

Significance of Effect

A6.4.11. The Proposed Development Area is assessed as having a Medium sensitivity, combined with a High magnitude of change which when combined results in a **Major-moderate** adverse and **significant** effect on the physical landscape fabric of the Proposed Development Area during construction and decommissioning. This would occur over a short period of time, the majority of which would be temporary in nature and reversible in the long-term. The exception being the turbine foundations and access tracks which would be left in situ following decommissioning.

During Operation and Maintenance (Scenario 1)

A6.4.12. Following reinstatement post construction, the Proposed Development Area would enter the operational and maintenance phase with activity within the proposed site reducing to works associated with the operation and maintenance of seven wind turbines, BESS, and access tracks. This would create additional movement within the landscape as well as the project components mentioned contrasting with the current land use resulting in direct impacts from the physical elements of the Proposed Development covering a small geographical area of the Proposed Development Area. The overall land use within the Proposed Development Area would not change during operation and maintenance and agricultural and forestry practices would continue.

A6.4.13. The operational and maintenance phase of the Proposed Development would result in the following activities:

- Operation and maintenance of 4,985 m x 4.5 – 6 m wide access track;
- Operational and maintenance of a permanent hardstanding 35 x 13 m;
- Operation and maintenance of a temporary construction and storage compound 50 x 50 m;
- Operation and maintenance of a permanent Control Building 16 x 16 m;
- Operation and maintenance of at BESS 47 x 29 m;
- Operation and maintenance of seven wind turbines at 220 m to tip height;
- Operation and maintenance of seven external transformer housing 3 x 3 m; and
- Vehicular/personnel movements on site.

Magnitude of Change

A6.4.14. Magnitude of change on the landscape resource of the Proposed Development Area would remain as **High** during operation and maintenance due to the size and scale of the changes occurring over a localised area including the operation of seven wind turbines, access tracks, earthworks, compound, BESS, and substation.

Significance of Effect

A6.4.15. This would result in a **Major-moderate** adverse and **significant** effect on the physical landscape fabric and perception of the Proposed Development Area during operation. The nature of changes would be direct, long-term, and reversible following decommissioning, the exception being sections of access tracks and the turbine foundations which would be left in situ.

A6.4.16. No further developments are planned for the Proposed Development Area and therefore there would be no cumulative effects.

Sweeping Moorland and Flows LCT

- A6.4.17. Beyond the Proposed Development Area, effects on the Sweeping Moorland and Flows LCT would be indirect and associated with visibility of the project components.
- A6.4.18. Analysis of the ZTV shown on Figures 6.3a – 6.4 show that 42.2 % of theoretical visibility of the Proposed Development is predicted within the Sweeping Moorland LCT that is within the 45 km study area. This would be widespread within 15 km of the Proposed Development, the exception being to the south west where landform would restrict theoretical visibility at 13 km. Beyond 15 km, theoretical visibility would reduce to areas of higher elevation. Due to the lack of tree cover within the LCT, the ZTV is predicted to be accurate.
- A6.4.19. To the north and south, the Proposed Development would extend turbines further east away from the existing cluster of Group 1 developments and therefore, increasing the horizontal extent of turbines seen within this LCT. To the west, the Proposed Development would be viewed behind the existing cluster of Group 1 developments, increasing the number of turbines forming the cluster and stacking. Depending on the elevation of the location within the LCT, in some cases, the turbines will at times appear in views noticeably higher than the foreground turbines, or at the same height.
- A6.4.20. A series of viewpoints represent the perceptual change experienced in the wider LCT from different elevations and distances from the Proposed Development as follows:
- Figures 6.22 a-f: Viewpoint 6: Ben Dorrery;
 - Figures 6.28 a-f: Viewpoint 12: Westerdale;
 - Figures 6.29 a-f: Viewpoint 13: Minor Road North of Grey Cairns;
 - Figures 6.30 a-g: Viewpoint 14: Loch More Cottage;
 - Figures 6.32 a-f: Viewpoint 16: A9, North of Rangag;
 - Figures 6.33 a-e: Viewpoint 17: Coire na Beinne; and
 - Figures 6.34 a-f: Viewpoint 18: Ben Alisky.

Key Characteristics

- A6.4.21. The key characteristics of the LCT likely to be affected during the construction/decommissioning and operational and maintenance phases are analysed in the following paragraphs.

Key characteristic - Vehicular tracks within parts of the landscape.

- A6.4.22. The addition of the Proposed Development would result in an increase in access tracks constructed within this LCT. However, the low-lying nature and relatively flat topography will reduce their visibility within the wider landscape to direct impacts on the landscape fabric of the Proposed Development Area rather than to views.

Key characteristic - Wind farms, transmission lines, the A9 and a network of minor roads are key features within the more modified outer fringes within Caithness.

Key characteristic - Long, low, and largely uninterrupted skylines offering extensive views across this landscape and result in a feeling of huge space.

- A6.4.23. The skyline to the west of the Proposed Development is heavily influenced by operational wind farms, electricity transmission lines, and coniferous forestry plantations. The addition of the Proposed Development to this baseline

would increase the number of wind turbines within the cluster, and from the south west, extend turbines further to the east of the Group 1 developments.

Key characteristic - Consistent views to the distant Lone Mountains and Rugged Mountain Massif – Caithness & Sutherland.

- A6.4.24. The Proposed Development is located on the eastern periphery of this LCT, therefore, would form an intervening feature to a small proportion of the LCT when viewing the lone mountains to the south west. Views from this area are currently affected by coniferous forestry and the operational Group 1 wind farms and it is not considered that the addition of the proposed turbines would affect these views.

Key characteristic - A strong sense of remoteness is associated within the largely uninhabited, inaccessible core flows and moorlands of this landscape.'

- A6.4.25. The addition of the Proposed Development would impact on the sense of remoteness of the proposed site, affecting a small number of people accessing the Proposed Development Area for commercial forestry and agricultural reasons that is privately owned. Within the wider landscape, the Proposed Development would be located on the periphery of the LCT, behind Group 1 developments and away from the core area of flows and moorland where the perception of remoteness is experienced and would have limited effect on this key characteristic.

During Construction / Decommissioning Phases (Scenario 1)

- A6.4.26. During construction, site enabling works and the installation of turbines and associated infrastructure would result in direct and indirect, permanent, and temporary impacts on the landscape fabric of the Proposed Development Area addressed above. Within the wider LCT, the main effects would relate to views of the Proposed Development which would form an additional new vertical feature (including temporarily views of cranes) alongside the existing operational wind farms. The supporting infrastructure works would be partially screened in views by a combination of landform and forestry plantations.

Magnitude of Change

- A6.4.27. This would result in a change in terms of the perceptual experience with theoretical visibility being widespread within 15 km, thereafter, affecting elevated areas. This would be experienced within the context of Group 1 developments and coniferous forestry which would be within the foreground, and therefore, the addition of the Proposed Development would not be as apparent as it would be without the existing operational wind farms..

- A6.4.28. Landscape magnitude of change during construction would be **High** as a result of the size and scale of the changes, combined with the geographical area affected surrounding the Proposed Development. As distance increases, the size and scale of change would reduce to **Medium** and **Low** levels.

Significance of Effect

- A6.4.29. Sensitivity for this LCT is assessed as Medium and magnitude of change High. This would result in a **Major-moderate** adverse and **significant** effect during construction and decommissioning, reducing to **Moderate** adverse **significant** to **Moderate** and **Minor** adverse not significant effects elsewhere as distance increases and the scale and size of the change reduces. This would occur over a short period of time, the majority of which would be temporary in nature and reversible in the long-term. The exception being the turbine foundations and access tracks which would be left in situ following decommissioning.

During Operation (Scenario 1)

- A6.4.30. The nature of the effects on landscape character would be both direct and indirect, long term during the operational life of the Proposed Development and reversible beyond this period following decommissioning, the exception being the turbine foundations and sections of access track left in situ, which would not be visible in the wider landscape.
- A6.4.31. During operation, turbines would be experienced rotating adding additional movement to the landscape alongside the existing Group 1 developments. There would also be regular maintenance vehicles visiting the proposed site. Figure 6.15
- A6.4.32. All seven aviation lights would be experienced within the LCT at various light intensities depending on elevation. This would include 0° to -4° within 15 km where light intensities are predicted to be between 200 – 4 candela (ca). Beyond 15 km, theoretical visibility and intensity of aviation lights would reduce with summits and north facing slopes being predicted to receive 200 ca, at distances in excess of 13 to 45 km. At these distances, the lights would not be as intense owing to distance and atmospheric conditions and appear as blinking. In views from the west within the LCT, foreground the blades of foreground Group 1 developments would also pass in front of the aviation lights. Aviation lights would be seen in the direction of other artificial lighting sources including lights from properties, skyglow from the distant settlements of Wick and Thurso, and vehicles travelling along the road network.

Magnitude of Change

- A6.4.33. Figure 6.5 indicates that the horizontal angle of view that the Proposed Development will occupy in views from the LCT will be typically between 50-360° within 2 km, reducing to 10-60° within 5 km and 1-20° thereafter as distance increases occupying a geographical area of 42.2%.
- A6.4.34. Magnitude of change would be **High**, resulting from the size and scale of the changes including the introduction of seven wind turbines, substation/BESS, access tracks and aviation lights which would extend the effects over a longer period each day. These would-be long-term features within the landscape. Beyond 15 km, magnitude of change would reduce as the scale of the turbines would become less owing to the large-scale landscape that it is located within viewed beyond Group 1 developments, where the size and scale of the change would recede, and the geographical area reduce. This would result in **Medium to Negligible** levels of magnitude.

Significance of Effect

- A6.4.35. Sensitivity for the LCT is assessed as Medium and magnitude of change High. This would result in a **Major-moderate** adverse and **significant** effect within 15 km of the Proposed Development, reducing to **Moderate significant to Moderate** and **Minor** adverse not significant effects elsewhere. The nature of changes would be direct, long-term, and reversible following decommissioning, the exception being sections of access tracks and the turbine foundations which would be left

Cumulative Assessment

Cumulative Assessment - Scenario 2

- A6.4.36. Three consented wind farms are located in this LCT, Achlachan II located to the west infilling an area between Achlachan I and Causeymire, Tachur located on the southern end of Bad a Cheo would result in further turbines forming part of the existing Group 1 cluster. To the east, Camster II located to the east between Camster I and Achairn forming part of Group 2 developments, and Golticlay located in the south east of the LCT as a standalone development. Cogle Moss would also be located within the Moss of Kirk / Moss of Killimster sub-unit, and Slickly

in the Battens of Brabster sub-unit to the north east of the Proposed Development. None of these developments would require aviation lights due to being under 150 m.

- A6.4.37. The Scenario 2 baseline would result in a further six turbines being viewed around the existing operational cluster of Bad a Cheo, Halsary and Causeymire. Both Achlachan II and Tachur would not result in further theoretical visibility within the LCT. Golticlay in the south east of the LCT, would result in a slight increase in theoretical visibility mainly occurring in the south west of the LCT.
- A6.4.38. The introduction of the Proposed Development to this baseline would not result in an increase in theoretical visibility within the LCT. Effects would be associated with further turbines being viewed beyond the existing cluster of operational turbines or extending development further east away from Group 1 developments as discussed for the assessment of Scenario 1. Therefore, it is not considered that the magnitude of change would increase from Medium. Therefore, the significance of effect would remain as **Major-moderate** adverse and **significant**, reducing to **Moderate** and **Minor** non-significant levels as distance increases from the Proposed Development.

Cumulative Assessment- Scenario 3

- A6.4.39. Both application schemes considered would be located within this LCT, Tormsdale in the South and East Caithness sub-unit would extend turbines further west from Causeymire operational wind farm increasing the spread of the Group 1 developments westwards, and Hollandmey would be located within the Battens of Brabster sub-unit to the north east.
- A6.4.40. Scenario 3 baseline would result in the addition of Tormsdale, located between west of the existing cluster of turbines of Scenario 1. This would increase the influence of wind turbines on views from the north of the LCT, in particular from the adjacent peatlands.
- A6.4.41. Potential impacts would be associated with further turbines being viewed beyond the Group 1 cluster or extending development further east It is not considered that the magnitude of change would increase from Medium due to the proposed turbines being further away from the core area of the LCT which lies to the west of the A9 road. Therefore, the significance of effect would remain as **Major-moderate** adverse and **significant**, reducing to **Moderate-minor** and **Minor** non-significant levels as distance increases from the Proposed Development.

LCT 143 Farmed Lowland Plain

- A6.4.42. Potential impacts on the Farmed Lowland Plain LCT would be indirect and associated with visibility of the Proposed Development.
- A6.4.43. Analysis of the ZTV shown on Figures 6.3a – 6.4 show that theoretical visibility of the Proposed Development would occur from 67.4 % of the Farmed Lowland Plain LCT that is within the 45 km study area. This would be widespread to the north and east of the Proposed Development within 15 km, with no theoretical visibility occurring in hollows. Beyond 15 km, theoretical visibility reduces to elevated ground facing the Proposed Development covering the east of Castletown, and north and west at Spittal, Halkirk and Thurso. In reality, the visual envelope would reduce as there are small copses of woodland and field boundary hedgerows in the intervening area which would provide some screening.
- A6.4.44. The addition of the Proposed Development to this baseline would result in an increase in the number of turbines being viewed to the south which would be seen in combination and front of, or extending the existing Group 1 operational cluster eastwards. The proposed turbines would also be seen sequentially with other operational wind farms both located within the LCT such as Group 2 developments to the east, and those located in adjacent LCTs.

A6.4.45. A series of viewpoints represent the perceptual change experienced in the wider LCT from different elevations and distances from the Proposed Development as follows:

- Figures 6.17 a-f: Viewpoint 1: Thurso;
- Figures 6.18 a-f: Viewpoint 2: North of Hoy;
- Figures 6.19 a-f: Viewpoint 3: Georgemas;
- Figures 6.20 a-f: Viewpoint 4: North Watten;
- Figures 6.21 a-f: Viewpoint 5: Scotscalder;
- Figures 6.23 a-f: Viewpoint 7: Harpsdale Crossroads;
- Figures 6.24 a-f: Viewpoint 8: Watten;
- Figures 6.25 a-f: Viewpoint 9: A882, east of Watten; and
- Figures 6.27 a-f: Viewpoint 11: North Wick, A99 Road.

Key Characteristics

A6.4.46. The key characteristics of the LCT likely to be affected during the construction/decommissioning and operational and maintenance phases are analysed in the following paragraphs.

Key Characteristic - Larger conifer woodlands located at the transition with the Sweeping Moorland and Flows standing out where they are planted on poorer wetter ground on low ridges.

A6.4.47. A total of 11.24 ha will be felled to enable construction of the Proposed Development, this would be located within the adjacent Sweeping Moorland and Flows LCT. This area is on the edge of a larger forest and its removal would not open up views across the Proposed Development Area towards the Flow Country and Lone Mountains beyond.

Key Characteristic - Small groups of large wind turbines sited on some of the low ridges and hills and prominent visibility of larger wind farms in adjacent Landscape Character Types.

Key Characteristic - Extensive views due to the openness of the landscape, and the clarity of northern air and light.

A6.4.48. The Proposed Development would form a large vertical feature which would be experienced in closer proximity to this LCT in comparison to the existing operational cluster. Viewpoints 4, 8 and 9 discussed in Technical Appendix A6.6 provide a representation of the likely effect on this LCT from close proximity. The remaining Viewpoints 1, 2, 3, 5, 7 and 11 represent views from more distant locations and elevations.

Key Characteristics - Dramatic views from the northern part of this landscape to Dunnet Head and the distant Orkney islands, and views from the A9 on the western edge of this landscape of the Lone Mountains of Morven and Scaraben seen across the low-lying Sweeping Moorland and Flows.

A6.4.49. The Proposed Development would not form an intervening feature in the views described on account of its location in the opposite direction.

During Construction / Decommissioning Phases (Scenario 1)

A6.4.50. During construction/decommissioning phases, the addition of the Proposed Development would result in additional vertical features (including temporarily views of cranes) alongside the existing operational wind farms being visible. The supporting infrastructure works would be partially to fully screened by a combination of landform and forestry plantations.

Magnitude of Change

A6.4.51. This would result in a change in terms of the perceptual experience of the LCT with theoretical visibility of construction and decommissioning activities being widespread within 15 km, thereafter, affecting elevated areas of farmland.

A6.4.52. Landscape magnitude of change during construction would be **High** as a result of the size and scale of the changes, combined with the geographical area affected surrounding the Proposed Development Area. As distance increases, the size and scale of change would reduce to **Medium** and **Low**.

Significance of Effect

A6.4.53. Sensitivity for this LCT is assessed as Medium and magnitude of change High. This would result in a **Major-moderate** adverse and **significant** effect within 15 km during construction and decommissioning phases, reducing to **Moderate** adverse and **Minor** adverse not significant levels elsewhere as distance increases.

During Operation (Scenario 1)

A6.4.54. During operation, turbines would be experienced rotating adding additional movement to the landscape alongside the existing operational wind turbines. This would be experienced within the context of Group 3 and 4 developments within and neighboring LCTs, Group 2 in the east, and backdropped by Group 1 developments. Therefore, the addition of the Proposed Development would not be as apparent as it would be without the existing operational wind farms..

A6.4.55. All seven aviation lights would be experienced within the LCT at various light intensities depending on elevation. This would include 0° to - 4° within 15 km where light intensities would predominantly be 75 – 8 ca within 10 km, and 200 – 4 (ca) beyond 15 km. At distances beyond 5 km, the lights would not be as intense owing to distance and atmospheric conditions and appear as blinking. Aviation lights would be seen alongside other artificial lighting sources including lights from properties, skyglow from the distant settlements of Wick and Thurso, and vehicles travelling along the road network within the LCT.

Magnitude of Change

A6.4.56. Figure 6.5 indicates that the horizontal angle of view that the Proposed Development will occupy in views from the LCT will be typically between 50-360° within 2 km, reducing to 10-60° within 5 km and 5-10° from 10 km as distance increases occupying a geographical area of 67.4%.

A6.4.57. Magnitude of change would be **Medium** during operation resulting from the size and scale of the changes including the introduction of seven wind turbines, and aviation lights which would extend the effects over a longer period each day. These would-be long-term features within the landscape and reversible following decommissioning. Beyond 15 km, magnitude of change would reduce as the scale of the turbines would become less owing to the large-scale landscape that it is located within, screening from landform and vegetation, and distance where the size and scale of the change would recede, and the reduced geographical area affected. This would result in **Medium** to **Negligible** levels.

Significance of Effect

A6.4.58. Sensitivity for the LCT is assessed as Medium and magnitude of change High. This would result in a **Major-moderate** adverse and **significant** effect within 15 km of the Proposed Development, reducing to **Moderate significant, Moderate** and **Minor** adverse not significant effects elsewhere. The nature of the effects on landscape

character would be indirect, long term during the operational life of the Proposed Development and reversible beyond this period following decommissioning.

Cumulative Assessment

Cumulative Assessment - Scenario 2

- A6.4.59. No consented sites would be located within this LCT, but visibility would occur of turbines in the neighbouring Sweeping Moorlands and Flow LCT. This would include Slickly located to the west of Stroupster forming Group 4 developments, Cogle Moss as a standalone, Camster II infilling an area between Camster and Achairn wind farms forming Group 2 developments, Achlachan II and Tachur forming part of Group 1 developments, and Golticlay further south.
- A6.4.60. The introduction of the Proposed Development would not result in an increase in theoretical visibility within the LCT. Impacts would be associated with further turbines being viewed beyond the existing cluster of operational turbines forming Group 1 extending development further east towards the LCT. The consented sites would be further away from the LCT, and it is not considered that there would be an increase in cumulative effects as a consequence of the Proposed Development.
- A6.4.61. Therefore, it is not considered that the magnitude of change would increase from **High** and the significance of effect would remain as **Major-moderate** adverse and **significant**, reducing to **Moderate-minor** and **Minor** non-significant levels as distance increases from the Proposed Development.

Cumulative Assessment- Scenario 3

- A6.4.62. The addition of the Scenario 3 developments would also be located in the neighboring Sweeping Moorland and Flows LCT and include Hollandmey in the north forming Group 3 developments, and Tormsdale in the south west which would extend turbines westwards of Group 1.
- A6.4.63. Potential impacts would be associated with further turbines being viewed beyond the existing cluster of operational turbines or extending development further east towards the LCT. It is not considered that the magnitude of change would increase from **High**. Therefore, the significance of effect would remain as **Major-moderate** adverse and **significant**, reducing to **Moderate-minor** and **Minor non-significant** levels as distance increases from the Proposed Development.

A6.5. Summary

A6.5.1. Table A6.8 provides a summary of the assessment of the Proposed Development on landscape character.

Table 6.8: Summary of Effects on Landscape Character

Landscape Character Type (LCT)	Sensitivity	Magnitude of Change	Significance of Effect	Cumulative Effect (Scenario 2)	Cumulative Effect (Scenario 3)
Proposed Development Area	Medium	High	Major adverse and significant during construction, operation, and decommissioning phases.	N/a	N/a

Landscape Character Type (LCT)	Sensitivity	Magnitude of Change	Significance of Effect	Cumulative Effect (Scenario 2)	Cumulative Effect (Scenario 3)
Sweeping Moorland and Flows	Medium	High reducing to Medium and Low levels with distance beyond 15 km.	Major-moderate adverse and significant, reducing to non-significant levels as distance increases during construction, operation, and decommissioning phases.	Major-moderate adverse and significant	Major-moderate adverse and significant
Farmed Lowland Plain	Medium	High reducing to Medium and Low levels with distance beyond 15 km.	Major-moderate adverse and significant, reducing to non-significant levels as distance increases during construction, operation, and decommissioning phases.	Major-moderate adverse and significant	Major-moderate adverse and significant

Technical Appendix A6.4

Protected & Designated Landscapes Assessment

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Glossary

Term	Definition
Direct effect	<i>'An effect that is directly attributable to the proposed development.'</i> *
Environmental Impact Assessment (EIA)	Environmental Impact Assessment (EIA) is a means of drawing together by the developer, in a systematic way, a description of the development and information relating to an assessment of the likely significant environmental effects arising from the Proposed Development.
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5.
Garden and Designed Landscape	A garden or landscape included in Historic Environment Scotland's Inventory of Gardens and Designed Landscapes. <i>'The inventory recognises grounds intentionally laid out for artistic effect which are of national importance.'</i> (HES, 2019)
Indirect effects	<i>'Indirect effects that result indirectly from the proposed project as a consequence of the direct effects., often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.'</i> *
Landform	<i>'The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.'</i> *
Landscape	<i>'An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.'</i> *
Landscape & Visual Impact Assessment (LVIA)	<i>'A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.'</i> *
Landscape effects	<i>'Effects on the landscape as a resource in its own right.'</i> *
Landscape receptors	<i>'Defined aspects of the landscape resource that have the potential to be affected by a proposal.'</i> *
National Scenic Area	National Scenic Area (NSAs) are described as areas <i>'of outstanding scenic value in a national context'</i> , for which special protection measures are required.' (Town and Country Planning. (Scotland) Act 1997 as amended).
Special Landscape Area	Special Landscape Areas (SLAs) are regionally valuable landscapes identified to protect and enhance landscape qualities and promote their enjoyment.
The Proposed Development	The proposed Watten Wind Farm development.
The Proposed Development Area	The area within the red line boundary where the Proposed Development will be located (application area).

Term	Definition
Wild Land Area	Wild Land Areas (WLAs) are the most extensive areas of high wildness. They are identified as nationally important in Scottish Planning Policy but are not a statutory designation.

* Taken from *Guidelines for Landscape and Visual Impact Assessment, Third Edition*. 2013

List of Abbreviations

Abbreviation	Description
AOD	Above Ordnance Datum
EIAR	Environmental Impact Assessment Report
GDL	Garden and Designed Landscape
LCT	Landscape Character Type
LVIA	Landscape and Visual Impact Assessment
NSA	National Scenic Area
OUVs	Outstanding Universal Values
SNH	Scottish Natural Heritage (now NatureScot)
SLA	Special Landscape Area
THC	The Highland Council
WHS	World Heritage Site
WLA	Wild Land Area
ZTV	Zone of Theoretical Visibility

A6.1. Introduction

A6.1.1. This Technical Appendix supports Chapter 6: Landscape and Visual of the Environmental Impact Assessment Report (EIAR) for Watten Wind Farm (the Proposed Development). The Technical Appendix includes a preliminary assessment of protected and designated landscapes within the 45 km study area and identifies which are to be scoped in and out of the Landscape and Visual Impact Assessment (LVIA), followed by a detailed assessment.

A6.1.2. This Technical Appendix should be read in conjunction with the following EIAR documents:

- Technical Appendix A6.1: LVIA Methodology;
- Figure 6.1: LVIA Study Area;
- Figure 6.2: Cumulative Study Areas;
- Figure 6.3a : Zone of Theoretical Visibility to Tip Height (A3 Size);
- Figure 6.3b: Zone of Theoretical Visibility to Tip Height (A0 Size);
- Figure 6.5: Horizontal Angle ZTV;
- Figure 6.6a-g – Aviation Lighting Intensity ZTV;
- Figure 6.8 – Landscape Character;
- Figure 6.9 – Protected and Designated Landscapes;
- Figure 6.30a-g – Viewpoint 14: Loch More Cottage;
- Figure 6.33a-e – Viewpoint 17: Coire na Beinne;
- Figure 6.34a-f – Viewpoint 18: Ben Alisky; and
- Figure 6.35a-f – Viewpoint 19: Scaraben.

A6.2. Preliminary Assessment of Protected and Designated Landscapes

A6.2.1. Protected and designated landscapes within the study area have been identified following a review of NatureScot designations and The Highland Council (THC) *Highland-wide Local Development Plan 2012*. Analysis of the tip height Zone of Theoretical Visibility (ZTV) mapping established which of the protected and designated landscapes would potentially be affected by the Proposed Development. Table A6.1 provides an overview of the extent of theoretical visibility within each designation and justification for being scoped in or out of the LVIA.

Table A6.1: Preliminary Assessment of Protected and Designated Landscapes

Protected and Designated Landscape	Extent of Theoretical Visibility	Included in the Assessment
National Level		
Hoy and West Mainland National Scenic Area (NSA)¹	This NSA is located 42.8 km to the north of the Proposed Development where a limited part of the southern extent is situated within the 45 km study area. Theoretical visibility is predicted to occur in a very limited area covering Whitefowl Hill, the western coastline and seascape at distances of 42.8 – 45 km from the proposed turbines.	No – it is considered that the introduction of the Proposed Development would not significantly affect the special qualities of the NSA as a result of distance.
Castle of May Garden and Designated Landscapes (GDL)²	Castle of Mey GDL is located 22.8 km to the north east of the proposed turbines. Theoretical visibility is predicted to be limited to the southern policies covering the main drive and woodland.	No – due to a combination of distance, limited theoretical visibility predicted and influence of policy woodland in screening potential views.
Dunbeath Castle GDL³	This GDL is situated 22.6 km to the south west of the proposed turbines. No theoretical visibility is predicted.	No
Melsetter House GDL⁴	This GDL is located 37.4 km to the north east of the Proposed Development on Hoy. No theoretical visibility is predicted.	No
No. 35 Ben Klibreck – Armine Forest Wild Land Area (WLA)⁵	This WLA is situated 40.5 km to the south west of the Proposed Development. No theoretical visibility is predicted.	No
No 36 Causeymire – Knockfin Flows WLA⁶	This WLA is located 5.7 km to the south west of the proposed turbines. Theoretical visibility is predicted to be widespread to 12.5 km from the Proposed Development, thereafter, reducing to elevated areas out to 39.5 km.	Yes – as it is considered there is potential for significant effects on the wild attributes as a result of proximity to the Proposed Development, and the extent of theoretical visibility predicted. The inclusion of the WLA was agreed through consultation with NatureScot and THC.
No. 39 East Halladale Flows WLA⁷	This WLA is located 13.6 km to the west of the proposed turbines. Theoretical visibility is predicted on elevated ground extending to 27.0 km	Yes – due to the proximity of the Proposed Development to the WLA, and the extent of theoretical visibility predicted. The inclusion of the WLA in the assessment was agreed

¹ Scottish Natural Heritage (2010) *Scottish Natural Heritage Commissioned Report 374: The Special Qualities of the National Scenic Areas*. Battleby. SNH.

² Historic Environment Scotland (2019) *CASTLE OF MEY (BARROGILL CASTLE)* Available from - <http://portal.historicenvironment.scot/designation/GDL00096> [Accessed 02/08/2023]

³ Historic Environment Scotland (2019) *DUNBEATH*. Available from - <http://portal.historicenvironment.scot/designation/GDL00150> [Accessed 02/08/2023]

⁴ Historic Environment Scotland (2019) *MELSETTER*. Available from - <http://portal.historicenvironment.scot/designation/GDL00281> [Accessed 02/08/2023]

⁵ NatureScot (2017) *Ben Kilbreck – Armine Forest Wild Land Area*. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20Ben-Kilbreck-Armine-Forest-July-2016-35.pdf> [Accessed 02/08/2023]

⁶ NatureScot (2017) *Causeymire – Knockfin Flows Wild Land Area*. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20Causeymire-Knockfin-Flows-July-2016-36.pdf> [Accessed 02/08/2023]

⁷ NatureScot (2017) *East Halladale Flows Wild Land Area*. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20East-Halladale-Flows-July-2016-39.pdf> [Accessed 02/08/2023]

Protected and Designated Landscape	Extent of Theoretical Visibility	Included in the Assessment
through consultation with NatureScot and THC.		
No. 41 Hoy WLA⁸	The Hoy WLA is located 39.5 km to the north of the proposed turbines covering the island of Hoy. Theoretical visibility is predicted from summits and south facing ridges between 40.8 – 45 km.	No – at the distances involved, it is not considered that the introduction of the Proposed Development would lead to significant effects to the wild attributes of the WLA.
Regional Level⁹		
Dunnet Head Special Landscape Area (SLA)	Located 15.6 km to the north of the proposed turbines covering Dunnet Head. Theoretical visibility is predicted to cover West Dunnet, Dunnet Hill, Burifa Hill and high ground above Dunnet Head.	No – due to the distance between the Proposed Development and SLA, it is not considered that the special qualities of the SLA would be significantly affected. An assessment of the view from Dunnet Head has been assessed in the visual assessment (see Viewpoint 20, Figure 6.36a-f).
Duncansby Head SLA	This SLA is located 25.0 km to the north east of the proposed turbines covering Duncansby Head. Theoretical visibility is predicted to be very limited covering the summit of Hill of Crogodale.	No – due to the distance from the Proposed Development and the very limited theoretical visibility predicted.
Farr Nay, Strathy and Portskerra SLA	This SLA is located 35.5 km to the north west of the proposed turbines and covers the coastline and immediate hinterland. No theoretical visibility is predicted.	No
The Flow Country and Berriedale Coast SLA	This SLA is located 6.8 km to the south west of the proposed turbines. Theoretical visibility is predicted to be widespread to 12.5 km from the proposed turbines, thereafter, reducing to elevated areas out to 39.5 km.	Yes – it is considered that there is potential for significant effects to the special qualities of the SLA due to proximity to the Proposed Development, and the extent of theoretical visibility predicted.

Source: Figure 6.9: Protected and Designated Landscapes

A6.2.2. In early 2023, a nomination for World Heritage Site (WHS) status for Scotland’s Flow Country was submitted to UNESCO by the Flow Country Partnership, via the UK Government. The Flow Country Partnership anticipates a decision on whether to award WHS status within 2024. There are currently no finalised, inscribed Outstanding Universal Values (OUVs), however information available from the nomination draft dated December 2022 has been published on the Flow Country Partnership website and it describes the Flow Country as, “a vast expanse of peatland in Caithness and Sutherland”, being nominated for WHS status for its, “blanket bog landscape and the biodiversity it holds”. The Flow Country website notes that the boundary aims to encompass, “the blanket bog that is in the best condition and displays the attributes that make it outstanding on a global scale”.

- A6.2.3. Protection for The Flow Country is provided through international and national designations, as well as national and local planning policies, and there is scope for future expansion of the site through restoration of adjacent degraded blanket bog. The area is also considered to be the type-locality for the description of blanket bog and so represents a significant research and educational resource.”
- A6.2.4. The Draft Management Plan also states that “*Although the site is not being proposed for its natural beauty (UNESCO WH criterion vii), the visual impact of wind farm developments needs to be considered as this can be relevant for the way people experience the site in respect to its setting.*” It also states that “...there is no explicit link between OUV and important views, visual relationships or natural beauty. This is not to rule out any importance attributed to views in terms of appreciation of OUV, but technically there is only a very marginal link to the OUV...”
- A6.2.5. The potential effect of the Proposed Development on the wild attributes of the WLAs has been assessed separately in Technical Appendix A6.5: Wild Land Assessment and summarised in the LVIA Chapter.
- A6.2.6. Of the eight national level and four regional level protected and designated landscapes identified within the study area, the following have been taken forward for detailed assessment:
- No 36 Causeymire – Knockfin Flows WLA;
 - No. 39 East Halladale Flows WLA; and
 - The Flow Country and Berriedale Coast SLA.
- A6.2.7. The following text provides a detailed assessment of the Flow Country and Berriedale Coast SLA.

A6.3. Detailed Assessment of Protected and Designated Landscape

Flow Country and Berriedale Coast SLA

Baseline

- A6.3.1. The SLA covers approximately 363 km² of the Caithness and Sutherland landscape and is located between 6.8 and 39.5 km to the south west of the nearest turbine. Considered to be regionally valuable, this landscape is designated to protect and enhance its landscape qualities and promote their enjoyment in *Policy 57 Natural, Built and Cultural Heritage of the Highland-wide local development plan (2012)*.
- A6.3.2. The assessment of the Flow Country and Berridale Coast SLA is supported by the following documents:
- Technical Appendix A6.3: Landscape Character Assessment;
 - Technical Appendix A6.5: Wild Land Assessment;
 - Figure 6.6a-g – Aviation Lighting Intensity ZTV;
 - Figure 6.8 – Landscape Character;
 - Figure 6.9 – Protected and Designated Landscapes;
 - Figure 6.30a-g – Viewpoint 14: Loch More Cottage;
 - Figure 6.33a-e – Viewpoint 17: Coire na Beinne;
 - Figure 6.34a-f – Viewpoint 18: Ben Alisky; and
 - Figure 6.35a-f – Viewpoint 19: Scaraben.

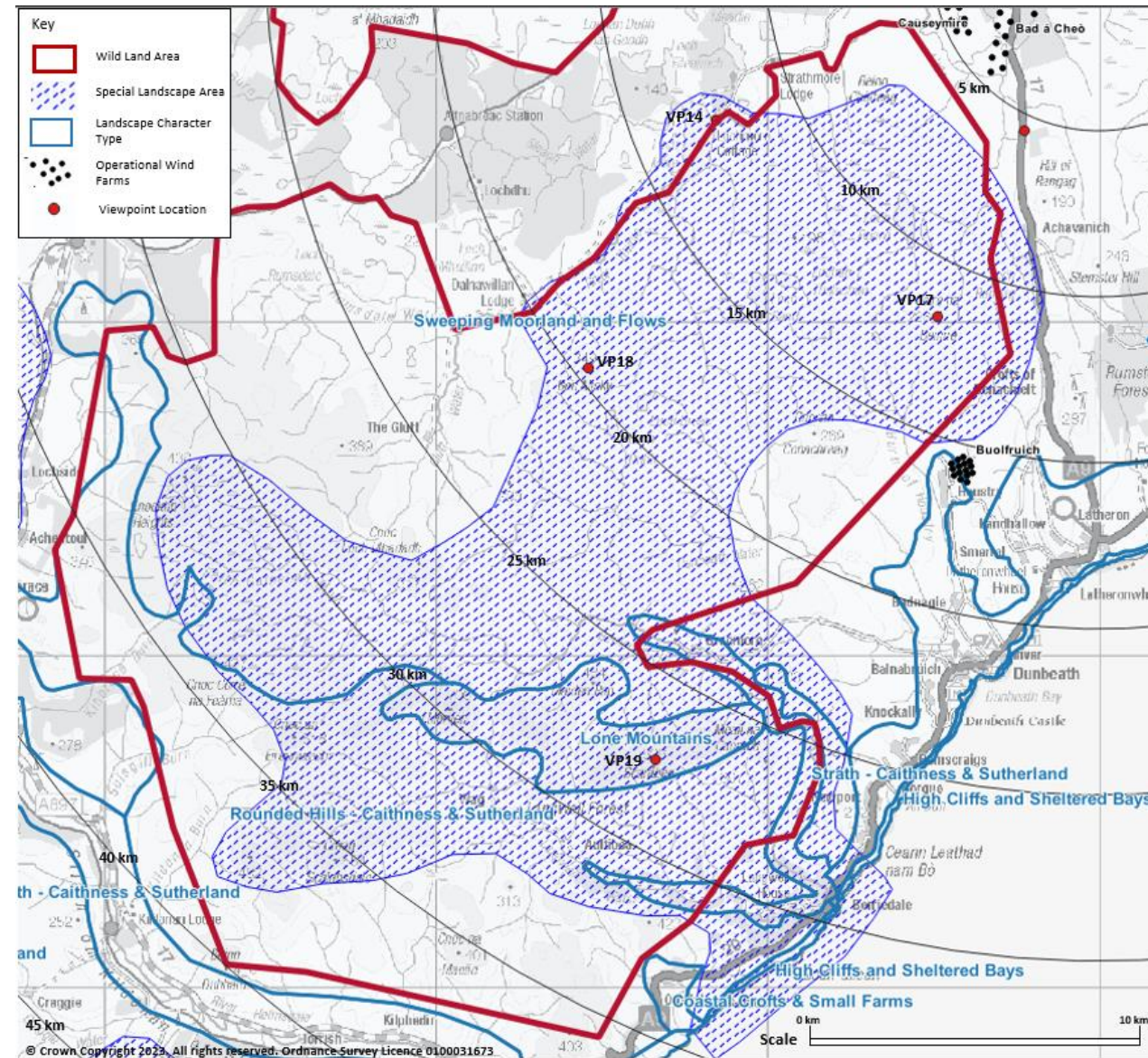
⁸ NatureScot (2017) Hoy Wild Land Area. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20Hoy-July-2016-41.pdf> [Accessed 02/08/2023]

⁹ The Highland Council (2011) Assessment of Highland Special Landscape Areas. Available from - https://www.highland.gov.uk/downloads/file/2937/assessment_of_highland_special_landscape_areas [Accessed 02/08/2023]

Baseline

- A6.3.3. Map A6.1 shows that the northern two thirds of the SLA is covered by Landscape Character Type (LCT) 134: Sweeping Moorland and Flows LCT, and the southern part of the SLA by LCT 138: Lone Mountains, and LCT 135: Rounded Hills – Caithness and Sutherland assessed in Technical Appendix A6.3.
- A6.3.4. The majority of the SLA is also covered by the Causeymire – Knockfin Flows WLA and extends beyond the WLA boundary to the north east at Rangan Loch, north west at Loch More, and south east at Berriedale Braes.

Map A6.1: Flow Country and Berriedale Coast SLA



Special Qualities

- A6.3.5. The special qualities of the Flow Country and Berriedale Coast SLA are set out in the *Assessment of Highland Special Landscape Areas* (THC, 2011) as follows:

'Distinctive Mountain and Moorland Skyline

- The distinctive combination of expansive peatland and isolated mountains is unique within the UK. The isolated and tall mountains emphasise the simplicity, flatness and low relief of the surrounding Flow Country peatland and vice versa.
- The conspicuous mountain profiles, from striking cones to rolling masses, are visible from most of Caithness and serve as distinctive landmarks. They are typically seen from a distance and it is difficult to perceive their size or distance due to the simplicity of the intervening peatland.
- Morven forms a prominent conical landmark feature which is visible from both the north coast and the Morayshire coast. It stands in strong contrast to its long-backed neighbour Scaraben but is echoed on a smaller scale by the rocky profile of the nearby Maiden Pap. The latter is an especially striking landscape feature and backdrop when viewed from the Braemore area.
- Ben Alisky is a remote, isolated peak north of the main range of mountains. Whilst not particularly high (349 metres), it forms a distinctive landmark feature for a wide area of Caithness.

Exposed Peaks, Vast Openness and Intimate Glens

- The mountain summits offer rare opportunity to view a panorama of wide ranging characteristics – extending over the Flow Country peatlands, out to sea and as far south as the Cairngorms in clear conditions.
- The vast open sweep of the peatlands with the long, low horizon evokes strong feelings of isolation and wildness. The mountains on its southern edge and the isolated peak of Ben Alisky are welcome orientation features in a landscape otherwise lacking in landmarks.
- Experience of the open peatlands area is strongly affected by big skies with rapidly changing light and weather conditions. Views from local roads are particularly important along the higher sections of the A9 around Achavanich and Berriedale and from the road into Braemore. Views from the railway which skirts the area's north western side, from the valley tracks, from the mountain peaks, or even from aircraft all give different perspectives. Views of the Flow Country from elevated viewpoints, including from air, best reveal the distinctive pattern of the pool systems.
- In further contrast to the elevation and exposure of the mountain summits and the wide expanse of the peatland, the deep wooded sections of the Berriedale and Langwell glens provide an intimacy of scale and shelter and are dotted with buildings and other welcoming signs of human habitation.
- Berriedale, at the wooded confluence of Langwell Water and Berriedale Water, is a dispersed settlement with buildings sandwiched between the Berriedale Water and the steep cliffs of the Berriedale Braes. Over these braes is a series of tortuous blind bends upon the A9 that are notoriously difficult to manoeuvre, particularly for long vehicles that occasionally get stuck on this section of the road.
- Within the glens, there is a concentration of architecturally and historically important buildings including a pair of Telford bridges, the Berriedale post office on west side of the A9, mills, smithys and a row of terrace estate workers houses on the south side of Berriedale Water, with the contrasting redundant salmon bothy, ice house and terraced fisherman cottages on the opposite side of the Water.

The Historic Landscape

- Recognising that the inland waterways were a vital method of transport and communication in prehistory monuments are predominantly located along Langwell and Berriedale Waters and their tributaries. The remains represent the full range of major prehistoric features and include chambered cairns, roundhouses,

brochs, souterrains, burnt mounds etc; the density of monuments increases as one gets closer to the confluence of the two Waters and their eventually outlet at Berriedale.’ (The Highland Council, 2011)¹⁰.

Sensitivity

- A6.3.6. GLVIA3 states that sensitivity of the landscape should be defined by analysing the value and susceptibility of the landscape receptor to the proposed change (the Proposed Development).
- A6.3.7. The following sets out landscape value and susceptibility for the Flow Country and Berriedale Coast SLA.

Table A6.2: Landscape Value of the Flow Country and Berriedale Coast SLA

Landscape Value	
Landscape Quality (Condition):	The Flow Country and Berridale SLA is considered to be a landscape of high quality comprising large swathes of intact blanket bog and interlinked pool systems. This is recognised at a national level with the area being identified as the Causeymire – Knockfin Flows WLA (see Technical Appendix A6.5). Within the SLA, there are some areas where landscape quality reduces as a result of forested and clear-felled areas north of Loch More and at Berriedale, erosion caused by overgrazing by deer, and damage by the creation of access tracks, recreational walking routes and climate change. Areas of lower quality within the SLA tend to occur on the periphery and closer to settled areas and agricultural land.
Scenic Quality:	The SLA is considered to have high scenic quality on account of the large expanse of low-lying underdeveloped moorland with the occasional lone mountains providing a stark contrast and key focal point. As well as being scenically attractive from within, the SLA forms an important backdrop to the settled coastal areas and straths of Caithness, and a distinctive skyline from wider afield including Sutherland and Moray.
Rarity:	The SLA forms part of The Flow Country, the most intact and extensive blanket bog system in the world extending over 4,000 km ² . The character of the SLA is considered to be rare, occurring in only a handful of other locations within the Highlands but at smaller scale, and unique in comparison to the other twenty-six SLAs in the THC administrative boundary.
Representativeness:	The juxtaposition of low-lying moorland interspersed with lone mountains and interconnecting hills is very distinctive and recognisable both locally and nationally.
Conservation interests:	The majority of this SLA is covered by the Causeymire – Knockfin WLA discussed further in Technical Appendix A6.5. Special Sites of Scientific Interest (SSSI) cover much of the SLA and include Strathmore Peatlands, Blar nam Faoleag, Coire na Beinne Mires, Dunbeath Peatlands, Morvern & Scaraben, Langwell Water, Berriedale Water, Berridale Cliffs, and Knockfin Heights. Parts of the SLA are covered by the Caithness and Sutherland Peatlands Ramsar, Blar nam Faoleag, Coire na Beinne, Strathmore and Dunbeath Peatlands, and Knockfin Heights Special Area of Conservation (SAC); and Strathmore and Dunbeath Peatlands, Blar nam Faoleag, Coire na Beinne Mires, and Knockfin Heights Special Protection Area (SPA). A small area on the western side covering the Halladale River forms part of the Forsinard Flows National Nature Reserve (NNR). Cultural heritage assets tend to be around Loch Bhreac, Dunbeath Water, west of Berridale and south of the Lone Mountains and include prehistoric settlements, shielings, pre-clearance townships, clearance cairns and brochs which are designated as Scheduled Monuments. The SLA also forms part of the Nominated Flow Country WHS as described in above.
Recreation value:	Several all-terrain vehicle tracks lead into the SLA, these are mainly located in the north and around the north western and eastern fringes. The number of visitors to the SLA are low and comprise people visiting isolated hill tops with Morven, Scaraben (both Grahams) and Ben Alisky being popular for

Landscape Value	
	hillwalking, and visitors taking part in field sports such as fishing on the numerous small lochans and shooting.
Perceptual aspects:	Due to its inaccessibility as a result of boggy terrain, numerous watercourses and lochans, combined with the lack of development, there is a strong perception of remoteness and wildness within the SLA. In particular, in the central and western areas due to being more isolated and away from built development. Technical Appendix A6.5 provides further details regarding the perceptual experience.
Associations:	The Flow Country and lone mountains have extensively been written about both from a scientific perspective and also in literature and the view across the peatlands towards Morven is an iconic view used to promote the area.
Overall, landscape value for the Flow Country and Berriedale Coast SLA is considered to be Very High on account of the quality of the landscape which is considered one of the largest intact bog systems in the world reflected in its designation at both national and regional level for landscape, important ecologically internationally and is proposed for World Heritage Site status.	

Table A6.3: Landscape Susceptibility of the Flow Country and Berriedale Coast SLA

Landscape Susceptibility	
Landscape scale and geographical extent:	The SLA is considered to be large in scale covering approximately 39.5 km ² , within Caithness and the eastern fringes of Sutherland and forms part of one of the largest intact blanket bog systems in the world.
Landform:	NatureScot mapping suggests limited ruggedness within the SLA. However, this is due to the larger scale that the mapping exercise was undertaken. In reality, there are several areas of ruggedness throughout the SLA, mainly occurring in the north, south and west where topography rises from the relatively flat peatlands into a series of interlocking hills and lone mountains. Elevation ranges between 90 m to 706 m Above Ordnance Datum (AOD) with the majority of areas between 90 and 290 m AOD comprising undulating and sweeping low-lying peatland. Several narrow glens penetrate the SLA reducing visibility of the surrounding landscape. In contrast, the peatlands are punctuated by several lone mountains, conical in nature and rugged small groups of interlocking hills. Morven forms one of the tallest hills in north of Scotland rising to 706 m AOD.
Skylines:	Due to the low-lying nature of the peatlands, the sky has a greater influence on how the landscape is experienced. Known as ‘ <i>Big Sky Country</i> ’ the peatlands are backdropped by distinct landmark hills including Morvern, Maiden Pap, Small Mount, Smean and Scaraben which form an important skyline not just within the SLA, but also from surrounding areas.
Landscape pattern and complexity:	The SLA is a vast peatland landscape of rough vegetation, comprising acidic grassland and heather, bogs, lochans and watercourses. Enclosure is limited to the periphery of the SLA and has little influence on landcover vegetation. Fencing is limited, occurring along the periphery, and linked to nearby settled areas.
Settlement and man-made influences:	As the SLA extends further from the settled coastline to the north and east, as well as the Straths to the west, remoteness increases. There is limited influence of settlement and other man-made features within the SLA. There are the remains of pre-clearance settlements, townships, and shielings, the majority of these are in ruin and contribute to the perception of isolation. Inhabited houses are associated with estates and are located in periphery areas. There are a number of access tracks linking lochans for fishing and hills where shooting is practiced which occur mainly in the north and eastern part of the WLA. Conifer plantations are visible near boundary areas contrasting with the surrounding peatland. Beyond the boundary of the SLA, man-made features are more notable and include several wind farms to the north and north east, the A9 road along the eastern boundary, and the Inverness to Thurso/ Wick railway line to the north and west, all of which lie beyond the boundary of the SLA.

¹⁰ The Highland Council (2011) *Assessment of Highland Special Landscape Areas*. Available from - https://www.highland.gov.uk/downloads/file/2937/assessment_of_highland_special_landscape_areas [Accessed 02/08/2023]

Landscape Susceptibility	
	From elevated locations the surrounding agricultural land is more noticeable and settlement along low ridgelines. At night-time artificial lighting is very limited within the SLA and sources tend to be from the surrounding settled areas in the form of lighting from properties that are part of small settlements or isolated, vehicles travelling along the A9 and surrounding minor roads, and sky glow from the distant settlements of Wick and Thurso.
Inter-visibility with adjacent landscapes and vistas:	Intervisibility of adjacent landscapes can be experienced, especially where taller man-made features draw the eye such as wind farms and forestry plantations. Beyond the boundaries in the neighbouring landscape, the SLA forms an important backdrop in receptors views including settled areas, roads, and railway line with the lone mountains often forming a focal point in views.
Perceptual aspects:	There is a strong sense of isolation and wildness within the SLA on account of the simple landcover, lack of man-made features, isolated mountains, and relationship to the coastline at Berriedale.
This SLA is highly susceptible to the introduction of tall vertical structures which have the potential to be prominent in views both internally within the SLA, and the interaction between the distinctive skyline of the SLA and neighbouring landscapes. This has the potential to affect the perception of scale of the lone mountains and surrounding peatlands. Landscape susceptibility is therefore considered Very High .	

A6.3.8. Overall landscape sensitivity for the Flow Country and Berriedale Coast SLA is considered **Very High**.

Potential Impacts During Development Phases

A6.3.9. The following potential impacts have been identified for the Flow Country and Berriedale Coast SLA.

Table A6.4: Potential Impacts of the Flow Country and Berriedale Coast SLA

Development Phase	Nature of Impact	Description of Impact
Construction / Decommissioning	Indirect temporary impact on views from the SLA of the construction and decommissioning phases of the Proposed Development.	<ul style="list-style-type: none"> • Vehicular/personnel movements, including vehicles associated with the construction or decommissioning phases travelling in both directions along the A9 and A870 roads; • The gradual introduction/removal of seven tall vertical structures (turbines and a meteorological mast) and the use of cranes during installation/decommissioning. The turbines themselves would be erected/removed over a short period, typically 1-2 days per turbine, and include the appearance of cranes in views of the Proposed Development.
Operation and Maintenance	Indirect long-term impact on views from the SLA of the operation and maintenance of the Proposed Development.	<ul style="list-style-type: none"> • Occasional maintenance activity and vehicular/personnel movements around the Proposed Development Area and travelling both ways on the A9 and A870 roads; and • 7 tall vertical structures with moving parts (turbines and meteorological masts), and medium intensity aviation lights.

Predicted Change

A6.3.10. Analysis of the special qualities of the SLA identified two as potentially being affected by the Proposed Development as follows:

- 'The conspicuous mountain profiles, from striking cones to rolling masses, are visible from most of Caithness and serve as distinctive landmarks. They are typically seen from a distance and it is difficult to perceive their size or distance due to the simplicity of the intervening peatland.'
- The mountain summits offer rare opportunity to view a panorama of wide ranging characteristics – extending over the Flow Country peatlands, out to sea and as far south as the Cairngorms in clear conditions.' (The Highland Council, 2011).

A6.3.11. Both of the above special qualities relate to visibility across the SLA towards the Lone Mountains, both from within and out with the boundaries of the designation.

A6.3.12. The introduction of the Proposed Development would result in approximately 33 % of the SLA receiving theoretical visibility based on a bare ground model. This covers low-lying peatland and elevated ground. Due to the lack of tree cover, the visual envelope is unlikely to reduce in reality.

A6.3.13. Theoretical visibility of the Proposed Development extends between 6.7 and 35.9 km and is predicted to be widespread across low-lying peatland out to 12.9 km. Thereafter, reducing to elevated areas including the north and east facing slopes extending between Dalnaha in the north, to Cnoc Bad Cholla in the south including the summit of Ben Alisky (349 m AOD); the upper slopes of isolated hills; north east facing slopes between Loch Mhadaidh and Bad Mairi; and between Cnoc Coire na Fearnna and Meall na Caorach including the summits of Morven and Scaraben.

A6.3.14. Views of the Proposed Development vary from within the SLA on account of the size of the designation. From the western side of the SLA (see Viewpoint 14: Loch More Cottage – Figures 6.30a-g, and Viewpoint 18: Ben Alisky Figures 6.34a-f), the Proposed Development would be viewed behind the foreground cluster of operational wind turbines of Bad a Cheo and Halsary. The extent of the proposed turbines visible would depend on the elevation of the viewpoint, with landform providing some screening to the base of the proposed turbines from Viewpoint 14 which is located within the flat peatlands. The proposed turbines would also be noticeably taller, again, the elevation of the viewpoint would dictate how much taller, with Viewpoint 18: Ben Alisky (see Figures 6.34a-f) appearing more prominent due to the higher elevation in comparison to Viewpoint 14.

A6.3.15. Therefore, the Proposed Development would form an intervening feature in views from the north east of the Proposed Development in the direction of the lone mountains. This would be seen within the existing context of operational wind farms which the Proposed Development would appear in the foreground against or extend eastwards within the view. However, the area affected would be beyond the SLA boundary. From within the SLA, the Proposed Development would not interfere with views across the peatlands towards the lone mountains due to being located in the opposite direction but would feature in distant views from the lone mountains looking across the Flow Country behind the existing cluster of operational wind farms or extending eastwards forming a standalone development.

Magnitude of Change – Scenario 1

A6.3.16. 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**.

Significance of Effects - Scenario 1

A6.3.17. The sensitivity of the Flow Country and Berriedale Coast SLA is considered **Very High** on account of the level of designations covering the SLA which are of international and national importance. Magnitude of change during the construction/decommissioning, and operation and maintenance phases would be **Medium** within the peatland area immediately to the south west of the Proposed Development, reducing to **Low** levels with distance. This would result in a **Major-moderate significant** adverse effect with 15 km, reducing to **Moderate** and **Minor** adverse levels thereafter and **not significant** as distance increases. Construction and decommissioning phases would be short-term in duration, becoming long-term during operation and maintenance and reversible following decommissioning.

Cumulative Assessment

Scenario 2 – Operational/under Construction + Consented Wind Farms

- A6.3.18. Scenario 2 baseline would include a further three turbines at Achlachan II (4.2 km to the west) occupying an area between the operational Achlachan Wind Farm and Causeymire, and a further three turbines at Tachur (4.0 km to the south west), extending further south from Bad a Cheo appearing as an extension to the operational wind farm.
- A6.3.19. Further consented sites of note are Cogle Moss (7.0 km to the north east), Camster II (6.2 km to the east), and Golticlay (9.7 km to the south east), extending turbines southwards in views from the SLA and appearing as a standalone development.
- A6.3.20. The Scenario 2 baseline would result in a further six turbines being viewed around the existing operational cluster of Group 1 developments and would not result in further theoretical visibility within the SLA. Golticlay to the east of the SLA, would result in a slight increase in theoretical visibility.
- A6.3.21. The introduction of the Proposed Development would not result in an increase in theoretical visibility within the SLA. Impacts would be associated with further turbines being viewed beyond the existing cluster of Group 1 developments or extending development further east as a standalone development as discussed for the assessment of Scenario 1. Therefore, it is not considered that the magnitude of change would increase from **Medium – Low**. Therefore, the significance of effect would remain as **Major-moderate** adverse and **significant**, reducing to **Moderate-minor** and **Minor** non-significant levels as distance increases from the Proposed Development.

Scenario 3 – Operational/under Construction + Consented + Application Wind Farms

- A6.3.22. Scenario 3 baseline would result in the addition of Tormsdale (5.8 km to the west), located between the SLA and existing cluster of turbines of Scenario 1 and 2. This would increase the influence of wind turbines on views from the north of the SLA, in particular from the adjacent peatlands.
- A6.3.23. Similar to the assessments of Scenario 1 and 2, the addition of the Scenario 3 sites to the baseline, would not result in an increase in theoretical visibility within the SLA. Impacts would be associated with further turbines being viewed beyond the existing cluster of operational turbines or extending development further east as a standalone development. It is not considered that the magnitude of change would increase from **Medium – Low** levels. Therefore, the significance of effect would remain as **Major-moderate** adverse and **significant**, reducing to **Moderate-minor** and **Minor** non-significant levels as distance increases from the Proposed Development.

A6.4. Summary

A6.4.1. Table A6.5 provides a summary of the assessment of the Proposed Development on protected and designated landscapes.

Table 6.5: Summary of Effects on Protected and Designated Landscapes

Landscape Designation	Sensitivity	Magnitude of Change	Significance of Effect	Cumulative Effect (Scenario 2)	Cumulative Effect (Scenario 3)
Flow Country and Berridale Coast SLA	Very High	Medium, reducing to Low levels with distance beyond 15 km.	Major-moderate adverse and significant, reducing to non-significant levels as distance increases during construction, operation, and decommissioning phases.	Major-moderate adverse and significant	Major-moderate adverse and significant

Technical Appendix A6.5

Wild Land Assessment

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Glossary

Term	Definition
Direct effect	<i>'An effect that is directly attributable to the proposed development.'</i> *
Environmental Impact Assessment (EIA)	Environmental Impact Assessment (EIA) is a means of drawing together by the developer, in a systematic way, a description of the development and information relating to an assessment of the likely significant environmental effects arising from the Proposed Development.
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5.
Garden and Designed Landscape	A garden or landscape included in Historic Environment Scotland's Inventory of Gardens and Designed Landscapes <i>'The inventory recognises grounds intentionally laid out for artistic effect which are of national importance.'</i> (HES, 2019)
Indirect effects	<i>'Indirect effects that result indirectly from the proposed project as a consequence of the direct effects., often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.'</i> *
Landform	<i>'The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.'</i> *
Landscape	<i>'An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.'</i> *
Landscape & Visual Impact Assessment (LVIA)	<i>'A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.'</i> *
Landscape effects	<i>'Effects on the landscape as a resource in its own right.'</i> *
Landscape receptors	<i>'Defined aspects of the landscape resource that have the potential to be affected by a proposal'</i> **
National Scenic Area	National Scenic Area (NSA) are described as areas <i>'of outstanding scenic value in a national context'</i> , for which special protection measures are required.' (Planning etc. (Scotland) Act 2006
Special Landscape Area	Special Landscape Areas (SLAs) are regionally valuable landscapes identified to protect and enhance landscape qualities and promote their enjoyment.
The Proposed Development	The proposed Watten Wind Farm development
The Proposed Development Area	The area within the red line boundary where the Proposed Development will be located (application area)

Term	Definition
Wild Land Area	Wild Land Areas (WLAs) are the most extensive areas of high wildness. They are identified as nationally important in Scottish Planning Policy but are not a statutory designation.

List of Abbreviations

Abbreviation	Description
AOD	Above Ordnance Datum
BESS	Battery Energy Storage System
ca	candela
CMLI	Chartered Member of the Landscape Institute
ECU	Energy Consents Unit
EIAR	Environmental Impact Assessment Report
GLVIA3	Guidelines for Landscape and Visual Impact Assessment
km	Kilometre
m	Metre
MW	Mega Watt
NNR	National Nature Reserve
NPF3	National Planning Framework 3
NPF4	National Planning Framework 4
SAC	Special Area of Conservation
SM	Scheduled Monument
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSSI	Special Sites of Scientific Interest
WHS	World Heritage Site
WLA	Wild Land Area(s)
ZTV	Zone of Theoretical Visibility

A6.1. INTRODUCTION

A6.1.1. This Technical Appendix of the Environmental Impact Assessment Report (EIAR) assesses the potential effects of Watten Wind Farm (the Proposed Development) on Wild Land Areas (WLAs). This assessment should be read in conjunction with the following EIAR documents and figures:

- Chapter 4: Site Selection and Design Evolution;
- Chapter 5: Project Description;
- Chapter 6: Landscape & Visual;
- Technical Appendix A6.1: Landscape and Visual Impact Assessment Methodology;
- Technical Appendix A6.2: Operational and Cumulative Sites;
- Technical Appendix A6.4: Protected and Designated Landscape Review;
- Figure 6.1: LVIA Study Area;
- Figure 6.2: Cumulative Study Areas;
- Figure 6.3a : Zone of Theoretical Visibility to Tip Height (A3 Size);
- Figure 6.3b: Zone of Theoretical Visibility to Tip Height (A0 Size);
- Figure 6.6a-g – Aviation Lighting Intensity ZTV;
- Figure 6.8 – Landscape Character;
- Figure 6.9 – Protected and Designated Landscapes;
- Figure 6.30a-g – Viewpoint 14: Loch More Cottage;
- Figure 6.33a-e – Viewpoint 17: Coire na Beinne;
- Figure 6.34a-f – Viewpoint 18: Ben Alisky; and
- Figure 6.35a-f – Viewpoint 19: Scaraben.

A6.2. BACKGROUND

A6.2.1. WLAs are not a statutory designation but were identified as a nationally important asset which merited strong protection in National Planning Framework 3 (NPF3)¹ (now superseded by NPF4, 2023)². Scottish Planning Policy (SPP) (2014)³, set out how this would be achieved with regards to identifying and safeguarding wild land in both development plans and spatial frameworks.

A6.2.2. NatureScot (formerly Scottish Natural Heritage (SNH)) as the Scottish Government's statutory adviser on landscape, published *Policy Statement No 02/03 Wildness in Scotland's Countryside* (2002)⁴ which set out the

¹ Scottish Government (2014) National Planning Framework 3. Available at: <https://www.gov.scot/publications/national-planning-framework-3/> [Accessed 03/08/2023]

² Scottish Government (2023) National Planning Framework 4. Available at: <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed 03/08/2023]

³ Scottish Government (2014) Scottish Planning Policy. Available at: <https://www.gov.scot/publications/scottish-planning-policy/> [Accessed 03/08/2023]

⁴ NatureScot (2002) Policy Statement 02/03 Wildness in Scotland's Countryside. Available at: https://www.webarchive.org.uk/wayback/archive/20210421121424mp_/https://www.nature.scot/sites/default/files/2019-10/Wildness%20in%20Scotland%27s%20Countryside%20-%20Policy%20Statement.pdf [Accessed 03/08/2023]

main pressures leading to a loss in wildness and considered how wild land is identified and cared for. Annex 1 of the policy identified 'search areas for wild land' where it was considered that wild land is most likely to be found in Scotland. In 2014, the 'search areas for wild land' were replaced by 'core areas of wild land' following consultation and were verified by fieldwork between 2013 and 2015, and descriptions and mapping subsequently published for 42 WLAs in 2017.

A6.2.3. The rationale behind NatureScot's identification of WLA applied four physical attributes as follows:

- Perceived naturalness of the land cover;
- Ruggedness of terrain;
- Remoteness from public roads, ferries, or railway stations; and
- Visible lack of buildings, roads, pylons, and other modern artefacts.

A6.2.4. In February 2023, the Scottish Government published NPF4 in which wild land is considered under Policy 4⁵ as follows:

g) Development proposals in areas identified as wild land in the Nature Scot Wild Land Areas map will only be supported where the proposal:

i. will support meeting renewable energy targets; or,

ii. is for small scale development directly linked to a rural business or croft or is required to support a fragile community in a rural area.

All such proposals must be accompanied by a wild land impact assessment which sets out how design, siting, or other mitigation measures have been and will be used to minimise significant impacts on the qualities of the wild land, as well as any management and monitoring arrangements where appropriate. Buffer zones around wild land will not be applied, and effects of development outwith wild land areas will not be a significant consideration.'

A6.3. WILD LAND ASSESSMENT METHODOLOGY

A6.3.1. This assessment has been undertaken by Chartered Members of the Landscape Institute (CMLI) from Natural Power Consultants Ltd (see **Technical Appendix A6.1** for Competency Statement).

A6.3.2. This assessment is based on the principles set out in NatureScot guidance *Assessing impacts on Wild Land Areas, Technical Guidance* (2020)⁶. The general approach and principles of the Wild Land Assessment are consistent with the *Guidelines for Landscape & Visual Impact Assessment, Third Edition* (GLVIA3)⁷, but is undertaken separately from the Landscape & Visual Impact Assessment (LVIA) to avoid duplication of the assessment. NatureScot state that the assessment 'should consider effects on the physical attributes and perceptual responses that contribute to the WLA qualities identified in the WLA descriptions...' (paragraph 4).

A6.3.3. Using the GLVIA3 approach to the Wild Land Assessment is less prescriptive and allows for a more subjective interpretation in respect of perceptual responses, given that these are inherently individual reactions.

⁵ Scottish Government (2023) National Planning Framework 4. Available at: <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed 03/08/2023]

⁶ NatureScot (2020) Assessing impacts on Wild Land Areas – Technical Guidance. Available at <https://www.nature.scot/doc/assessing-impacts-wild-land-areas-technical-guidance> [Accessed 03/08/2023]

⁷ Landscape Institute, Institute of Environmental Management and Assessment (2013) *Guidelines for Landscape and Visual Impact Assessment, Third Edition*. Routledge. London.

Nevertheless, this assessment has assumed professional judgement in order to inform an understanding of the landscape context and level of effects likely to be experienced and should be read in conjunction with the LVIA methodology outlined in **Technical Appendix A6.1**.

- A6.3.4. Fieldwork has been undertaken during periods of clear visibility between September 2022 and February 2023 and involved visiting viewpoint locations. Viewpoint photography was undertaken during the same time frame to the requirements of NatureScot’s visualisation guidance (SNH, 2017).
- A6.3.5. Table A6.1 reproduces NatureScot’s guidance (2020) setting out the methodology to be applied in undertaking wild land assessment.

Table A6.1: NatureScot Overview of Wild Land Area Impact Assessment

Step	Summary
Step 1 – Define the study area and the scope of the assessment	<p>Identify a study area appropriate to the scale of the proposal and extent of likely significant effects on the WLA.</p> <p>Output: Brief justification and map or description of the area that will be assessed.</p>
Step 2 – Verify the WLA baseline	<p>Confirm the wild land qualities (set out in the WLA description) relevant to the study area, describing any major changes that have occurred since the description was prepared and the nature of their contribution to the WLA.</p> <p>Output: Identification of relevant qualities and explanation of how any changes since preparation of the WLA Description have affected them.</p>
Step 3 – Assess the sensitivity of the qualities	<p>Through detailed field assessment within the study area, assess the sensitivity of the wild land qualities scoped in (including their physical attributes and perceptual responses), to the type and scale of change proposed.</p> <p>Output: A clear and concise narrative explaining the susceptibility of individual qualities and/or combinations of qualities where there is some commonality between their contributing attributes and responses, and their overall sensitivity.</p>
Step 4 – Assess the magnitude of the effects	<p>Assess the effects on individual and / or combinations of qualities, drawing out which physical attributes and perceptual responses will be affected, how and to what degree. This should reflect the size or scale of change, its extent and duration.</p> <p>Output: A clear and concise narrative explaining the effects of the various elements of the proposal on individual qualities and / combinations of qualities.</p>
Step 5 – Judge the significance of the effects	<p>Conclude on the overall significance (taking into account any mitigation), in terms of the study area and where relevant the wider WLA.</p> <p>Output: A clear narrative explaining the overall significance of residual effects identified on the individual qualities and / or combination of qualities.</p>

Source: Assessing impacts on Wild Land Areas, Technical Guidance (NatureScot, September 2020)

A6.4. PROPOSED DEVELOPMENT

- A6.4.1. The Proposed Development will comprise up to seven wind turbines with a blade tip of up to 220 m (based on a candidate turbine V162, 6.8-megawatt (MW)), giving approximately 47.6 MW and Battery Energy Storage System (BESS) compound with a maximum capacity of 20 MW. The lifespan of the Proposed Development is proposed to be 35 years following which decommissioning of the turbines and other infrastructure would be undertaken as required.
- A6.4.2. The Proposed Development will include associated infrastructure as follows:
 - Seven 220 m turbines with aviation mounted lights;
 - Associated infrastructure specific to each turbine:

- turbine foundations;
- external transformer housing;
- crane hardstandings and erection areas;
- Onsite substation, control building and compound;
- New and floating access tracks; including watercourse crossings;
- Underground electricity cables connecting infrastructure within the Proposed Development Area;
- Temporary construction and storage compounds and ancillary infrastructure, 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 water drainage;
- Forestry felling and replating.

A6.4.3. The Proposed Development would not be located within a WLA, and no direct impacts would occur within a WLA. Both WLAs assessed would potentially receive indirect effects associated with intervisibility of the Proposed Development during construction/decommissioning, and operational and maintenance phases of the Proposed Development as set out in Table A6.2:

Table A6.2: Potential sources of effects during each phase of the Proposed Development on Wild Land

Construction	Operational	Decommissioning
Vehicular/personnel movements, including vehicles associated with the construction travelling in both directions along the A9 road and temporary lighting in the Proposed Development Area.	Occasional maintenance activity and vehicular/personnel movements around the Proposed Development Area and on the A9 and A870 road.	Vehicular/personnel movements associated with decommissioning within the Proposed Development Area and on the A9 road, including temporary lighting in the Proposed Development Area.
Ground enabling works during the construction of access tracks, hardstandings, and subsequent reinstatement works.	Access tracks and hardstanding areas at each turbine location at ground level.	Access tracks will either be left for use by the landowner or covered in topsoil. Implementation of restoration following an agreed Decommissioning Method Statement.
Installation of a new substation control building.	Onsite substation.	Removal of substation and control building.
The gradual introduction of tall vertical structures (turbines and a meteorological mast) and the use of cranes during installation. The turbines themselves would be erected over a short period, typically 1-2 days per turbine, and the appearance of the construction cranes in views of the Proposed Development would therefore be of short duration.	Tall vertical structures with moving parts (turbines and meteorological masts), and medium intensity aviation lights.	Dismantling and removal of wind turbines and meteorological masts, trimming of foundations to a depth of 1 m below ground surface levels, and restoration of turbine locations to match the character and appearance the existing landscape.

A6.5. CONSULTATION

A6.5.1. A scoping request was submitted to the Energy Consents Unit (ECU) on the 7th of June 2022 (Ref ECU 00 00 45 09). This contained detailed and focused LVIA questions pertaining to the overall methodology of the LVIA and the landscape, visual and cumulative receptors to be assessed.

A6.5.2. The Scoping Report initially proposed to scope wild land out of the assessment. In line with paragraph 5 of ‘Assessing impacts on Wild Land Areas, Technical Guidance’ (2020) which states:

‘This guidance should only be applied to proposals whose nature, siting, scale or design are likely to result in a significant effect on the qualities of a WLA. Given this, assessments are more likely for proposals within a WLA, and are less-likely for proposals outwith the WLA.’

A6.5.3. NatureScot response in the Scoping Opinion (September 2022) requested that a Wild Land Assessment was undertaken as follows:

‘Landscape and visual impacts : *The proposal has the potential to significantly impact the Causeymire – Knockfin Flows Wild Land Area (WLA) and East Halladale Flows WLA. A Wild Land Assessment will therefore be required.’*

Annex 1 – Our advice on the scope of the EIA and comments on the scoping report.

We do not agree that a Wild Land Assessment is scoped-out of the EIA. *Figure 7.2.1 shows that the predicted visibility of the proposal will extend into both the Causeymire – Knockfin Flows WLA and the East Halladale Flows WLA.*

Given the scale of turbines proposed, the predicted visibility and the requirement for turbine lighting, a full assessment of impacts on Wild Land will be required. More information on such an assessment is available from our website and we would be happy to discuss this further with the developer.’

A6.6. WILD LAND ASSESSMENT

Step 1 – Define the study area and the scope of the assessment.

A6.6.1. In accordance with NatureScot guidance, the study area for the LVIA is based on the proposed turbine height. For proposals exceeding 150 m in tip height, an initial study area of 45 km is recommended. Computer generated Zone of Theoretical Visibility (ZTV) mapping has been produced to assist in determining the likely extent of visibility of the Proposed Development within each WLA located in the LVIA study area.

A6.6.2. A review of protected and designated landscapes within the 45 km study area (see Figure 6.9) identified four WLAs as follows:

- No. 35 Ben Kilbreck – Armine Forest: 40.5 km to the south west⁸;
- No. 36 Causeymire – Knockfin Flows: 5.7 km to the south west⁹;
- No. 39 East Halladale Flows: 13.6 km to the west¹⁰; and
- No. 41 Hoy: 39.5 km to the north¹¹.

⁸ NatureScot (2017) *Ben Kilbreck – Armine Forest Wild Land Area*. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20Ben-Kilbreck-Armine-Forest-July-2016-35.pdf> [Accessed 03/08/2023]

⁹ NatureScot (2017) *Causeymire – Knockfin Wild Land Area*. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20Causeymire-Knockfin-Flows-July-2016-36.pdf> [Accessed 03/08/2023]

A6.6.3. The Proposed Development would not be located within any of the WLAs identified within the 45 km study area. A review of ZTV mapping (see Technical Appendix A6.4) identified two WLAs as having the potential to receive significant adverse effects on their key attributes and qualities as a result of proximity to the Proposed Development and extent of theoretical visibility predicted. Both WLAs have therefore been scoped in as follows:

- No. 36 Causeymire – Knockfin Flows - 5.7 km to the south west; and
- No. 39 East Halladale Flows - 13.6 km to the west.

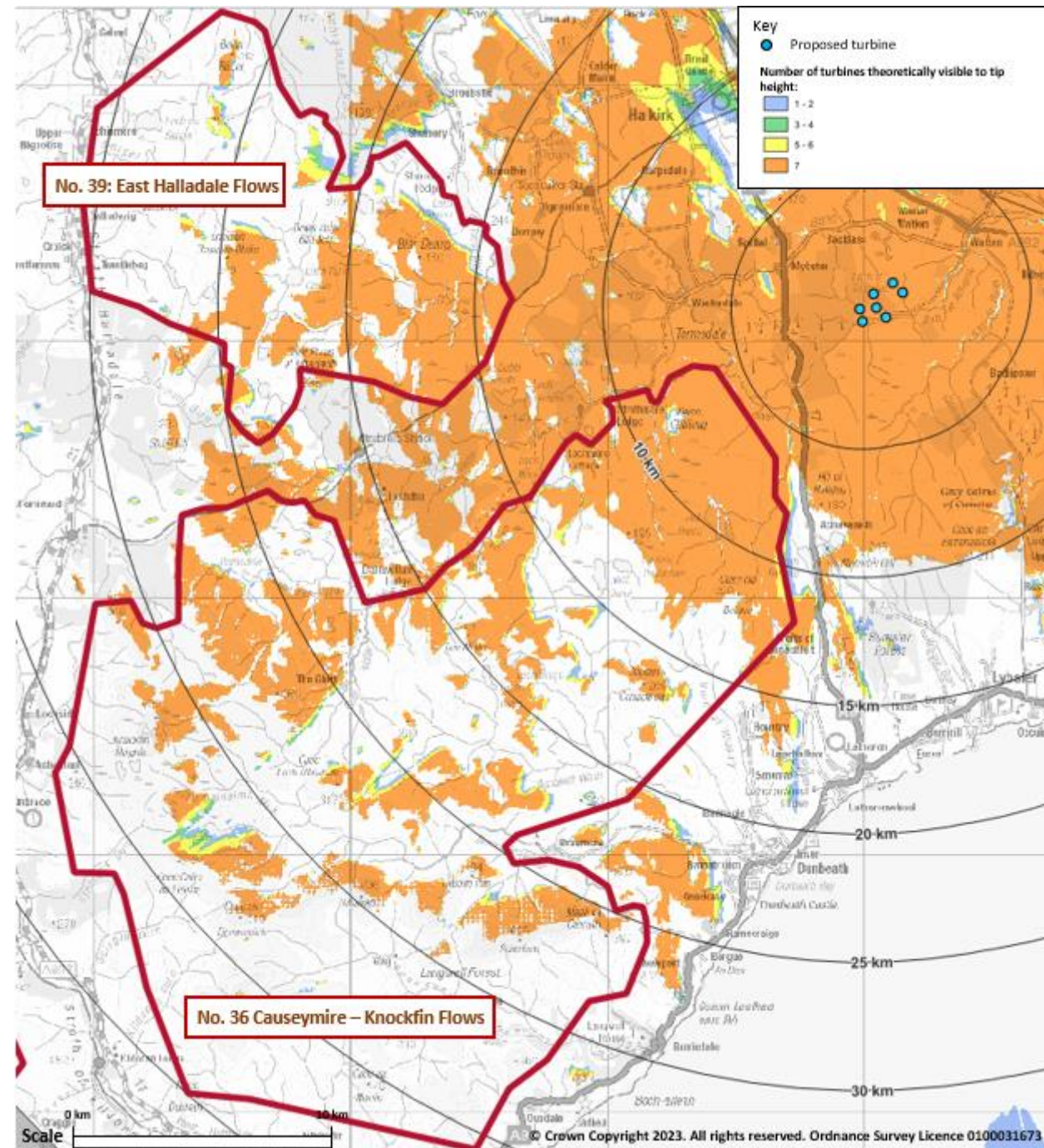
A6.6.4. The remaining two WLA have been scoped out of the assessment due to the distance from the Proposed Development and the limited extent of theoretical visibility predicted.

A6.6.5. This assessment focusses on the areas identified by ZTV mapping as potentially receiving theoretical visibility of the Proposed Development as shown on Map A6.1.

¹⁰ NatureScot (2017) *East Halladale Flows WLA*. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20East-Halladale-Flows-July-2016-39.pdf> [Accessed 03/08/2023]

¹¹ . NatureScot (2017) *Hoy Wild Land Area*. Available from - <https://www.nature.scot/sites/default/files/2021-06/Wild%20land%20Description%20Hoy-July-2016-41.pdf> [Accessed 03/08/2023]

Map A6.1: Theoretical Visibility of the Proposed Development predicted within WLAs No. 36 and No. 39

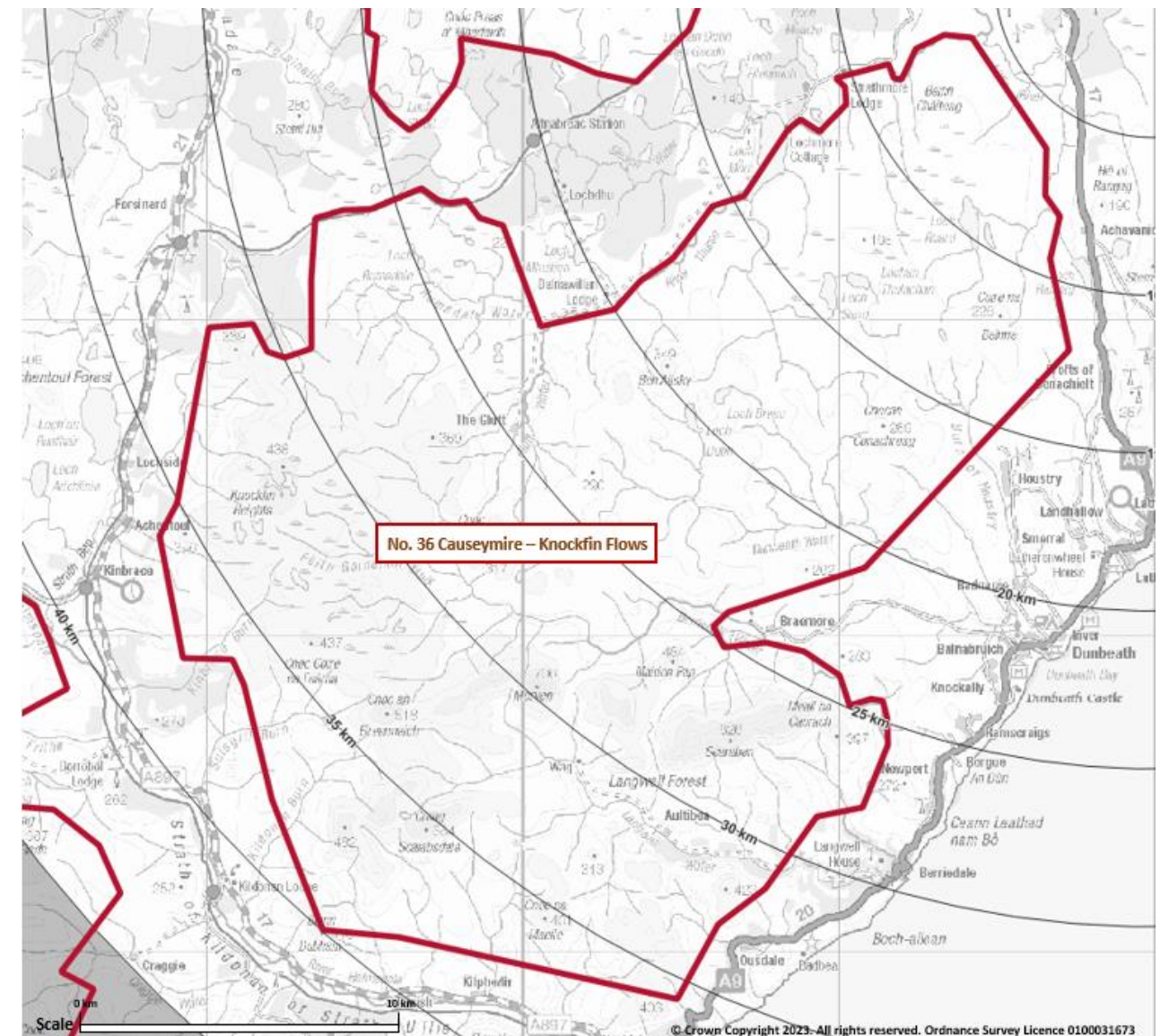


Step 2 – Verify the WLA baseline

No. 36 Causeymire – Knockfin Flows

A6.6.6. The Causeymire – Knockfin Flows WLA is located 5.7 km to the south west of the nearest turbine. Occupying approximately 514 km², the WLA comprises a large area of low-lying peatland covering part of Caithness and the eastern fringes of Sutherland in an area known as The Flow Country. This area extends between Forsinard in the north, Causeymire in the east, the hills above Helmsdale in the south, and the Strath of Kildonan in the west as shown on Map A6.2.

Map A6.2: No. 36 Causeymire – Knockfin Flows WLA



A6.6.7. NatureScot identify the following key attributes and qualities specific to the Causeymire – Knockfin WLA:

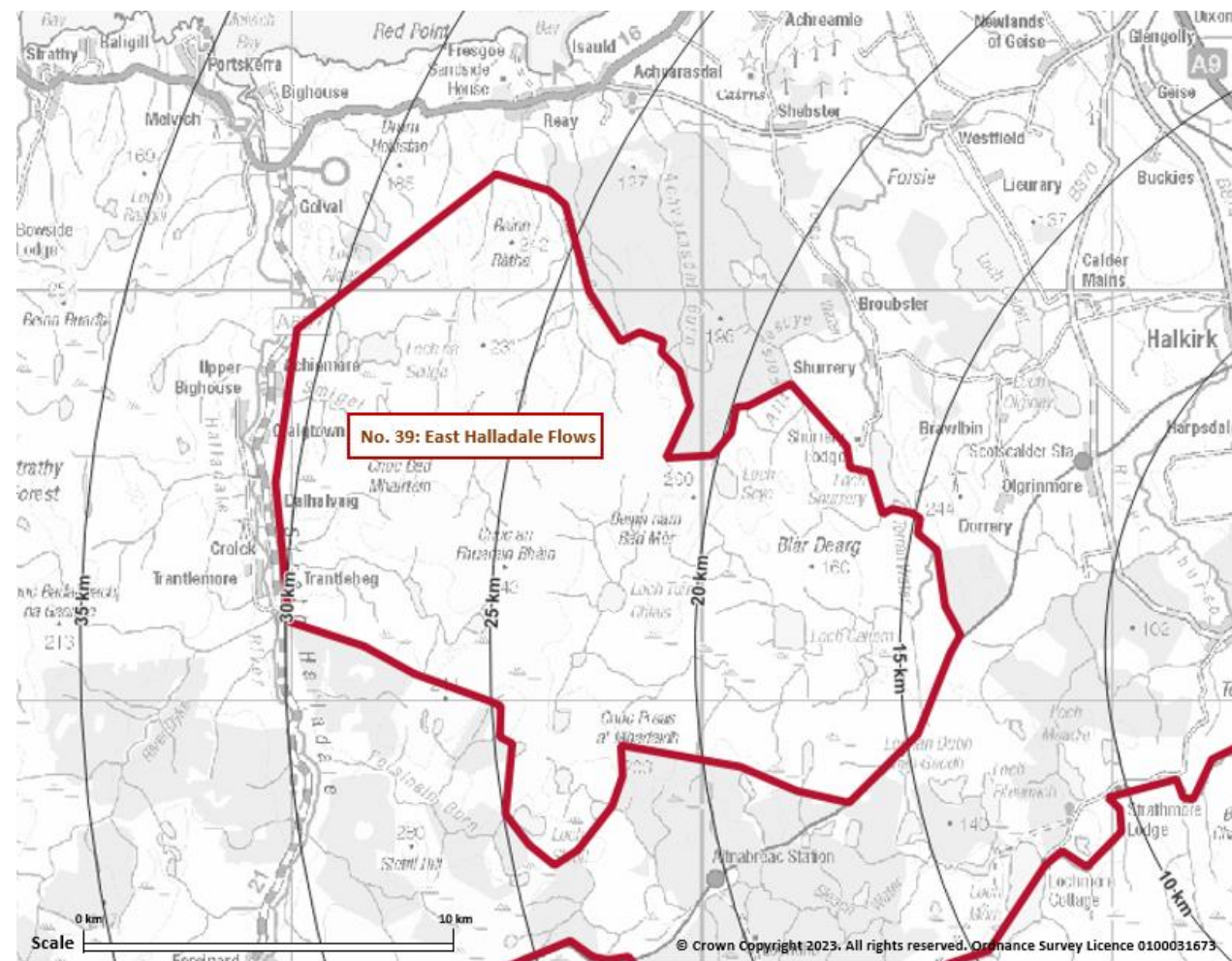
- 'Awe inspiring simplicity of wide open peatland from which rise isolated, arresting, steep mountains;
- Irregular peatland and dubh lochan, comprising a complex mix of hidden pools, bogs and lochans that contribute to perceived naturalness and limit access;

- An extensive remote interior with few visitors in contrast to the margins of the area from which many people view into the WLA;
- Wide glens containing meandering rivers that limit access and are often the focus for isolated historic features;
- Rolling interlocking hills in the south containing remote, sheltered glens with limited visibility.’ (NatureScot, 2017)

No 39 East Halladale Flows

A6.6.8. The East Halladale Flows WLA is located 13.6 km to the west of the nearest turbine and occupies 159 km² of low-lying bog in Caithness and the eastern edge of Sutherland known as The Flow Country.

Map A6.3: East Halladale Flows WLA



A6.6.9. NatureScot identify the following key attributes and qualities:

- ‘An awe-inspiring simplicity of landscape at the broad scale, with a strong horizontal emphasis, ‘wide skies’ and new foci;
- A remote, discrete interior, with limited access and a strong sense of solitude;
- A rugged and complex pattern of hidden burns, lochans and pools at the local level, despite the landscape’s simple composition at the broad scale;

- A remarkably open landscape with extensive visibility, meaning tall or high features in the distance are clearly visible.’ (NatureScot, 2017)

Step 3 – Assess the sensitivity of the qualities

A6.6.10. GLVIA3 states that sensitivity of the landscape should be defined by analysing the value and susceptibility of the landscape receptor to the proposed change (the Proposed Development).

A6.6.11. The following sets out landscape value and susceptibility for the Causeymire – Knockfin Flows and East Halladale Flows WLAs.

Causeymire – Knockfin Flows WLA

Table A6.3: Landscape Value of the Causeymire – Knockfin WLA

Landscape Value	
Landscape Quality (Condition):	The Causeymire – Knockfin Flows WLA is considered to be a landscape of high quality comprising large swathes of intact blanket bog and interlinked pool systems and its importance is recognised at an international and national level. NatureScot mapping (see Annex 1, Map A1) shows a consistent pattern of perceived naturalness across the whole of the Causeymire – Knockfin Flows WLA. Within the WLA, there are some areas where landscape quality reduces as a result of current and former forested areas where large-scale drainage works were undertaken affecting the natural water table, erosion caused by overgrazing by deer, and damage by the creation of access tracks, recreational walking routes and climate change. Areas of lower quality within the WLA tend to occur on the periphery and closer to settled areas. There are currently ongoing efforts by a number of organisations to restore the peatlands.
Scenic Quality:	The WLA is considered to have high scenic quality on account of the large expanse of low-lying underdeveloped moorland with the occasional lone mountains providing a stark contrast and key focal point. As well as being scenically attractive from within, the WLA forms an important backdrop to the settled coastal areas and straths of Caithness.
Rarity:	The WLA forms part of The Flow Country, the most intact and extensive blanket bog system in the world extending over 4,000 km ² . The character of the WLA is considered to be rare, occurring in only a handful of other locations within the Highlands but at smaller scale.
Representativeness:	The juxtaposition of low-lying moorland interspersed with lone mountains and interconnecting hills is very distinctive and recognisable both locally and nationally.
Conservation interests:	Special Sites of Scientific Interest (SSSI) cover much of the WLA and include Strathmore Peatlands, Blar nam Faoleag, Coire na Beinne Mires, Dunbeath Peatlands, Morvern & Scaraben, Langwell Water, Berriedale Water, Knockfin Heights and Rumsdale Peatlands. The northern part of the WLA is covered by the Caithness and Sutherland Peatlands Ramsar, Special Area of Conservation (SAC), and Special Protection Area (SPA). A small area on the western side covering the Halladale River forms part of the Forsinard Flows National Nature Reserve (NNR). Cultural heritage assets are situated along the edge of the WLA around Dunbeath Water, Raffin Burn, west of Berriedale and north of Kelpedir and include prehistoric settlements, shielings, pre-clearance townships, clearance cairns and brochs which are designated as Scheduled Monuments (SMs). At a local level, the WLA is located within part of The Flow Country and Berriedale Coast Special Landscape Area, The WLA also forms part of the Nominated Flow Country World Heritage Site (WHS) as described in Annex 2 and shown on Map A .

Landscape Value	
Recreation value:	Several all-terrain vehicle tracks lead into the WLA, these are mainly located in the north and around the eastern fringes and none are situated within the Knockfin Heights in the south west. The number of visitors to the WLA are low and comprise people visiting isolated hill tops with Morven, Scaraben (both Grahams) and Ben Alisky being popular for hillwalking, and visitors taking part in field sports such as fishing on the numerous small lochans and shooting.
Perceptual aspects:	Due to its inaccessibility as a result of boggy terrain, numerous watercourses and lochans, combined with the lack of development, there is a strong perception of remoteness and wildness within the WLA. In particular, in the central and western areas, and numerous small-scale straths due to being more isolated and away from built development. NatureScot mapping (see Annex 1, Map A3)
Associations:	The Flow Country and Lone Mountains have extensively been written about both from a scientific perspective and also in literature and the view across the peatlands towards Morven is an iconic view used to promote the area.
Overall, landscape value for the Causeymire – Knockfin Flows WLA is considered to be Very High on account of the quality of the landscape which is considered one of the largest intact bog systems in the world reflected in its designation at both national and regional level for landscape, important ecologically internationally and is proposed for World Heritage Site status.	

Table A6.4: Landscape Susceptibility of the Causeymire – Knockfin Flows WLA

Landscape Susceptibility	
Landscape scale and geographical extent:	The WLA is considered to be large in scale covering approximately 514 km ² , within Caithness and the eastern fringes of Sutherland and forms part of one of the largest intact blanket bog systems in the world.
Landform:	NatureScot mapping (see Annex 1, Map A2) suggests limited ruggedness within the WLA. However, this is due to the larger scale that the mapping exercise was undertaken. In reality, there are several areas of ruggedness throughout the WLA, mainly occurring in the north, south and west where topography rises from the relatively flat peatlands into a series of interlocking hills and lone mountains. Elevation ranges between 90 m to 706 m Above Ordnance Datum (AOD) with the majority of areas between 90 and 290 m AOD comprising undulating and sweeping low-lying peatland. Several narrow glens penetrate the WLA reducing intervisibility of the surrounding landscape. In contrast, the peatlands are punctuated by several lone mountains, conical in nature and rugged small groups of interlocking hills. Morven forms one of the tallest hills in north of Scotland rising to 706 m (AOD).
Skylines:	Due to the low-lying nature of the peatlands, the sky has a greater influence on how the landscape is experienced. Known as ' <i>Big Sky Country</i> ' the peatlands are backdropped by distinct landmark hills including Morvern, Maiden Pap, Small Mount, Smean and Scaraben which form an important skyline not just within the WLA, but also from surrounding areas. There is also a strong interaction between the WLA and the skylines of neighbouring WLAs including East Halladale Flows WLA to the north, and Ben Klibreck – Amine Forest to the west, where from some locations, settled straths between the WLAs are not visible creating an impression of a much larger area of wild land.
Landscape pattern and complexity:	The WLA is a vast peatland landscape of rough vegetation, comprising acidic grassland and heather, bogs, lochans and watercourses. Enclosure is limited to the periphery of the WLA and has little influence on landcover vegetation. Fencing is limited, occurring along the periphery, and linked to nearby settled areas.
Settlement and man-made influences:	NatureScot mapping showing the degree of remoteness (see Annex 1, Map A3) indicate that the mountainous areas around Ben Alisky and the mountain range in the south and west of the WLA are considered to have the highest areas of remoteness. There is limited influence of settlement and other man-made features within the WLA. There are the remains of pre-clearance settlements, townships, and shielings, although the majority of these are in ruin and contribute to the perception of isolation. Inhabited houses are associated with estates and are

Landscape Susceptibility	
	located in periphery areas. There are a number of access tracks linking lochans for fishing and hills where shooting is practiced which occur mainly in the north and eastern part of the WLA (see Annex 1, Map 4). Conifer plantations are visible near boundary areas contrasting with the surrounding peatland. Beyond the boundary of the WLA, man-made features are more notable and include several wind farms to the north and north east, the A9 road along the eastern boundary, and the Inverness to Thurso/ Wick railway line to the north and west. From elevated locations the surrounding agricultural land is more noticeable and settlement along low ridgelines. At night-time artificial lighting is very limited within the WLA and sources tend to be from the surrounding settled areas in the form of lighting from properties, vehicles travelling along the A9 and surrounding minor road network, and sky glow from the distant settlements of Wick and Thurso.
Inter-visibility with adjacent landscapes and vistas:	Intervisibility of adjacent landscapes can be experienced, especially where taller man-made features draw the eye such as wind farms and forestry plantations. Beyond the boundaries in the neighbouring landscape, the WLA forms an important backdrop in receptors views including settled areas, roads, and railway line with the lone mountains often forming a focal point in views.
Perceptual aspects:	There is a strong sense of isolation and wildness within the WLA on account of the simple landcover, lack of man-made features, isolated mountains, and relationship to nearby WLA which makes it difficult to perceive the scale of the landscapes.
The Causeymire – Knockfin Flows WLA is highly susceptible to the introduction of tall vertical structures which have the potential to be prominent in views both internally within the WLA, and the interaction between the distinctive skyline of the WLA and neighbouring landscapes. This has the potential to affect the perception of scale of the lone mountains and surrounding peatlands. Landscape susceptibility is therefore considered Very High .	

A6.6.12. Overall landscape sensitivity for the Causeymire – Knockfin Flows WLA is considered **Very High**.

East Halladale Flows WLA

Table A6.5: Landscape Value of the East Halladale Flows WLA

Landscape Value	
Landscape Quality (Condition):	The East Halladale Flows WLA is considered to be a landscape of high quality comprising large swathes of intact blanket bog and interlinked pool systems and its importance is recognised at an international and national level. Within the WLA, there are some areas where landscape quality reduces as a result of access tracks, evidence of past management practices, overgrazing by deer and climate change. NatureScot mapping (see Annex 1, Map 5) shows that there is a strong perception of naturalness across the WLA on account of the quality of the landscape where there is limited influence from man. Existing and former forested areas around the periphery provide some distracting features.
Scenic Quality:	The WLA is considered to have high scenic quality on account of the large expanse of low-lying underdeveloped moorland with and interlinked hills. As well as being scenically attractive from within, the WLA forms an important backdrop to the settled coastal areas to the north and east, as well as Strath Halladale to the west.
Rarity:	The WLA forms part of the most intact and extensive blanket bog system in the world extending over 4,000 km ² . The character of the WLA is considered to be rare only occurring in a handful of other locations within the Highlands but to not at the same scale.
Representativeness:	The WLA is recognisable as a low-lying peatland area distinctive to Caithness and Sutherland.
Conservation interests:	SSSI cover much of the WLA and include East Halladale, Loch Caluim Flows and Sletill Peatlands.

Landscape Value	
	<p>The majority of the WLA is covered by the Caithness and Sutherland Peatlands Ramsar, SAC, and SPA.</p> <p>A small area on the south eastern side is designated as the Forsinard Flows NNR.</p> <p>No cultural heritage assets were identified within the WLA.</p> <p>The WLA also forms part of the Nominated Flow Country WHS (see Annex 2, Map A.).</p> <p>The WLA is not covered by any landscape designations of national or local importance.</p>
Recreation value:	Several tracks lead into the WLA accessing lochans for fishing. Visitors are limited to hill tops such as Beinn Ratha on the northern periphery.
Perceptual aspects:	Due to its inaccessibility as a result of boggy terrain, numerous watercourses and lochans, combined with the lack of development, there is a strong perception of remoteness and wildness within the WLA. In particular, in the central areas due to being more isolated and away from built development.
Associations:	The Flow Country and Lone Mountains have extensively been written about both from a scientific perspective and also in literature.
<p>Overall, landscape value for the East Halladale Flows WLA is considered to be Very High on account of the quality of the landscape which is considered one of the largest intact bog systems in the world reflected in its designation at both national and regional level for landscape, important ecologically internationally and is proposed for World Heritage Site status.</p>	

Table A6.6: Landscape Susceptibility of the East Halladale Flows WLA

Landscape Susceptibility	
Landscape scale and geographical extent:	The WLA is considered to be large in scale covering approximately 159 km ² , within Caithness and the eastern edge of Sutherland and forms part of one of the largest intact blanket bog systems in the world.
Landform:	Elevations vary between 70 – 291 m AOD of undulating and sweeping low-lying peatland which reduces intervisibility of adjacent landscapes as a result of intervening slopes. NatureScot mapping (see Annex 1, Map A1.6) suggests the area has limited ruggedness. In reality, there are areas of ruggedness around some of the higher summits; however, generally the WLA is relatively smooth comprising a series of interlocking hills.
Skylines:	Due to the low-lying nature of the peatlands, the sky has a greater influence on how the landscape is experienced. The undulating nature of the landform reduces intervisibility of the surrounding settled landscape, the WLA appears at time as part of the larger area where nearby WLAs to the south and south west can also be experienced. From these location, the lone mountains form a distinctive and noticeable feature along the skyline resulting in a strong interaction between the WLAs covering the Flow Country.
Landscape pattern and complexity:	The WLA is a vast peatland landscape of rough vegetation, comprising acidic grassland and heather, bogs, lochans and watercourses. Enclosure is limited to the periphery of the WLA and has little influence on landcover vegetation. Fencing is limited, occurring along the periphery, and linked to nearby settled areas.
Settlement and man-made influences:	NatureScot mapping (see Annex 1, Maps A7 and A8) shows the influence of man-made The WLA is uninhabited although there are some areas of settlement lying close to the boundary, most notably Broubster, Shurrery and Dorrery to the east, and numerous small-scale settlement's within Strath Halladale to the west. The Inverness to Wick/Thurso railway line passes along the southern boundary and is built up above the surrounding peatlands offering uninterrupted views towards the WLA. There are a number of access tracks linking lochans for fishing and shooting is practiced within the surrounding uplands. Conifer plantations are visible near boundary areas contrasting with the surrounding peatland. Beyond the boundary of the WLA, man-made features are more notable and include several wind farms to the north and north east, the A9 road along the eastern boundary, and the Inverness to Thurso/ Wick railway line to the south.
Inter-visibility with adjacent landscapes and vistas:	Intervisibility of adjacent landscapes can be experienced, especially where taller man-made features draw the eye such as wind farms and forestry plantations. There is a strong interaction between WLAs appearing as one large area. Beyond the boundaries in the neighbouring landscape, the WLA forms an important backdrop in receptors views including settled areas, roads, and railway line to the north, east and Strath Halladale to the west.
Perceptual aspects:	There is a strong sense of isolation and wildness within the WLA on account of the simple landcover, lack of man-made features, isolated mountains, and relationship to nearby WLA which makes it difficult to perceive the overall scale of the landscapes.
<p>The East Halladale Flows WLA is highly susceptible to the introduction of tall vertical structures which have the potential to be prominent in views both internally within the WLA, and the interaction between the distinctive skyline of the WLA and neighbouring landscapes. This has the potential to affect the perception of scale of the lone mountains and surrounding peatlands. Landscape susceptibility is therefore considered Very High.</p>	

A6.6.13. Overall landscape sensitivity for the East Halladale Flows WLA is considered **Very High**.

Step 4 - Assess the magnitude of effects

Causeymire – Knockfin Flows WLA

Scenario 1

A6.6.14. As identified in Step 2, NatureScot identify five wild attributes for the Causeymire - Knockfin Flows WLA. The following addresses each wild quality in relation to the Proposed Development:

'Awe inspiring simplicity of wide open peatland from which rise isolated, arresting, steep mountains.'

Irregular peatland and dubh lochan, comprising a complex mix of hidden pools, bogs and lochans that contribute to perceived naturalness and limit access.

'An extensive remote interior with few visitors in contrast to the margins of the area from which many people view into the WLA.'

'Wide glens containing meandering rivers that limit access and are often the focus for isolated historic features.'

Rolling interlocking hills in the south containing remote, sheltered glens with limited visibility.'

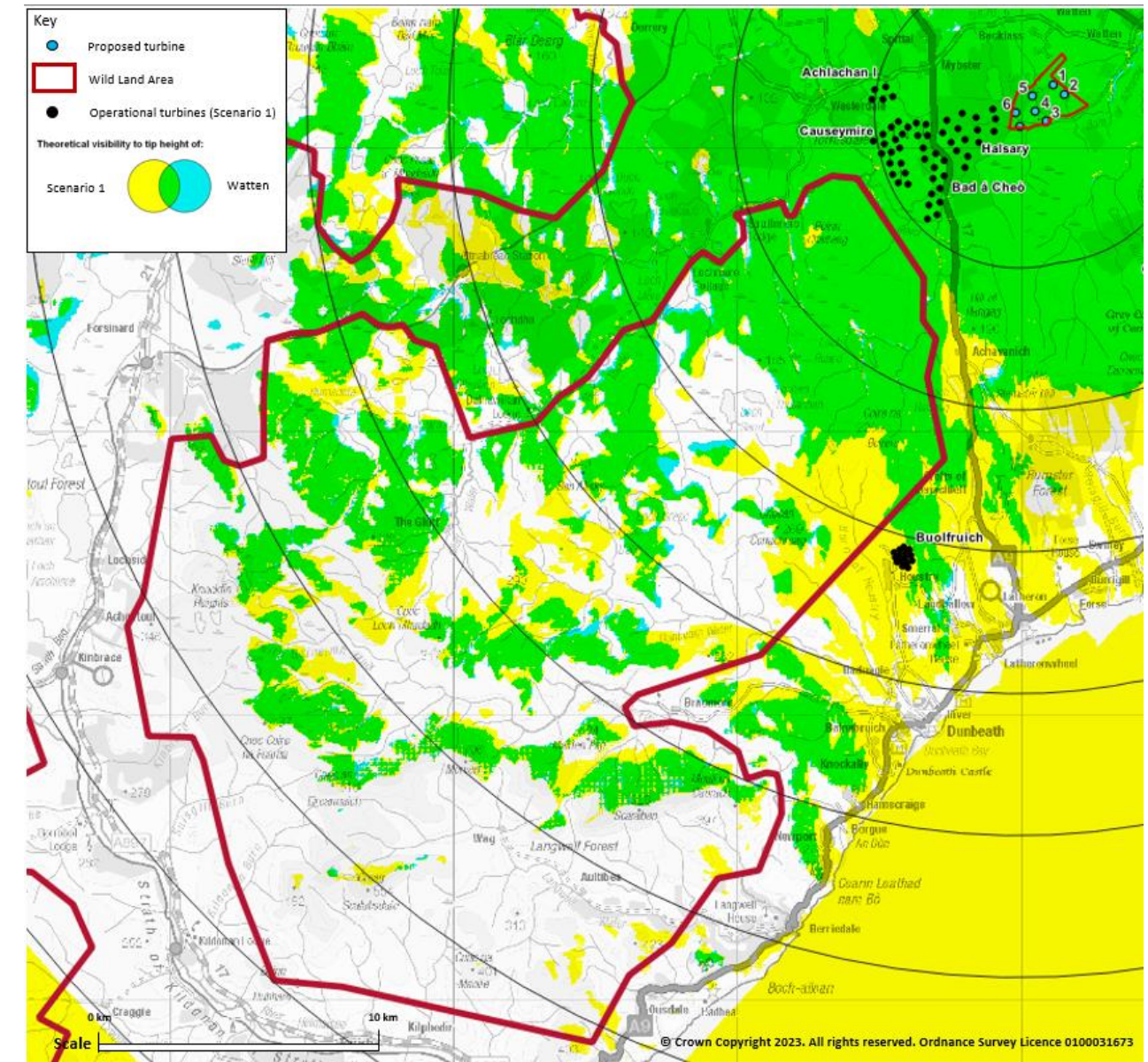
A6.6.15. The Proposed Development would not be located within the WLA and would not have any direct effects on the physical attributes of the WLA, or views across the peatlands towards the mountains. Potential effects are therefore indirect and related to receptors experiencing visibility of the Proposed Development alongside operational wind farms.

A6.6.16. Approximately 31.7 % of the Causeymire – Knockfin Flows WLA is predicted to receive theoretical visibility of the Proposed Development based on a bare ground model. This covers low-lying peatland and elevated ground and due to the lack of tree cover, the visual envelope is unlikely to reduce in reality.

A6.6.17. Theoretical visibility of the Proposed Development extends between 5.7 and 35.8 km and is predicted to be widespread across low-lying peatland out to 12.9 km. Thereafter, reducing to elevated areas including the east facing slopes extending between Dalnaha in the north, to Cnoc Bad Cholla in the south including the summit of Ben Alisky (349 m AOD); the upper slopes of isolated hills; north east facing slopes between Loch Mhadaidh and Bad Mairi; high ground to the east of The Flows NNR; and along a ridgeline extending between Meall Dhonuil in the east, and Cnoc Coire na Fearna in the west including the distinctive summits of Morven (706 m AOD) and Scaraben (626 m AOD).

A6.6.18. The Proposed Development would be experienced beyond the existing cluster of operational turbines (Scenario 1) comprising Halsary, Bad a Cheo and Causeymire. Map A6.4 shows that there would be a very slight increase in theoretical visibility of wind turbines within the WLA as a direct consequence of the Proposed Development. This would extend visibility to the lower slopes of hills near Achscoriclate, Backlass, Sithean Corr-Meille, Loch Breac, Cnoc Gleannain, Pollboy and along the ridgeline extending west from Morven. This is mainly as a result of the proposed turbines being taller than the nearby operational turbines where blade tips will be visible at lower elevations.

Map A6.4: Scenario 1 comparison ZTV with the Proposed Development



A6.6.19. Views of the Proposed Development vary from within the WLA on account of the size of the designation and supported by the following viewpoints:

- Figure 6.30a-g – Viewpoint 14: Loch More Cottage;
- Figure 6.33a-e – Viewpoint 17: Coire na Beinne;
- Figure 6.34a-f – Viewpoint 18: Ben Alisky;
- Figure 6.35a-f – Viewpoint 19: Scaraben; and
- Wirelines in Annex 3 (1-5).

A6.6.20. From the western side of the WLA (see Viewpoint 14: Loch More Cottage, and Viewpoint 18: Ben Alisky), the Proposed Development would be viewed behind the foreground cluster of operational wind turbines of Bad a Cheo and Halsary. The extent of the proposed turbines visible would depend on the elevation of the viewpoint, with landform providing some screening to the base of the proposed turbines from Viewpoint 14 which is located within

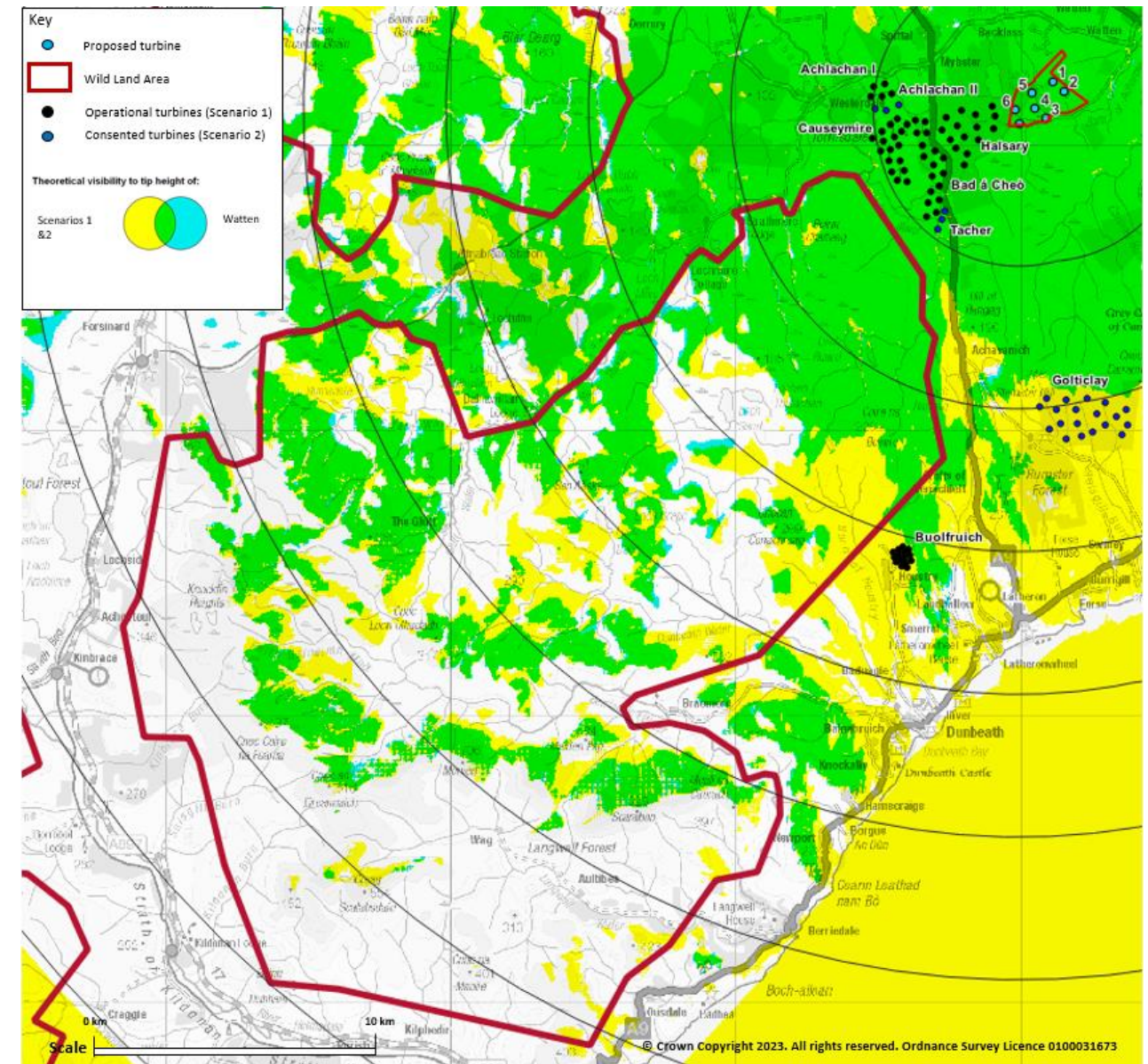
the flat peatlands. The proposed turbines would also be noticeably taller, again, the elevation of the viewpoint would dictate how much taller, with Viewpoint 18: Ben Alisky appearing more prominent due to the higher elevation in comparison to Viewpoint 14.

- A6.6.21. All seven of the aviation lights mounted on turbine nacelles would be visible from the WLA. This would be widespread up to 12.9 km from the Proposed Development. It is predicted that the horizontal angle would be 0° to -1° resulting in light intensities of 200 candela (ca) to 75 ca and comparable to the brake light of a car assuming clear conditions.
- A6.6.22. Areas of higher ground at Coire na Beinne, Cnocan, Ben Alisky and the lone mountains would obtain visibility of aviation lights between 0° to 3° at 200 ca in clear conditions, although the intensity would reduce as a consequence of the distance from the Proposed Development where lights will be observed blinking due to atmospheric conditions.
- A6.6.23. Aviation lighting would be experienced within the context of vehicles travelling along the A9 road, several A and minor roads, and lights from properties in the surrounding settled landscape. Nevertheless, aviation lights will extend the duration of effects of the wind turbines to hours of darkness.
- A6.6.24. 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**. Construction and decommissioning phases would be short-term in duration, becoming long-term during operation and maintenance and reversible following decommissioning.

Scenario 2

- A6.6.25. The addition of the consented sites (Scenario 2) would include a further three turbines at Achlachan II (4.2 km to the west of the Proposed Development occupying an area between the operational Achlachan Wind Farm and Causeymire, and a further three turbines at Tachur (4.0 km to the south west of the Proposed Development), extending further south from Bad a Cheo appearing as an extension to the operational wind farm.
- A6.6.26. Further consented sites of note are Cogle Moss (7.0 km to the north east of the Proposed Development), Camster II (6.2 km to the south east), and Golticlay (9.7 km to the south east), extending turbines southwards in views from the WLA and appearing as a standalone development.
- A6.6.27. Map A6.5 shows that there would be a slight reduction in the additional theoretical visibility described for Scenario 1 where only the Proposed Development would be visible.

Map A6.5: Scenario 1 & 2 comparison ZTV with the Proposed Development



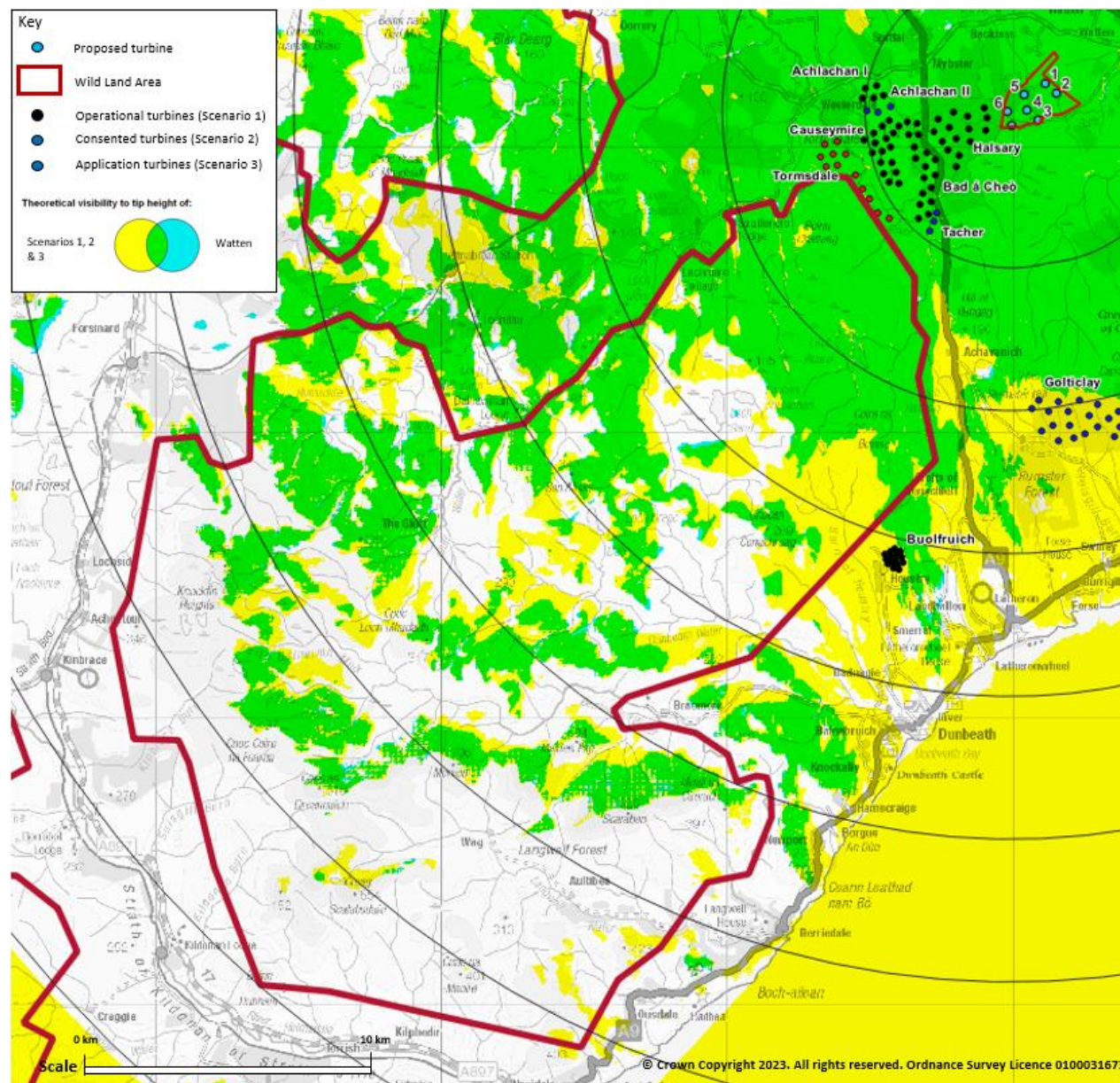
- A6.6.28. The Scenario 2 baseline would result in a further six turbines being viewed around the existing operational cluster of Bad a Cheo, Halsary and Causeymire. Both Achlachan II and Tachur would not result in further theoretical visibility within the WLA. Golticlay to the east of the WLA, would result in a slight increase in theoretical visibility.
- A6.6.29. The introduction of the Proposed Development would not result in an increase in theoretical visibility within the WLA. Impacts would be associated with further turbines being viewed beyond the existing cluster of operational turbines or extending development further east as a standalone development as discussed for the assessment of Scenario 1. Therefore, it is not considered that the magnitude of change would increase from **Medium – Low**.

Scenario 3

- A6.6.30. Scenario 3 baseline would result in the addition of Tormsdale (5.8 km to the west of the Proposed Development), located between the WLA and existing cluster of turbines of Scenario 1 and 2. This would increase the influence of wind turbines on views from the north of the WLA, in particular from the adjacent peatlands.

A6.6.31. Scenario 3 (application sites) would result in Tormsdale increasing the presence of wind turbines on the north eastern boundary of the Causeymire - Knockfin Flows WLA, resulting in turbines encroaching on the WLA and would be viewed in front of the existing operational and consented cluster. Similar to Scenarios 2 and 3, Map A6.6 shows that there would still be a slight increase in areas where Watten would be visible on its own at lower elevations comprising blade tips.

Map A6.6: Scenario 1,2 & 3 comparison ZTV with the Proposed Development



A6.6.32. Similar to the assessments of Scenario 1 and 2, the addition of the Scenario 3 sites to the baseline, would not result in an increase in theoretical visibility within the WLA. Impacts would be associated with further turbines being viewed beyond the existing cluster of operational turbines or extending development further east as a standalone development. It is not considered that the magnitude of change would increase from **Medium – Low** levels.

East Halladale Flows WLA

A6.6.33. NatureScot identify five wild attributes for the Causeymire - Knockfin Flows WLA. The following addresses each wild quality in relation to the Proposed Development;

'An awe-inspiring simplicity of landscape at the broad scale, with a strong horizontal emphasis, 'wide skies' and new foci.

A remote, discrete interior, with limited access and a strong sense of solitude.

A rugged and complex pattern of hidden burns, lochans and pools at the local level, despite the landscape's simple composition at the broad scale.

A remarkably open landscape with extensive visibility, meaning tall or high features in the distance are clearly visible.'

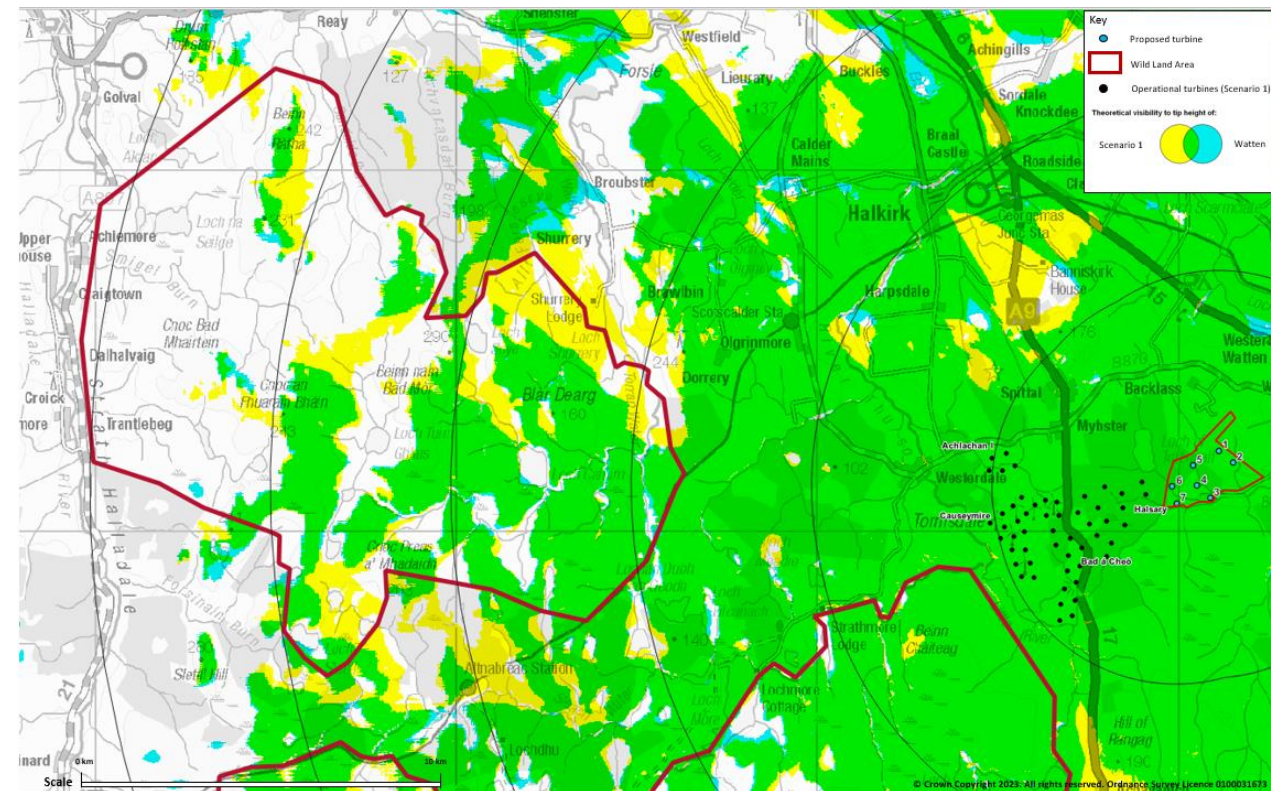
A6.6.34. The Proposed Development would not be located within the WLA and would not have any direct effects on the physical attributes of the WLA, or views across the WLA. Potential effects are therefore indirect and related to receptors experiencing intervisibility of the Proposed Development.

A6.6.35. Approximately 34.4 % of the East Halladale Flows WLA is predicted to receive theoretical visibility of the Proposed Development based on a bare ground model. This covers low-lying peatland in the east and elevated ground in the west. Due to the lack of tree cover, the visual envelope is unlikely to reduce in reality.

A6.6.36. The ZTV for the East Halladale Flows WLA shows widespread theoretical visibility between 13.6 – 22.1 km from the proposed turbines covering the Forsinard Flows National Nature Reserve. Thereafter, isolated hills including Beinn Ratha (242 m AOD), and Cnoc Bad Mhairtein (230 m AOD).

A6.6.37. Similar to the Causeymire – Knockfin Flows WLA, the Proposed Development would be experienced beyond the existing cluster of operational turbines (Scenario 1) comprising Halsary, Bad a Cheo and Causeymire. Map A6.7 shows that there would be a very slight increase in theoretical visibility of wind turbines within the WLA as a direct consequence of the Proposed Development. This would extend visibility on the lower slopes of above Loch Calium, numerous watercourses and scattered elevated ground such as Bad Mhairtein and Sean Airigh. This would be as a result of the proposed turbines being taller than the nearby operational turbines where blade tips will be visible at lower elevations.

Map A6.7: Scenario 1 comparison ZTV with the Proposed Development



- A6.6.38. The wirelines shown in **Annex 3** (Wirelines 6-8) show that there would be a slight increase in the horizontal extent of wind turbines when viewed from northern areas of the WLA, where some of the proposed turbines would extend beyond Achlachan and Halsary.
- A6.6.39. All seven of the aviation lights mounted on turbine nacelles would be visible from the WLA. This would be widespread in the eastern half of the WLA. It is predicted that the horizontal angle would be 0° to -1° resulting in light intensities of 200 candela (ca) to 75 ca and comparable to the brake light of a car assuming clear conditions.
- A6.6.40. Areas of higher ground at Beinn nam Bad Beig, Beinn nam Bad Mor, and Cnoc Maol Donn would obtain visibility of aviation lights between 0° to 3° at 200 ca in clear conditions, although the intensity would reduce as a consequence of the distance from the Proposed Development where lights will be observed blinking due to atmospheric conditions.
- A6.6.41. Aviation lighting would be experienced within the context of vehicles travelling along the A9 road, several A and minor roads, and lights from properties in the surrounding settled landscape. Nevertheless, aviation lights will extend the duration of effects of the wind turbines to hours of darkness.
- A6.6.42. 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 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. Construction and decommissioning phases would

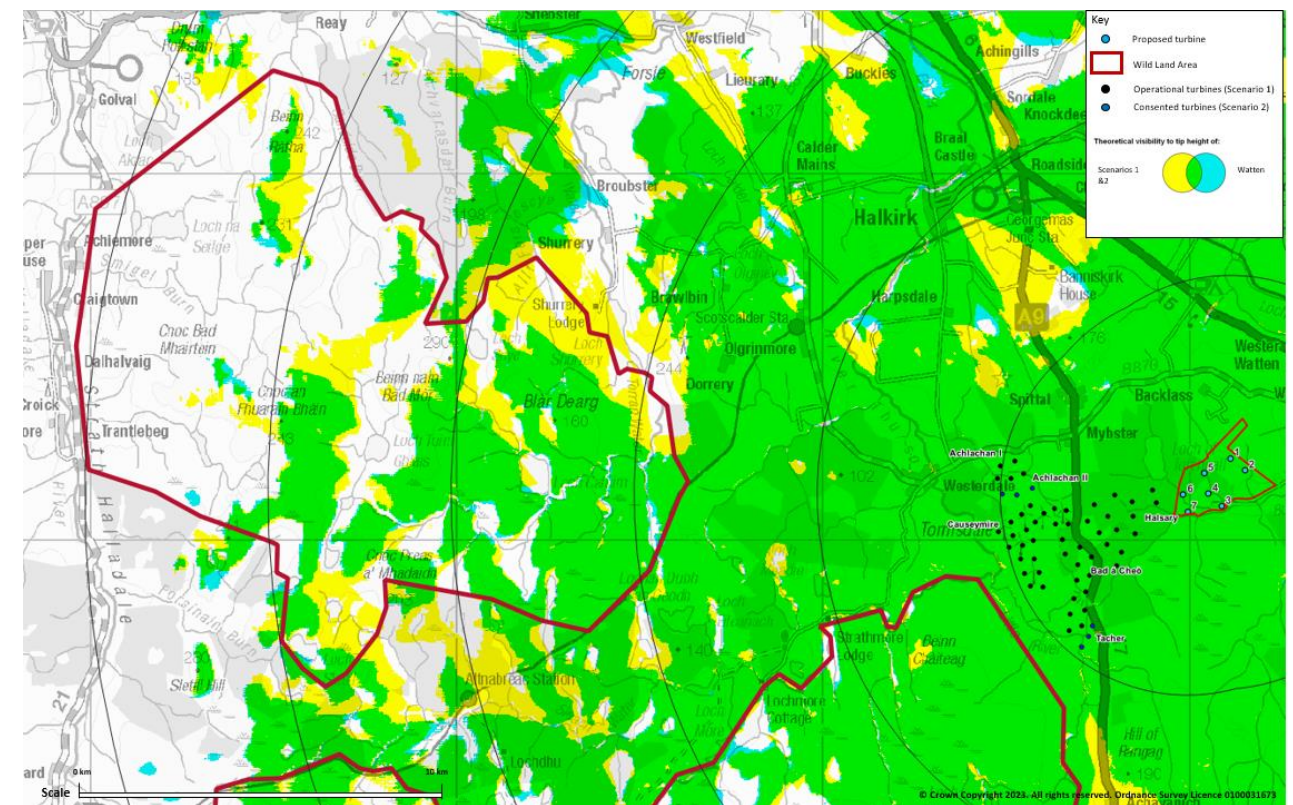
be short-term in duration, becoming long-term during operation and maintenance and reversible following decommissioning.

Scenario 2

A6.6.43. The addition of the consented sites (Scenario 2) would further increase the number of turbines in the operational cluster in which the Proposed Development would be part of. Achlachan 2 would infill a gap between Achlachan and the main cluster and Tachur would extend turbines southwards from the main cluster.

A6.6.44. Map A6.8 shows that there would be a slight reduction in the additional theoretical visibility described for Scenario 1 where only the Proposed Development would be visible as a result of the additional wind farms being included in the baseline.

Map A6.8: Scenario 1 & 2 comparison ZTV with the Proposed Development

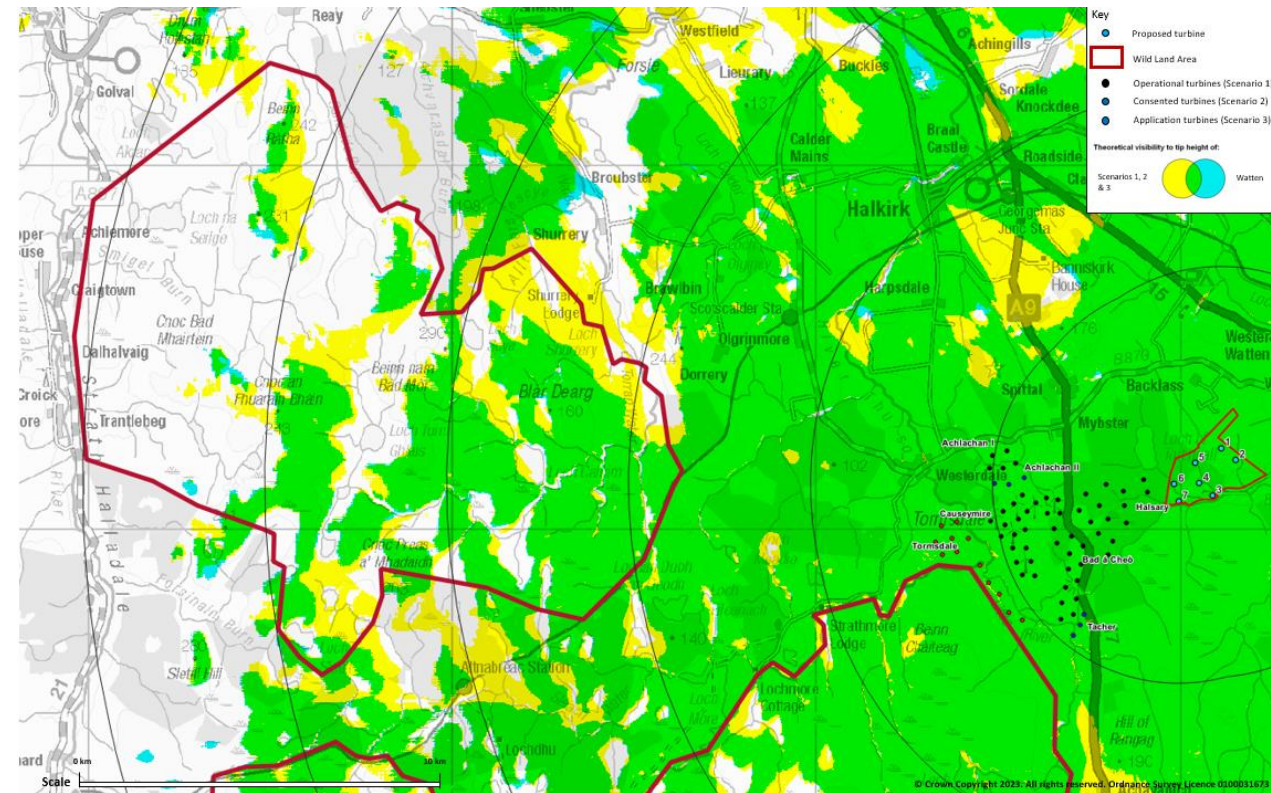


A6.6.45. Impacts on the WLA would be associated with further turbines being viewed beyond the existing cluster of operational turbines or slightly extending development further north. Therefore, it is not considered that the magnitude of change would increase from **Low**.

Scenario 3

A6.6.46. Scenario 3 (application sites) would result in Tormsdale increasing the presence of wind turbines and extend turbines closer to the WLA boundary and would be viewed in front of the existing operational and consented cluster. Similar to Scenarios 2 and 3, Map A6.9 shows that there would still be a slight increase in areas where the Proposed Development would be visible on its own at lower elevations comprising blade tips.

Map A6.9: Scenario 1,2 & 3 comparison ZTV with the Proposed Development



A6.6.47. Impacts from the Proposed Development would be associated with further turbines being viewed beyond the existing cluster of operational turbines or extending development further north. Tormsdale would be prominent from the WLA, whereas the Proposed Development would be further away and appear part of the existing cluster. It is not considered that the magnitude of change would increase from Low.

Step 5: Judge the significance of the effects

Causeymire – Knockfin Flows WLA

A6.6.48. The sensitivity of the Causeymire and Flows WLA is considered **Very High** on account of the level of designations covering the WLA which are of international and national importance. Magnitude of change during the construction/decommissioning, and operation and maintenance phases would be **Medium** within the peatland area immediately to the south west of the Proposed Development, reducing to **Low** levels with distance. This would result in a **Major-moderate significant** adverse effect within 12.9 km, reducing to **Moderate-minor** and **Minor** adverse levels thereafter and not significant as distance increases.

Scenarios 2 and 3

A6.6.49. There would be no increase in effect from **Major-moderate** to **Minor** adverse for Scenarios 2 and 3 due to the Proposed Development mainly being experienced as part of and behind the existing operational, consented and application cluster, and due to the limited number of turbines proposed.

East Halladale Flows WLA

A6.6.50. The sensitivity of the East Halliday Flows WLA is considered **Very High** on account of the level of designations covering the WLA which are of international and national importance. Magnitude of change during the construction/decommissioning, and operation and maintenance phases would be **Low** within the peatland area immediately to the west of the Proposed Development. This would result in a **Moderate-minor** not significant adverse effect due to the distances involved where the Proposed Development would be viewed beyond the existing operational cluster of wind farms.

Scenario 2 and 3

A6.6.51. There would be no increase in effect from **Moderate-minor** for Scenarios 2 and 3 due to the Proposed Development mainly being experienced as part of and behind the existing operational, consented and application cluster, and due to the limited number of turbines proposed.

A6.7. Summary

A6.7.1. Table A6.5 provides a summary of the assessment of the Proposed Development on Wild Land Areas.

Table 6.7: Summary of Effects on Wild Land Areas

Wild Land Area	Sensitivity	Magnitude of Change	Significance of Effect	Cumulative Effect (Scenario 2)	Cumulative Effect (Scenario 3)
Causeymire – Knockfin Flows	Very High	Medium, reducing to Low levels with distance beyond 15 km.	Major-moderate adverse and significant , reducing to non-significant levels as distance increases during construction, operation, and decommissioning phases.	Major-moderate adverse and significant	Major-moderate adverse and significant
East Halladale Flows	Very High	Low	Moderate-minor adverse and not significant.	Moderate-minor adverse and not significant.	Moderate-minor adverse and not significant.

ANNEX 1

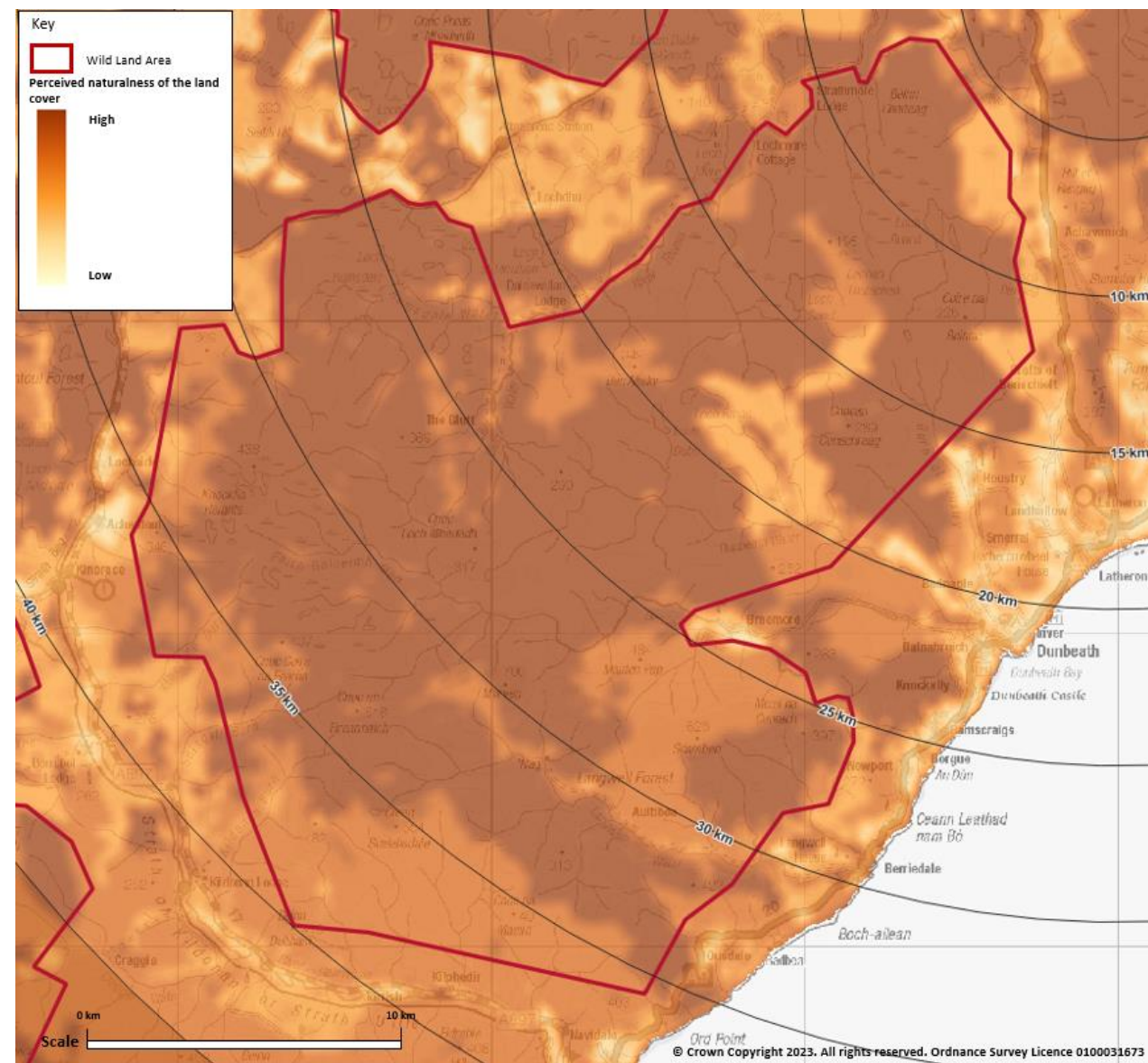
A6.7.2. The rationale behind NatureScot's identification of WLA applied four physical attributes as follows:

- Perceived naturalness of the land cover;
- Ruggedness of terrain;
- Remoteness from public roads, ferries, or railway stations; and
- Visible lack of buildings, roads, pylons, and other modern artefacts.

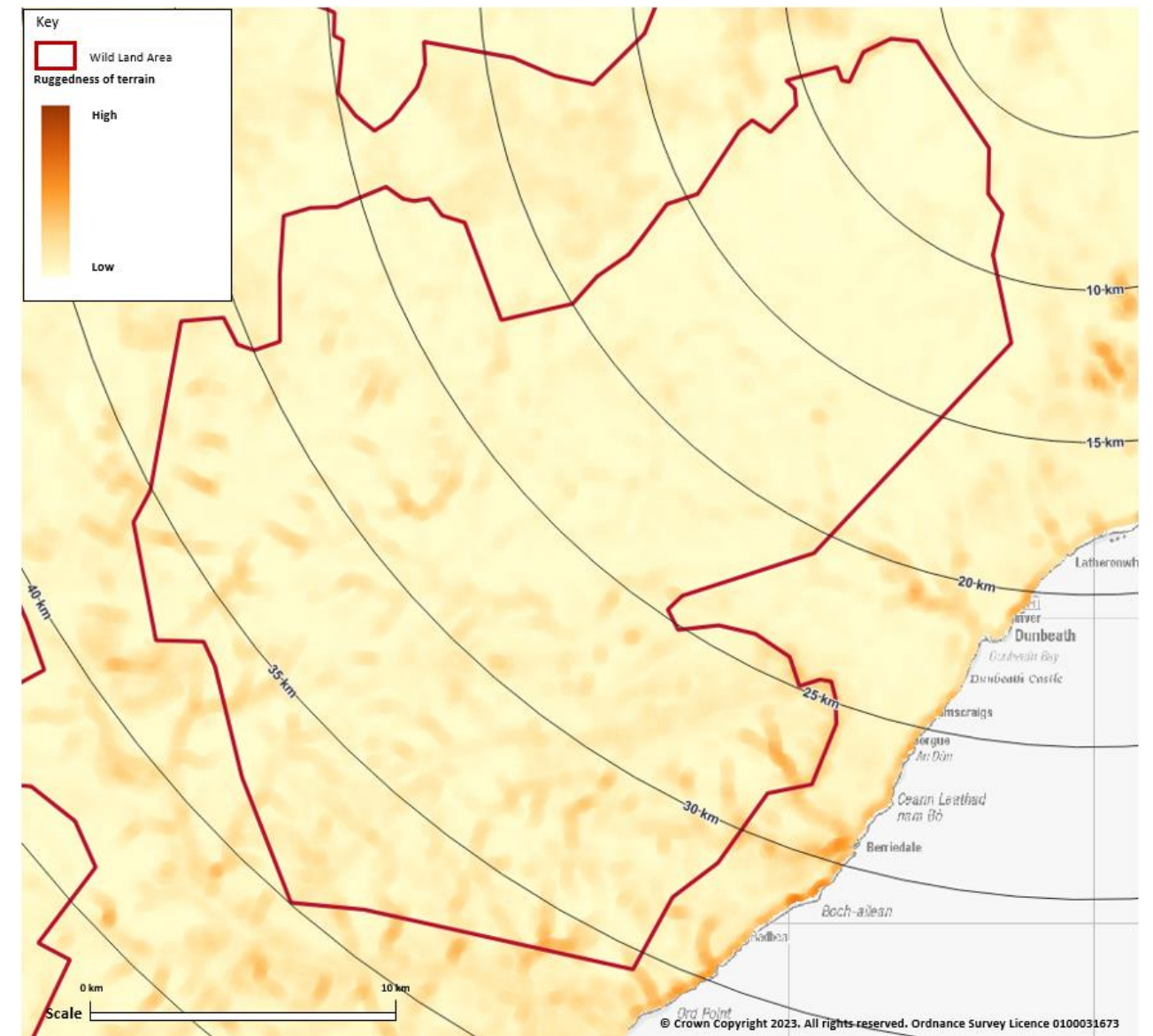
A6.7.3. Maps of each of the above have been provided for each WLA considered in the assessment in this Annex.

Causeymire – Knockfin Flows WLA

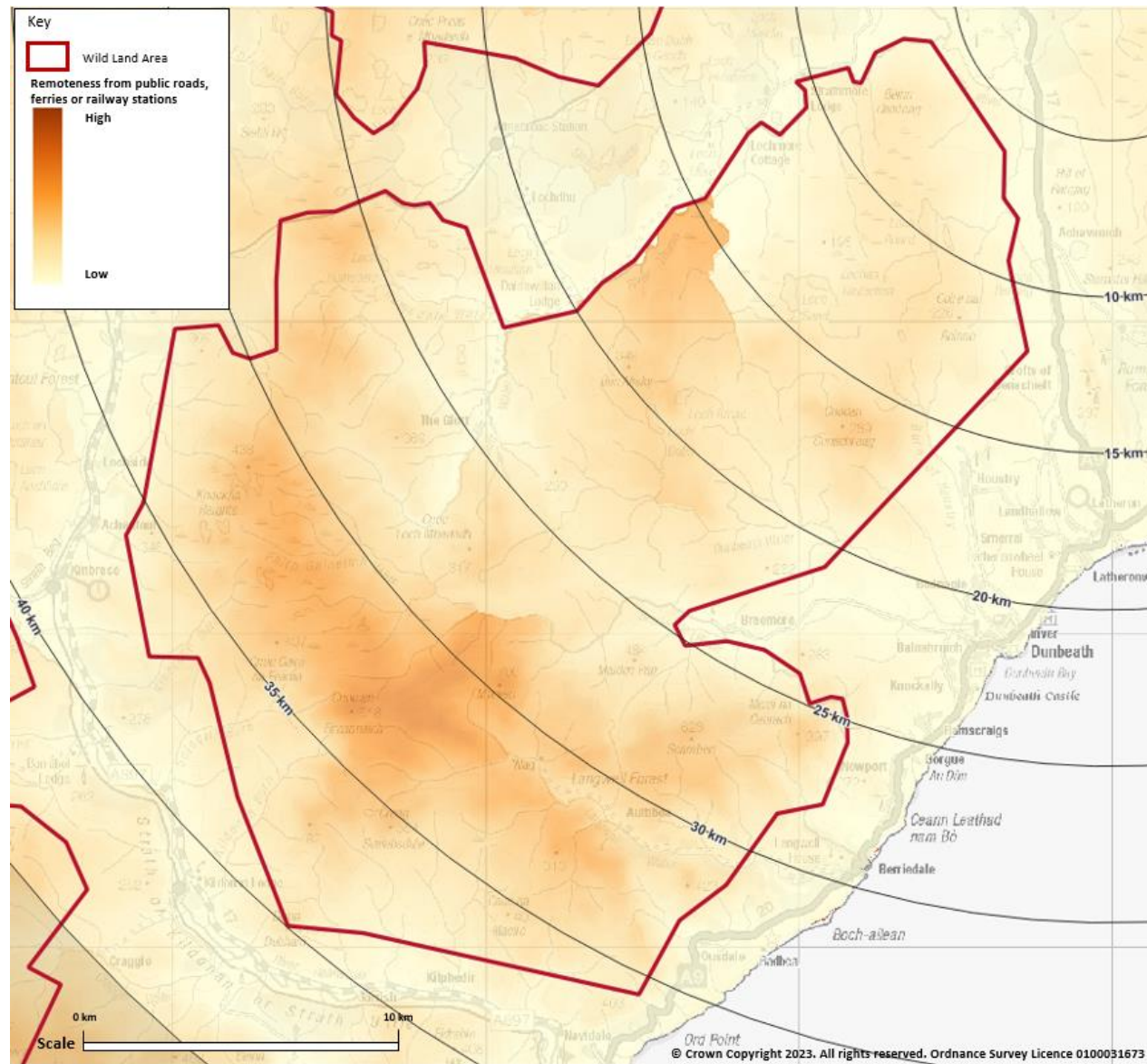
Map A1: Perceived naturalness of the land cover within the Causeymire – Knockfin Flows WLA



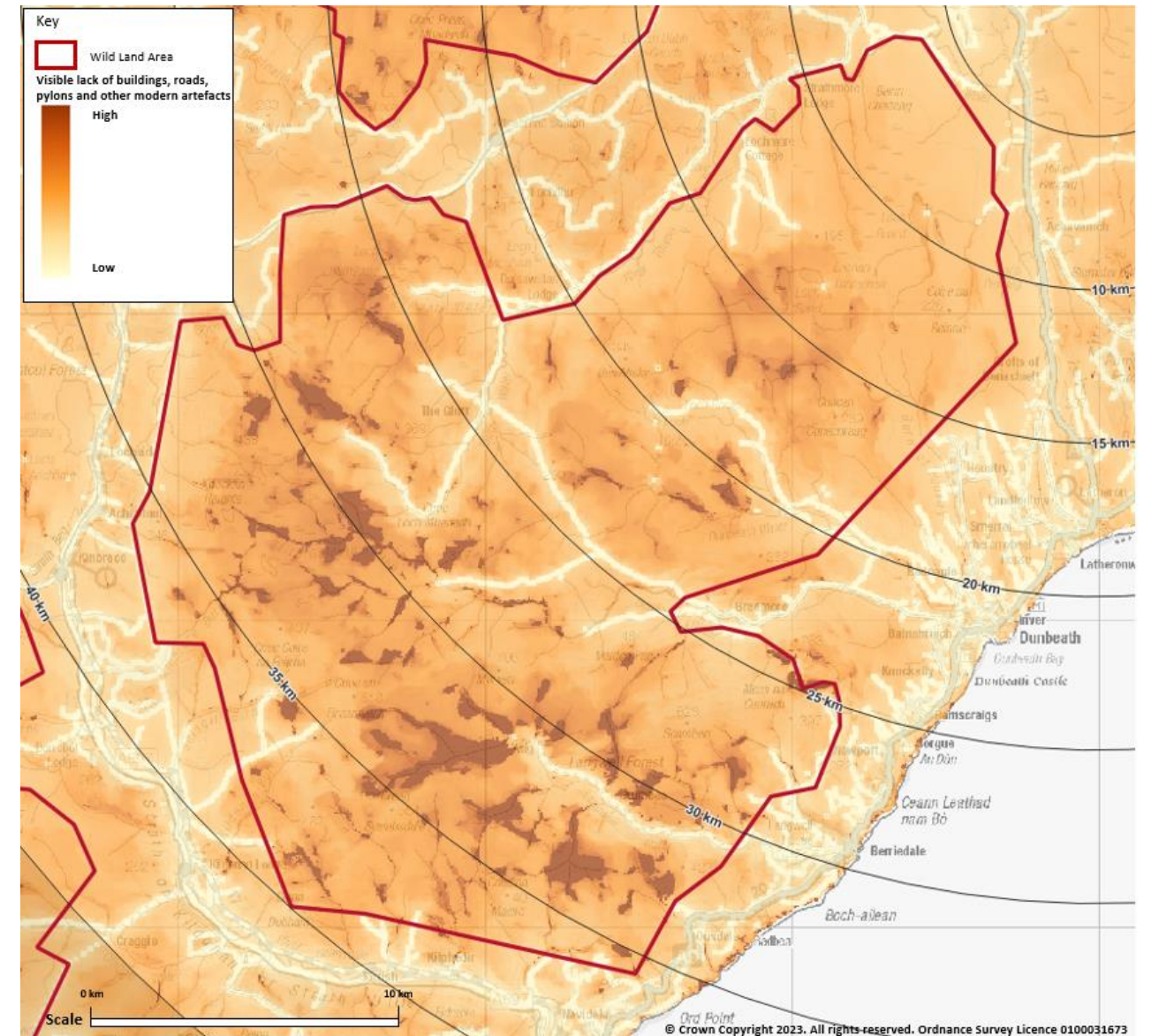
Map A2: Ruggedness of terrain within the Causeymire – Knockfin Flows WLA



Map A3: Remoteness from public roads, ferries or railway stations within the Causeymire – Knockfin Flows WLA

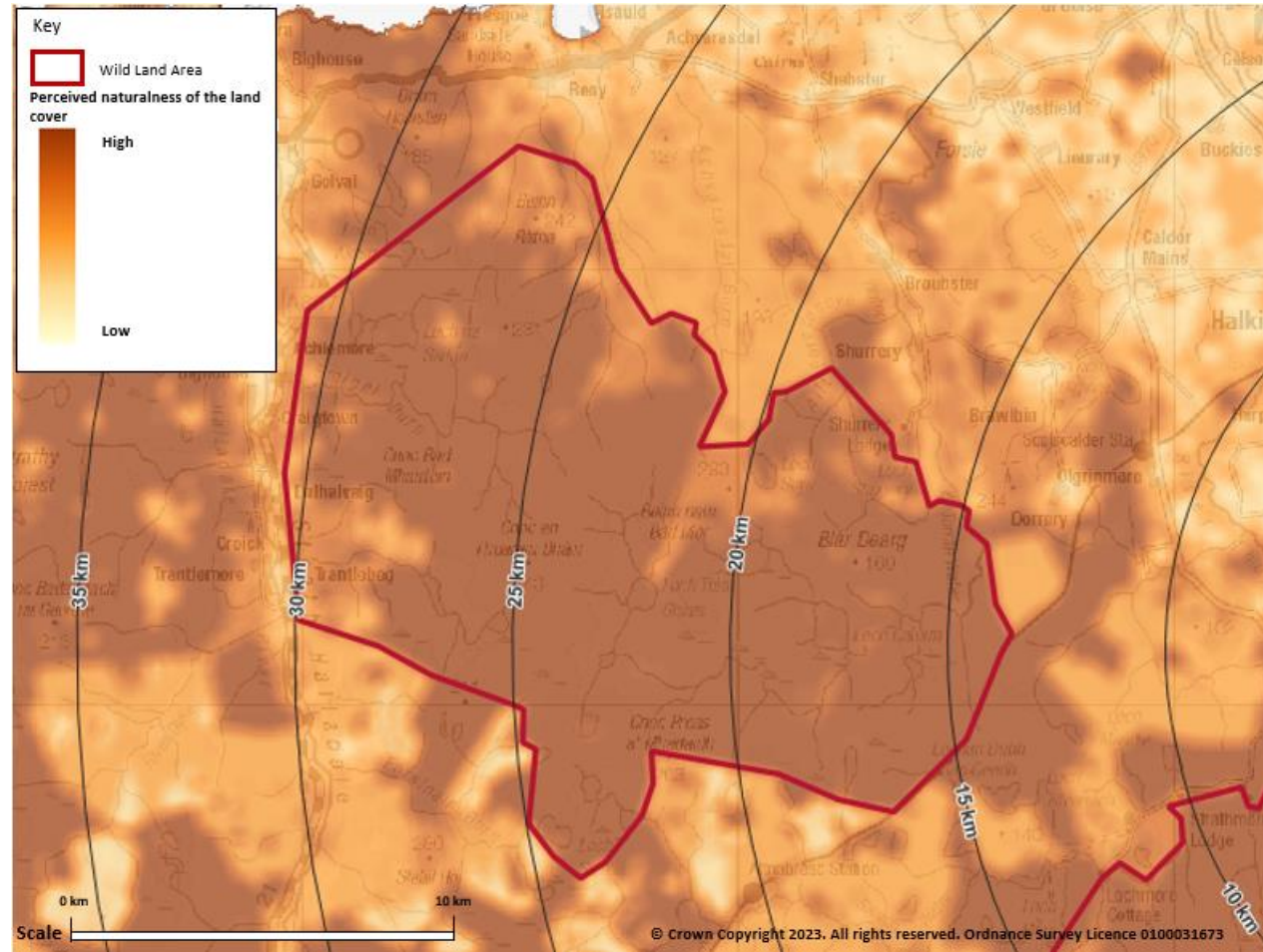


Map A4: Visible lack of buildings, roads, pylons and other modern artefacts within the Causeymire – Knockfin Flows WLA

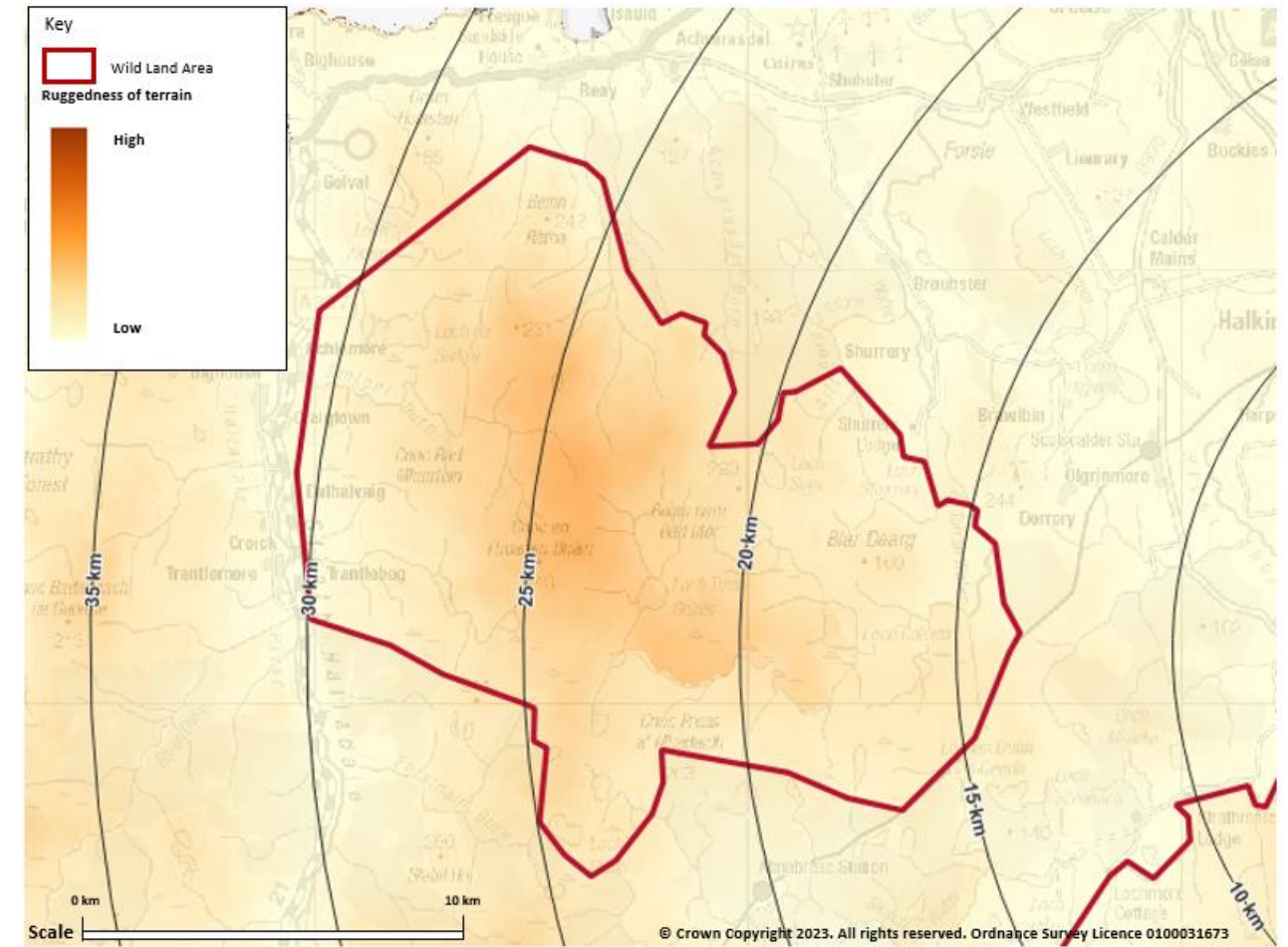


East Halladale Flows WLA

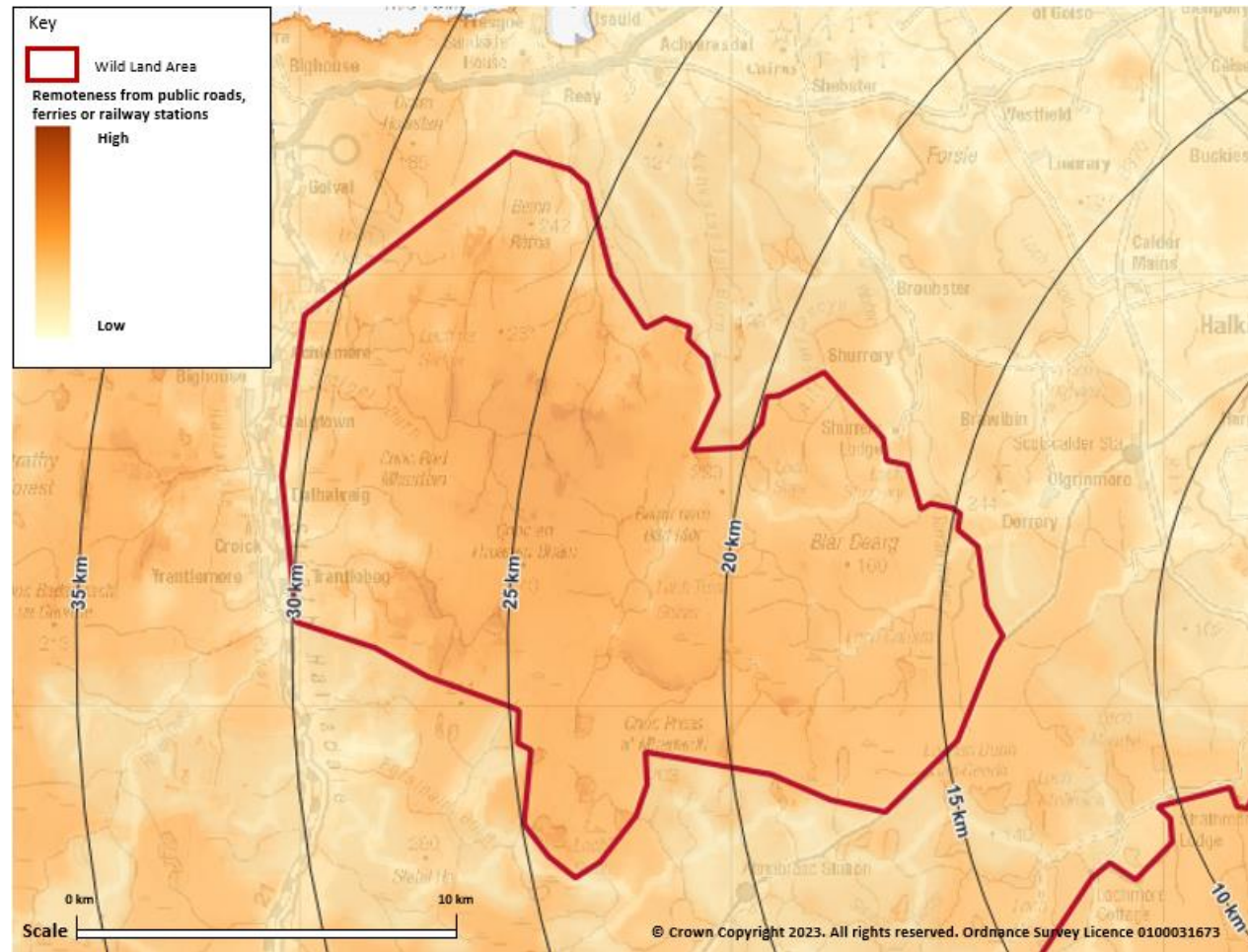
Map A5: Perceived naturalness of the land cover within the East Halladale Flows WLA



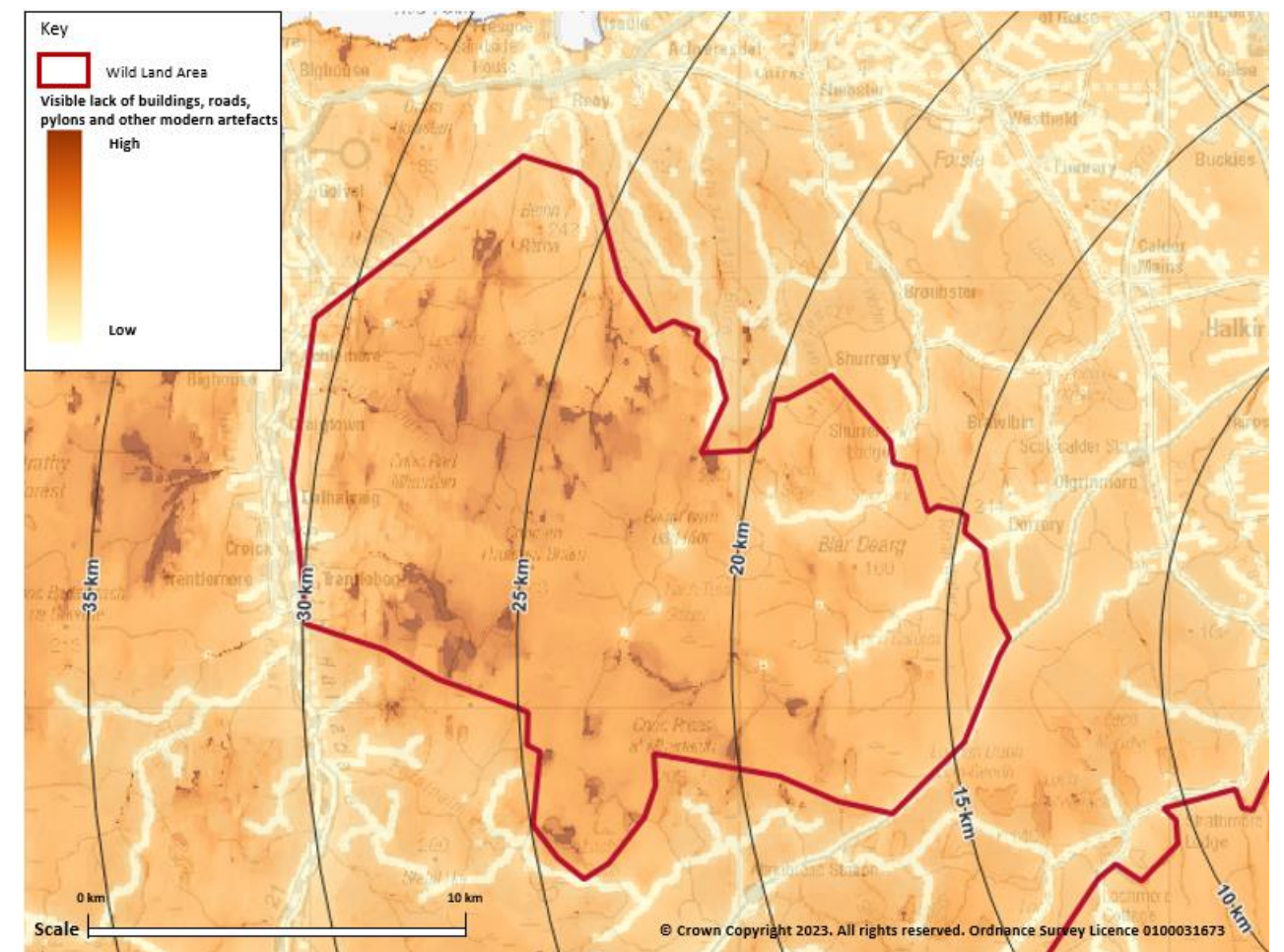
Map A6: Ruggedness of terrain within the East Halladale Flows WLA



Map A7: Remoteness from public roads, ferries or railway stations within the East Halladale Flows WLA



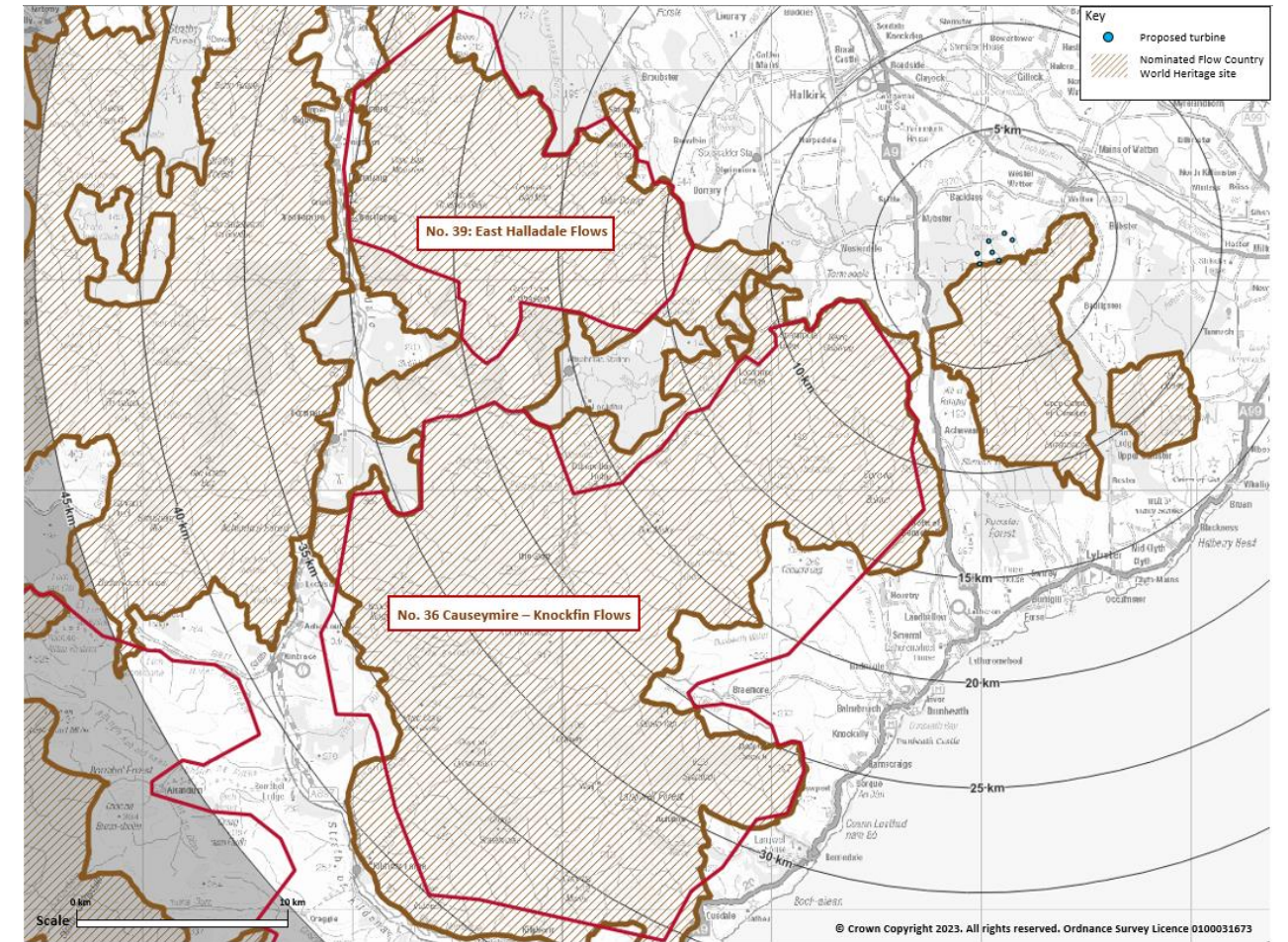
Map A8: Visible lack of buildings, roads, pylons and other modern artefacts within the East Halladale Flows WLA



ANNEX 2

- A6.7.4. The proposed Flow Country WHS covers a large area straddling Caithness and Sutherland (see Map A), The proposed WHS covers a wide range of peatland vegetation, bog pools and a selection of rare and endangered bird and insect species considered globally rare and outstanding.
- A6.7.5. The revised boundary encompasses the best conditioned that displays the attributes that make it outstanding on a global scale as well as the biodiversity it contains and is described further in Technical Appendix A6.4.

Map A: Nominated Flow Country World Heritage Site



ANNEX 3: Wirelines

Causeymire – Knockfin Flows WLA

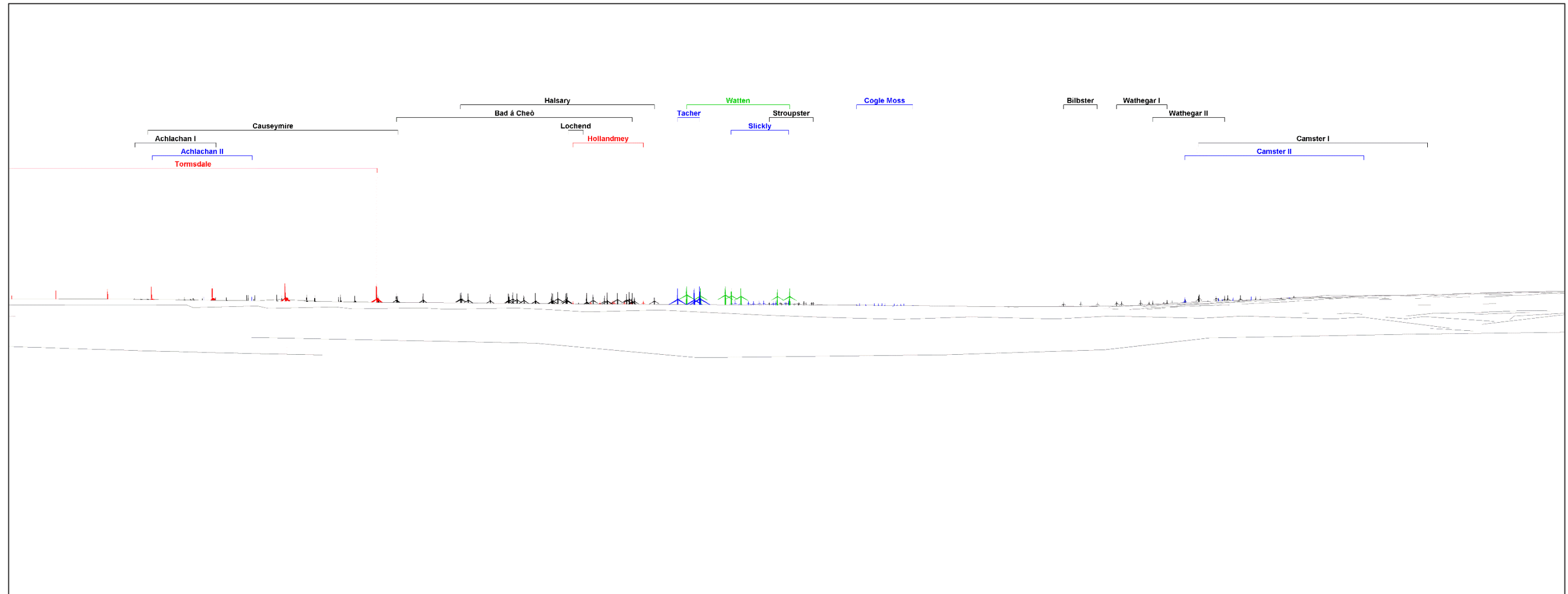
Wireline 1: Loch Ruard

Grid Coordinate: 314417, 943297

Distance: 9.3 km

Direction: 40°

Included Angle: 90°



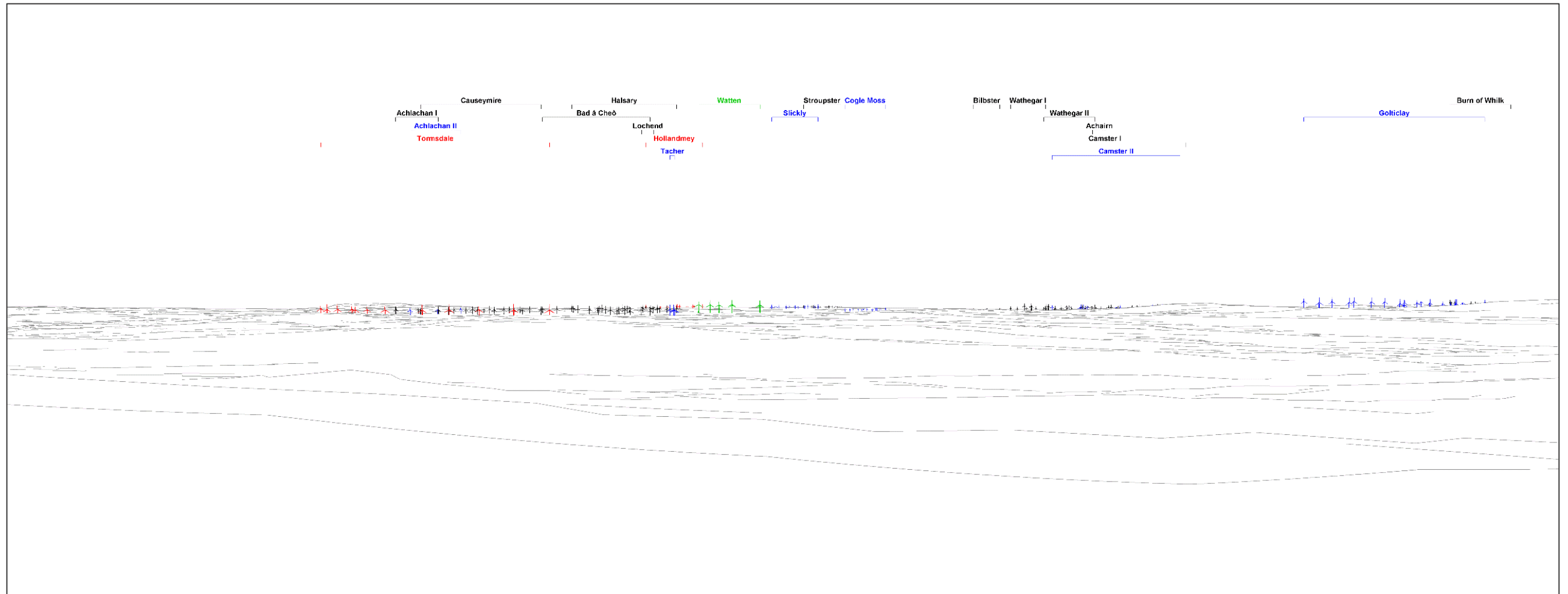
Wireline 2: Morvern

Grid Coordinate: 311424, 936766

Distance: 16.4 km

Direction: 35°

Included Angle: 90°



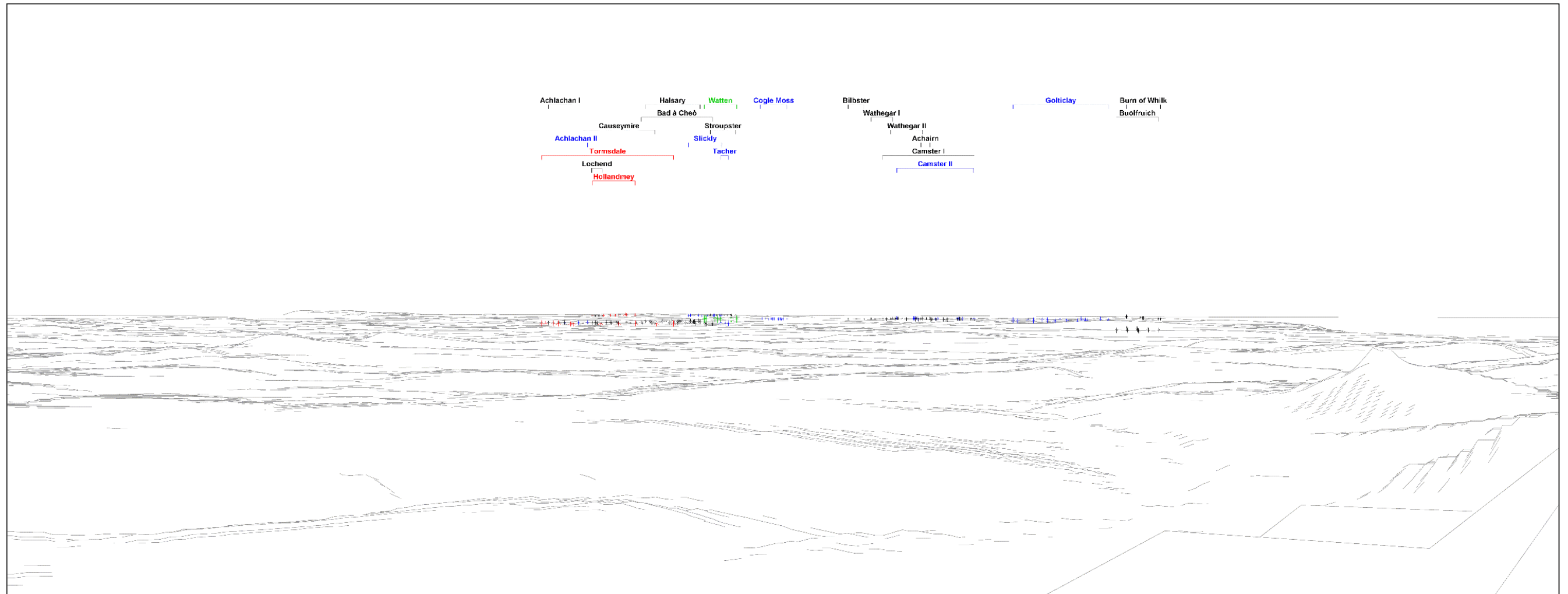
Wireline 3: Cnocan Conachreag

Grid Coordinate: 300478, 928551

Distance: 29.5 km

Direction: 45°

Included Angle: 90°



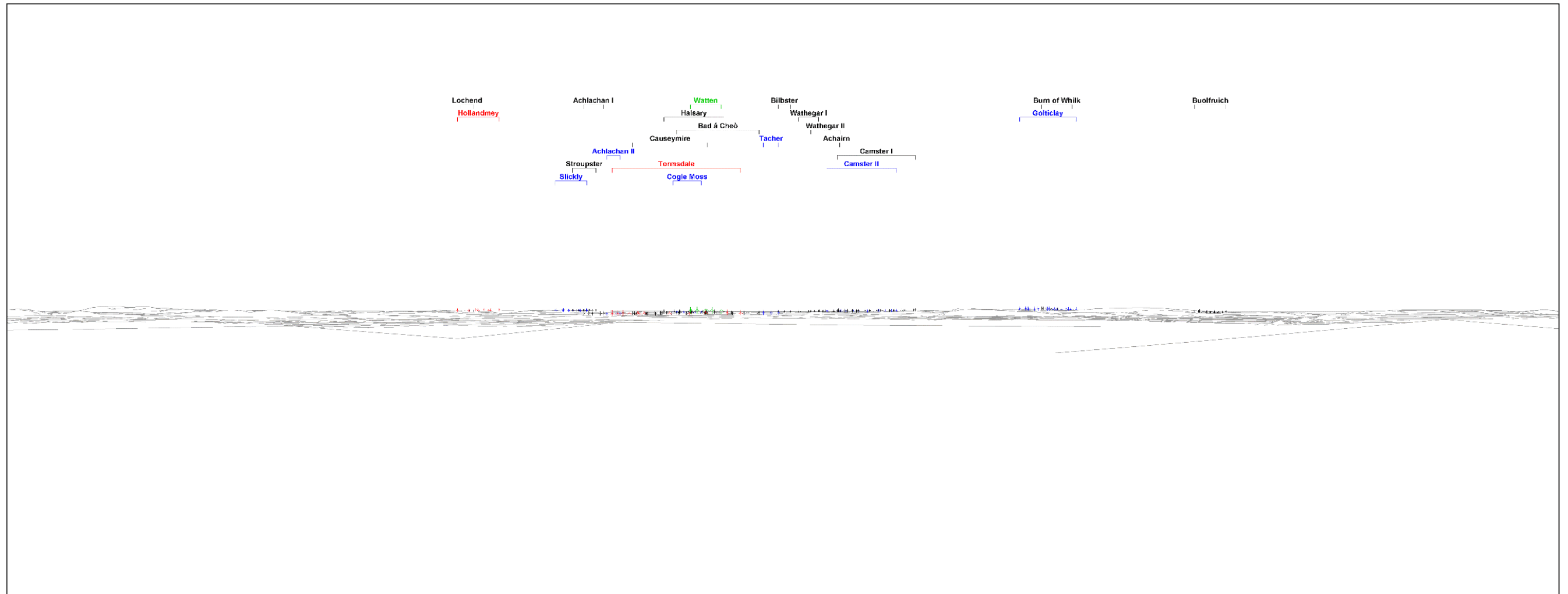
Wireline 4: Knockfin Heights

Grid Coordinate: 292497, 935492

Distance: 31.4 km

Direction: 65°

Included Angle: 90°



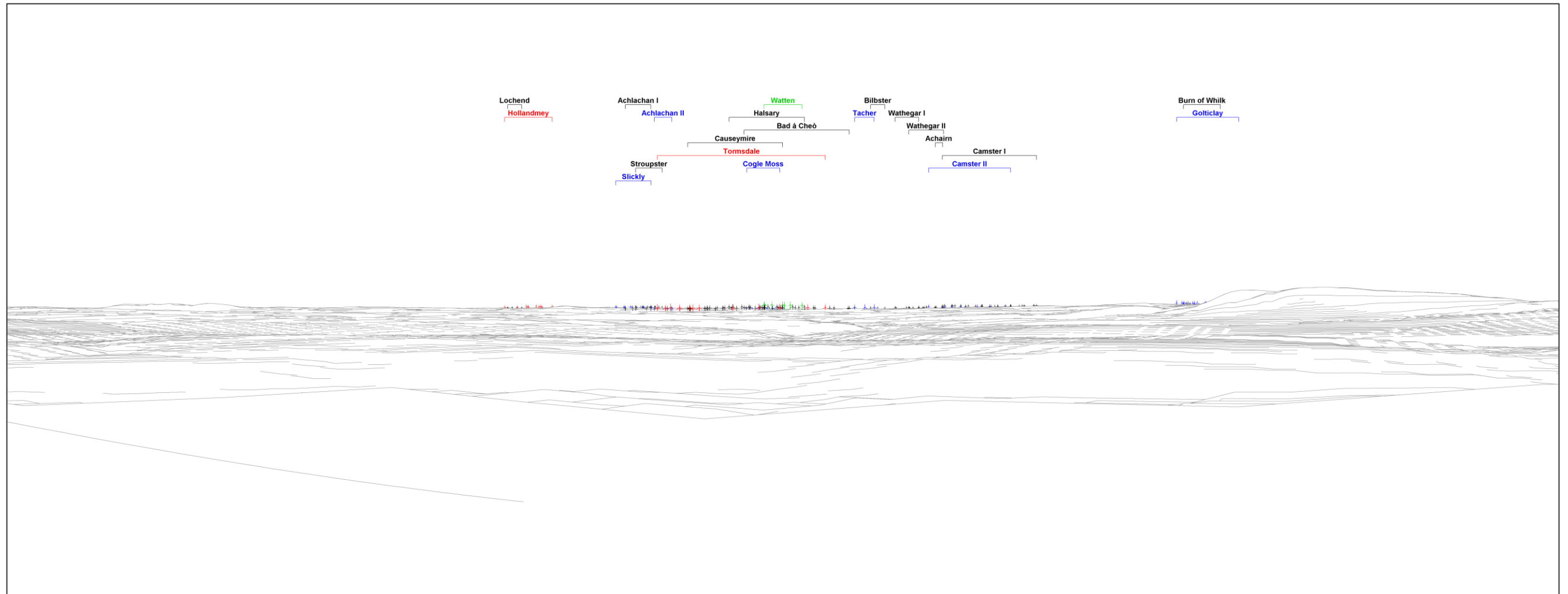
Wireline 5: The Craggan

Grid Coordinate: 297883, 938256

Distance: 25.4 km

Direction: 60°

Included Angle: 90°



East Halladale Flows WLA

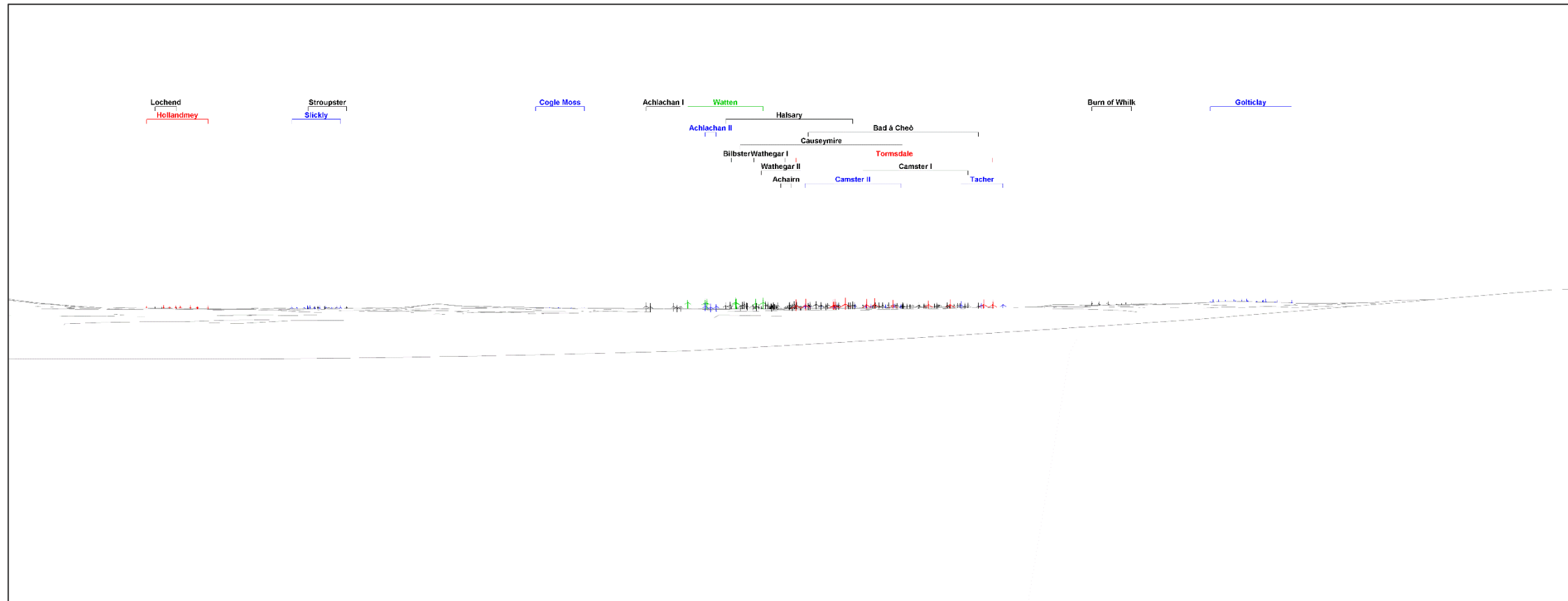
Wireline 6: Footpath

Grid Coordinate: 302124, 950100

Distance: 17.7 km

Direction: 90°

Included Angle: 90°



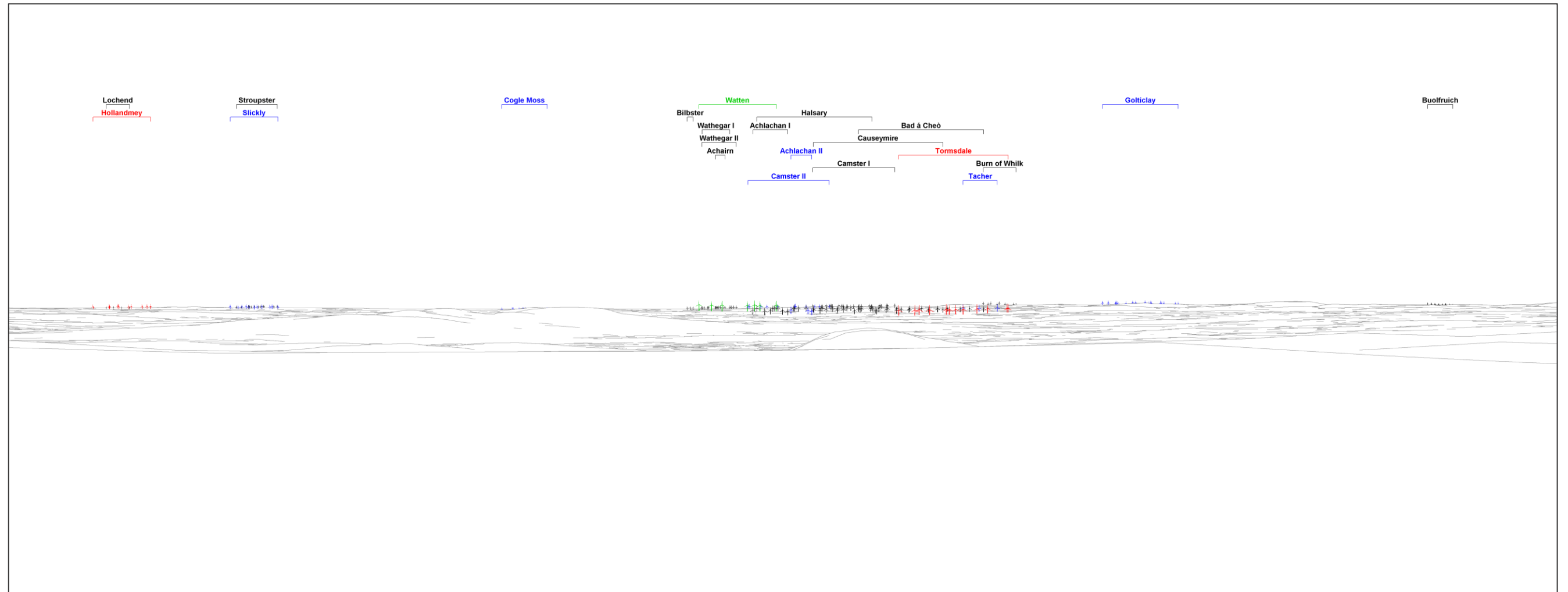
Wireline 7: Beinn nam Bad Mor

Grid Coordinate: 299890, 955039

Distance: 20.3 km

Direction: 102°

Included Angle: 90°



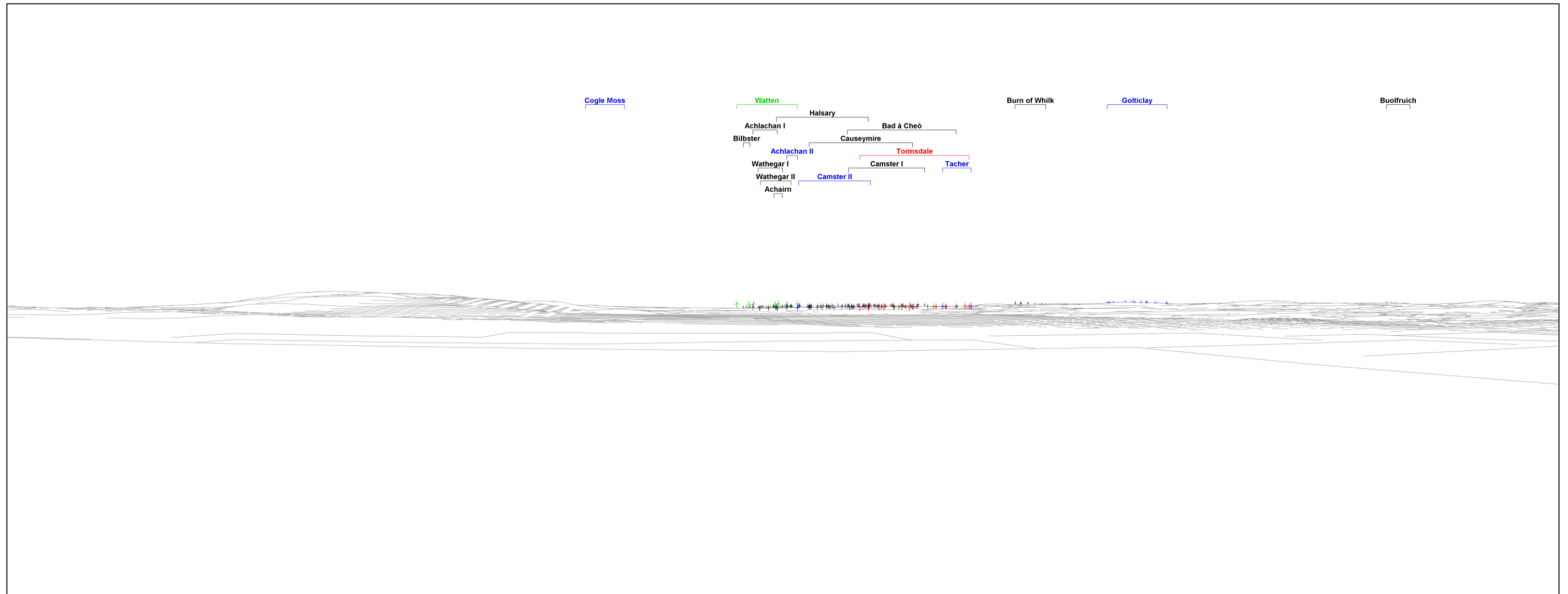
Wireline 8: Cnoc an Fhuarain Bhain

Grid Coordinate: 295286, 953289

Distance: 24.6 km

Direction: 95°

Included Angle: 90°



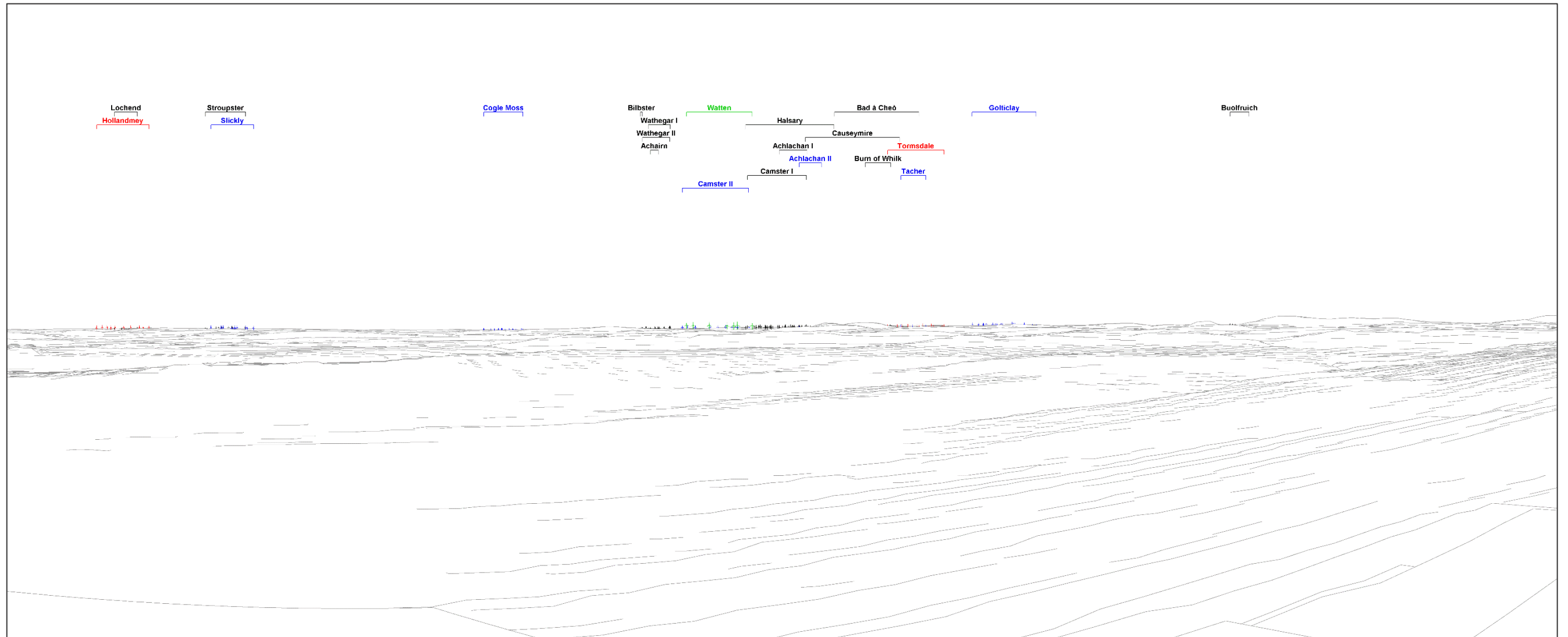
Wireline 9 Beinn Ratha

Grid Coordinate: 295452, 961303

Distance: 26.4 km

Direction: 115°

Included Angle: 90°



Technical Appendix A6.6

Viewpoint Assessment

Contents

A6.1.	Introduction	3
A6.2.	Viewpoint Assessment	4
A6.3.	Summary	14

Glossary

Term	Definition
Baseline studies	'Work done to determine and describe the environmental conditions against which future changes can be measured or predicted and assessed.'*
Developer	In the event of the Proposed Development granted Section 36 Consent, this is the Company developing the Project.
Environmental Impact Assessment	'The process of gathering environmental information; describing a development ; identifying and describing the likely significant environmental effects of the project; defining ways of preventing/avoiding, reducing, or offsetting or compensating for any adverse effects; consulting the general public and specific bodies with responsibilities for the environment; and presenting the results to the competent authority to inform the decision on whether the project should proceed.'*
Environmental Impact Assessment Report	A document reporting the findings of the EIA and produced in accordance with the EIA Regulations.
Geographical Information System	'A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.'*
Landcover	'The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.'*
Land Use	'What land is used for, based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.'*
Landform	'The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.'*
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 & Visual Impact Assessment	'A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.'*
Landscape character	'A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.'*
Landscape Character Types	'These are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes.'*
Magnitude (of effect)	'A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is reversible or irreversible and whether it is short or long term in duration.'*
Panorama	'An image covering a horizontal field of view wider than a single 50mm frame. Wirelines and photomontages may also be produced as panoramas.'**
Perception	'Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources an experiences).'*
Photomontage	'A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs'*
Protected and designated landscapes	'Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.'*
Receptors	'See Landscape receptors and Visual receptors.'*

Term	Definition
Scoping	'The process of identifying the issues to be addressed by an EIA. It is a method of ensuring that an EIA focuses on the important issues and avoids those that are considered to be less significant.'*
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 receptor.'*
Significance	'A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to environmental topic'*
Susceptibility	'The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences.'*
The Applicant	EDF Renewables
The Proposed Development	The proposed Watten Wind Farm development.
The Proposed Development Area	The area within the red line boundary where the Proposed Development will be located (application area).
Visual amenity	'The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.'*
Visual effects	'Effects on specific views and on the general visual amenity experienced 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.'*

List of Abbreviations

Abbreviation	Description
AOD	Above Ordnance Datum
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
LCT	Landscape Character Type
LVIA	Landscape & Visual Impact Assessment
m	Metre
THC	The Highland Council
ZTV	Zone of Theoretical Visibility

A6.1. Introduction

- A6.1.1 This Technical Appendix of the Environmental Impact Assessment Report (EIAR) identifies and assesses the Viewpoints agreed through consultation with The Highland Council (THC) and NatureScot.
- A6.1.2 Viewpoints were selected to take account of the viewing experience (such as static views from settlements and sequential views from routes), cumulative views of other developments and as far as possible are representative, illustrative and specific of the range of key visual receptors and view types (including panoramas, vistas, glimpsed views), as well as being located at varying distances, elevations and orientations from the Proposed Development.
- A6.1.3 This Technical Appendix should be read in conjunction with the following technical appendices and figures:
- Technical Appendix A6.1: Landscape and Visual Impact Assessment (LVIA) Methodology;
 - Figure 6.3a: Zone of Theoretical Visibility (ZTV) to Tip Height (A3 Size);
 - Figure 6.3b: ZTV to Tip Height (A0 Size);
 - Figure 6.4: ZTV to Hub Height (A3 Size);
 - Figure 6.6: ZTV of Aviation Lighting (Worst Case);
 - Figure 6.6a-g: ZTV of Aviation Lighting – Individual Turbines;
 - Figure 6.8: Landscape Character with ZTV;
 - Figure 6.9: Protected & Designated Landscapes with ZTV;
 - Figure 6.10 Visual Receptors;
 - Figures 6.11a – f: Sequential Routes; and
 - Figures 6.17a – 6.36 f: Viewpoints.
- A6.1.4 The selected viewpoints assessed in the Landscape and Visual Impact Assessment (LVIA) are as follows:

Table A6.1: Selected Viewpoints

VP No.	Viewpoint Name	Coordinate		Distance from the Proposed Development (km)	Direction to the Proposed Development
		Easting	Northing		
1	Thurso	310620	967007	18.0	South east
2	North of Hoy on B876	321651	964988	12.8	South
3	Georgemas	315578	959171	8.8	South east
4	North Watten	324777	957723	6.7	South west
5	Scotscalder	309630	956104	11.3	South east
6	Ben Dorrey	306304	955053	14.0	South east
7	Harpsdale Cross Roads	313275	954658	7.4	South east
8	Watten	323859	954413	3.4	South west
9	A882, east of Watten	326872	953616	5.6	South west
10	Spittal	335973	951944	14.5	West
11	North Wick, A99 Road	335973	951944	14.5	West
12	Westerdale	313273	951908	6.6	East
13	Minor road north of Grey Cairns of Camster	324217	948493	4.1	North west
14	Loch More Cottage	308413	946109	12.4	North east
15	Loch of Yarrows Trail	330436	943207	12.3	North west
16	A9, North of Rangag	317698	945611	5.4	North east
17	Coire na Beinne	315109	940170	11.6	North east
18	Ben Alisky	304559	938626	19.6	North east
19	Scaraben Peak	306608	926834	27.4	North east
20	Dunnet Head	320532	976491	24.3	South

Source: Natural Power, 2023

A6.2. Viewpoint Assessment

Table A6.2: Viewpoint 1: Thurso - Assessment

Viewpoint 1: Thurso (Figures 6.17a-f)					
Grid Coordinate:	310620, 967007	Distance to nearest turbine:	18.0 km	Direction to the Proposed Development:	South east
Landscape Character Type:	Landscape Character Type (LCT) 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Road users
Baseline					
Location:	This viewpoint is situated on the southern edge of Thurso adjacent to the B874 road.				
Existing view:	<p>This location is approximately 45 metres (m) Above Ordnance Datum (AOD) allowing extensive views across farmland within the Thurso River valley to the south east. Elsewhere, the built form of Thurso to the north, and landform and vegetation to the east and west limit the extent of views obtained.</p> <p>Distant views of operational wind farms can be obtained including the Camster and Burn of Whilk cluster where blade tips can be observed above the ridgeline, and the larger cluster of Halsary, Bad a Cheo, Causeymire and Achlachan which occupy a dip in the ridgeline to the south east. To the north east, Stroupster is partially screened by a combination of landform and foreground buildings.</p> <p>During hours of darkness, there are several sources of artificial lighting affecting this location including nearby street lights, property lighting, and vehicles travelling along the B874 road. Further afield, views of lights from small settlements and isolated farms can be observed in the landscape to the south.</p>				
Sensitivity:	This viewpoint is representative of views from properties on the edge of Thurso, all residential receptors are considered to be of High sensitivity to change in their view. This considers that people at their home attach High value to their existing view and visual amenity and are more susceptible to being affected by changes in their visual amenity.				
Assessment					
Predicted View:	<p>The Proposed Development would be closer to the viewpoint location than the operational wind farms and occupy an area between the Group 1 and 2 developments. Foreground landform would provide some screening to the base of the turbines which would be seen in three distinct groups and include the hubs of turbines 1, 2, 3, 4 and 5, and the blade tips of turbines 6 and 7.</p> <p>Aviation lights of five turbines would be visible as a distant feature on the southern horizon from this location. This is predicted to be seen between 200 candela (ca) and 75 ca at a distance of 18.0 km where the light intensity would reduce with distance and atmospheric conditions and seen in the context of vehicle lights and lights on properties in the intervening landscape.</p>				
Scenario 1 - Magnitude of Change:	The size and scale of the change would be small as a result of the horizontal extent that the Proposed Development occupies combined with screening from landform which would reduce the vertical prominence of the turbines within the view. During construction/decommissioning the installation of the turbine towers, nacelles and blades would be visible including crane operations. During operation, receptors would experience views of five rotating turbines and blade tips of two breaking the skyline. Magnitude of change during construction and operation is assessed as Low during the construction, decommissioning and operation phases.				
Scenario 1 – Visual Effects	This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during the construction/decommissioning, and operation and maintenance phases. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.				

Viewpoint 1: Thurso (Figures 6.17a-f)	
Cumulative Assessment – Scenario 2	<p>Scenario 2 baseline would result in views of Achlachan II, Tacher, and Golticlay Wind Farms which would be seen within the context of the Halsary, Bad a Cheo and Causeymire cluster resulting in a very slight increase in the number of turbines forming this cluster. Slickly would be barely visible above the ridgeline to the north east and mainly screened by landform and buildings.</p> <p>It is not considered that the introduction of the Proposed Development to the Scenario 2 baseline would result in an increase in magnitude of change or effect for this viewpoint which would remain the same as assessed for Scenario 1.</p>
Cumulative Assessment - Scenario 3	<p>The blade tips of Hollandmey is predicted to be visible the north east but would be screened by woodland extending along the ridgeline. No other Scenario 3 developments would be visible from this location. Therefore, there would be no additional change in magnitude or effect.</p>

Source: Natural Power, 2023

Table A6.3: Viewpoint 2: North of Hoy on the B876 Road - Assessment

Viewpoint 2: North of Hoy on B876 (Figures 6.18a – 6.18f)					
Grid Coordinate:	321651, 964998	Distance to nearest turbine:	12.8 km	Direction to the Proposed Development:	South
Landscape Character Type:	LCT 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Road users
Baseline					
Location:	This viewpoint is located on the B876 road between Wick with Castletown. Photography has been taken at the turn-off for a minor road linking the B876 and B874 roads, 3 km south east of Castletown.				
Existing View:	<p>The viewpoint location is situated on slightly elevated ground which allows 180-degree views across the adjacent farmland to the south and west and on clear days, the lone mountains forming the distant horizon. Views in other directions are screened by rising landform.</p> <p>Operational wind farms are visible to the south and west in two distinct clusters at distances between 14.3 – 19.5 km and include Achairn, Wathegar plus extension, Bilbster to the south, and Buolfruch forming Group 2 developments, and Halsary, Bad a Cheo, and Causeymire (Group 1 developments to the west. Burn of Whilk and Camster are screened by coniferous forestry within the mid-ground of the view.</p> <p>Dark skies mapping shows that the viewpoint location is situated in an area of relative darkness. Sky glow can be seen to the north west from coastal settlements including nearby Castletown, and Thurso. Other sources of artificial lighting include vehicles travelling along roads and from properties and farms within the wider landscape.</p>				
Sensitivity:	<p>The B876 road is not a promoted tourist route and is mainly used as a short-cut avoiding longer journeys around the north east corner of Caithness on the busier A836 and A99 roads via John o Groats. The road passes through low-lying farmland that is not designated as a sensitive landscape. Views from the road are considered to be Medium.</p> <p>Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be Medium.</p>				
Assessment					
Predicted View:	<p>The Proposed Development would be located closer to the viewpoint location in comparison to the operational wind farms mentioned above. All seven turbines would be visible to the south and consistently spaced with no overlapping and occupy an area between the two main clusters of operational wind farms.</p> <p>During periods of darkness and poor visibility, all seven aviation lights would be visible from the viewpoint location between 200 – 75 ca at distances of 12.8 km, where the light intensity would reduce with distance and atmospheric conditions and seen in the context of vehicle lights and lights on properties in the intervening landscape.</p>				

Viewpoint 2: North of Hoy on B876 (Figures 6.18a – 6.18f)	
Scenario 1 – Magnitude of Change	A small extent of the overall view would be affected from this location. The size and scale of the change would also be small on account of the distance between the Proposed Development and viewpoint location, and screening by landform of the bottom of the proposed turbines. During construction/decommissioning the installation of the turbine towers, nacelles and blades would be visible including crane operations. During operation, seven rotating turbines, with aviation lights switched on during hours of darkness would be visible. Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low , during construction, operation and decommissioning phases,
Scenario 1 – Visual Effects	This viewpoint is assessed as having a Medium sensitivity to change, combined with a Low magnitude of change resulting in a Minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.
Cumulative Assessment – Scenario 2	The addition of the Scenario 2 developments to the baseline would result in Cogle Moss extending turbines eastwards from the Group 2 developments in filling the existing cluster. Achlachan II would be screened by landform and Golticlay would be visible further south The introduction of the Proposed Development to this scenario would result in the proposed turbines being viewed in front of Golticlay, but due to the distance between the two developments, the Proposed Development would still appear as a separate development and the magnitude of change and overall effect would be similar to that assessed for Scenario 1.
Scenario 3 – Cumulative Effects	Scenario 3 would result in the addition of Tormsdale to the baseline, however, this development is predominantly screened by landform limiting views to blade tips of five turbines, which would appear within the extent of Causeymire and be perceived as the same development. Similar to the assessment for Scenarios 1 and 2, the introduction of the Proposed Development would not increase the magnitude of change or effect for this viewpoint.

Source: Natural Power, 2023

Table A6.4: Viewpoint 3: Georgemas - Assessment

Viewpoint 3: Georgemas (Figures 6.19a-f)					
Grid Coordinate:	315578, 959171	Distance to nearest turbine:	8.8 km	Direction to Proposed Development:	South east
Landscape Character Type:	LCT 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Road users
Baseline					
Location:	This viewpoint is located on the junction between the A9 road (running north to south) and the Inverness to Wick railway line, close to Georgemas Station which is not a request stop and is where the lines to Thurso and Wick diverge.				
Existing View:	The main focus forms this viewpoint location is along the A9 to the north and south. Rising landform, buildings and vegetation limits the distance of the views obtained from this location. To the west, the blade tips of Causeymire and Achlachan operational wind farms are visible breaking the skyline. During hours of darkness, there are several sources of artificial lighting affecting this location including nearby lights associated with the railway line, nearby properties, and vehicles travelling along the A9 road. Further lights would be observed of trains on the Inverness to Wick railway line, although the service is limited. Further afield, views of lights from small settlements and isolated farms can be observed in the landscape to the south.				
Sensitivity:	The A9 road is not a promoted tourist route and is mainly used as a main route through Caithness. Similarly, the railway line also forms the main route joining the northern towns of Thurso and Wick with Inverness to the south. However, the line is scenic and popular amongst rail enthusiasts and visitors to the north highlands.				

Viewpoint 3: Georgemas (Figures 6.19a-f)	
	Value is considered to be high overall, but low for Georgemas junction due to not being a requested stop and rail infrastructure present. Susceptibility is also considered to be Medium, as road and rail users on this route are expected to have less appreciation of the surrounding landscape. The overall sensitivity of the viewpoint location is considered to be Medium .
Assessment	
Predicted View:	The blade tips of 5 of the proposed turbines would be visible to the south east, 3 of which would be screened by intervening coniferous woodland. No aviation lights would be visible from this location.
Scenario 1 - Magnitude of Change:	The Proposed Development would be predominantly screened from this location and the size and scale of the change in view would be very limited. During construction/decommissioning the installation of the turbine blades would be barely visible due to screening by landform. During operation, the blade tips of three turbines would be barely visible along the ridgeline to the south east. Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Negligible , short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.
Scenario 1 – Visual Effects	This viewpoint is assessed as having a Medium sensitivity to change, combined with a Negligible magnitude of change resulting in a Minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.
Scenario 2 – Cumulative Effects	Scenario 2 would result in a further two wind farms being theoretically visible, Achlachan II to the south west which would be seen against the existing Group 1 developments, and Cogle Moss and Slickly to the north east. In reality, only the blades of Achlachan II would be visible with the other two wind farms being screened by intervening woodland. The introduction of the Proposed Development to this baseline would not result in an increase in magnitude or effects.
Scenario 3 – Cumulative Effects	One application site would be visible, Tormsdale to the south west. This would extend turbines further west in the view, although only the blades tips of some of the turbines would be visible and the extent of the development visible would be influenced by intervening screening by trees. The introduction of the Proposed Development into this baseline scenario would not increase the effects assessed for Scenario 1 and 2.

Source: Natural Power, 2023

Table A6.5: Viewpoint 4: North Watten - Assessment

Viewpoint 4: North Watten (Figures 6.20a – 6.20f)					
Grid Coordinate:	324777, 957723	Distance to nearest turbine:	6.7 km	Direction to the Proposed Development:	South west
Landscape Character Type:	LCT 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Residents
Baseline					
Location:	This viewpoint is located to the north east of Proposed Development on a minor road near Ruther and is representative of the view obtained from scattered properties and the minor road network at North Watten.				

Viewpoint 4: North Watten (Figures 6.20a – 6.20f)	
Existing View:	<p>The viewpoint location is situated on elevated ground which allows extensive views across Loch Watten and the adjacent farmland extending from the south east to south west, and on clear days, across the flat peatlands of the Flow Country towards the lone mountains.</p> <p>Views in other directions are screened by rising landform, and vegetation.</p> <p>Several operational wind farms are visible to the south and include a cluster comprising Group 1 developments to the south west, and Group 2 developments to the south east. The majority of the operational developments are skylined, the exception being where the Lone Mountains feature in the background.</p> <p>Dark skies mapping shows that the viewpoint location is situated in an area of relative darkness. Sources of artificial lighting include nearby Watten, scattered properties, Ruther Quarry and vehicles travelling along the A882, B870 and several nearby minor roads.</p>
Sensitivity:	<p>This viewpoint is representative of views from properties at North Watten, all residential receptors are considered to be of High sensitivity to change in their view. This considers that people at their home attach High value to their existing view and visual amenity and are more susceptible to being affected by changes in their visual amenity.</p>
Assessment	
Predicted View:	<p>The Proposed Development would be seen to the south west occupying the mid-ground ridgeline, where it would appear extend eastwards from Halsary and Bad a Cheo. Due to the angle of view, turbines 2 and 3 would appear slightly detached from the main cluster of five turbines, where all turbines would overlap with one another.</p> <p>Turbines will appear as a group, with a small gap separating the two easterly turbines from the main group. During construction all seven turbines would be seen and include crane operations during their installation. During periods of darkness and poor visibility, all seven aviation lights would be visible from the viewpoint location between 200 – 75 ca at a distance of 6.7 km with some flickering occurring due to blades passing in front of the aviation lights mounted on hubs. Aviation lights would be seen in the context of lights from properties and vehicles in the intervening landscape.</p>
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would extend turbines further east from Halsary, and Bad a Cheo, and be closer to the viewpoint location appearing as a separate development. Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as High-medium,</p>
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a High-medium magnitude of change resulting in a Major-moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>
Scenario 2 – Cumulative Effects	<p>Scenario 2 wind farms visible from this location include Cogle Moss to the east, which would be prominent due to proximity to the viewpoint location but partially screened by trees, Camster II which would be seen within the existing Group 2 cluster to the south, and Golticlay partly infilling a gap between the operational Group 2 cluster to the south west which would include Tachur and Achlachan II which would be partially screened by landform.</p> <p>The addition of the Proposed Development to this baseline would increase the number of turbines viewed successively, where Cogle Moss would be the closet and most prominent development, followed by the Proposed Development which would be viewed in front of the existing Group 1 developments. Magnitude of change would increase to High resulting in a Major significant adverse effect.</p>
Scenario 3 – Cumulative Effects	<p>Scenario 3 baseline would include Tormsdale which would be predominantly screened due to landform with a few blade tips being visible above the ridgeline.</p> <p>Therefore, it is not considered that there would be an increase in cumulative effects for Scenario 3 which are already considered Major and significant for Scenario 2.</p>

Source: Natural Power, 2023

Table A6.6: Viewpoint 5: Scotscaelder – Assessment

Viewpoint 5: Scotscaelder (Figures 6.21a-f)					
Grid Coordinate:	309630, 956104	Distance to nearest turbine:	11.3 km	Direction to the Proposed Development:	South east
Landscape Character Type:	LCT 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Residents
Baseline					
Location:	This viewpoint is located at the intersection of B870 road and Inverness to Wick and Thurso railway line, slightly north of the Scotscaelder Railway Station bridge at the entrance to Hillside house.				
Existing View:	<p>The main focus forms this viewpoint location is along the B870 road to the south across agricultural land. Rising landform, buildings and vegetation limits the distance of the views obtained elsewhere from this location.</p> <p>To the south east, Group 1 developments form a cluster of operational wind farms which include Camster II further in the distance.</p> <p>During hours of darkness, there are several sources of artificial lighting affecting this location including nearby lights associated with the railway line, nearby properties, and vehicles travelling along the A870 road. Lights would also be observed of trains on the Inverness to Wick railway line, although the service is limited. Further afield, views of lights from small settlements and isolated farms can be observed in the landscape to the south.</p>				
Sensitivity:	<p>This viewpoint is representative of views from properties at Scotscaelder, all residential receptors are considered to be of High sensitivity to change in their view. This considers that people at their home attach High value to their existing view and visual amenity and are more susceptible to being affected by changes in their visual amenity.</p>				
Assessment					
Predicted View:	<p>From this location the Proposed Development will be visible and extend turbines further north east in the view from Halsary and Camster. The proposed turbines would be spaced out resulting in no overlap, turbine tower bases would predominantly be screened by landform and forestry.</p> <p>All seven of the aviation lights would be visible from this location during periods of darkness between 200 – 75 ca at a distance of 11.3 km. Aviation lights would be seen in the context of lights from foreground properties and vehicles in the intervening landscape.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would extend turbines further north east from Halsary and Camster. Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium-low, due to the small part of the overall view affected and screening by landform which reduces the scale of the development in views.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Medium-low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases. The effect is not considered to be significant as a consequence of the degree of screening by a combination of landform and forestry. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>				
Cumulative Effects – Scenario 2	<p>Scenario 2 wind farms would result in further turbines within the Group 1 cluster to the south east and Golticlay further to the south. These would be seen within the existing operational Group1 cluster resulting in a slight increase in turbines visible. The introduction of the Proposed Development would be similar to that assessed for Scenario 1 with the new turbines being located further east away from the main cluster of Group 1 turbines.</p> <p>As a result of screening and distance from the Proposed Development, it is not considered that there would be an increase in magnitude or effect</p>				
Cumulative Effects – Scenario 3	<p>Scenario 3 would result in further turbines seen to the south east in the form of Tormsdale. Foreground screening by coniferous woodland would reduce the extent of the turbines visible to the hubs and blade tips. Tormsdale would be closer to the viewpoint location, however, the introduction of the Proposed Development is not considered to increase the magnitude or effects assessed in Scenario 1 and 2.</p>				

Source: Natural Power, 2023

Table A6.7: Viewpoint 6: Ben Dorrey- Assessment

Viewpoint 6: Ben Dorrey (Figures 6.22a-f)					
Grid Coordinate:	306306, 955050	Distance to nearest turbine:	14.0 km	Direction to the Proposed Development:	South east
Landscape Character Type:	LCT 134 Sweeping Moorland and Flows	Landscape Designation:	None	Visual Receptors:	Walkers
Baseline					
Location:	This viewpoint is situated at the summit of Ben Dorrey (AOD 244m), a small hill located to the west of Scots Calder and at the end of a Core Path track (Ben Dorrey, CA06.03).				
Existing View:	<p>Due to its elevation and the surrounding landscape being low-lying, extensive panoramic views of the Caithness landscape can be obtained, including the coastline and sea to the north and east across foreground farmland, and the peatlands forming the Flow Country to the south, backdropped by the Lone Mountains.</p> <p>Due to its elevation, the majority of operational wind farms are visible, the most prominent of these are Group 1 developments to the south east, with Group 2 developments forming a distant cluster beyond.</p> <p>During hours of darkness, the influence of artificial lighting is limited owing to the viewpoint being more isolated away from built development. Lighting sources can be observed from isolated properties, larger settlements including skyglow from Thurso and Wick, and vehicles travelling of the network of roads to the north, east and south of the viewpoint location.</p>				
Sensitivity:	Value and susceptibility are both considered to be High for the Ben Dorrey summit as walkers' attention will be focussed on the views of the surrounding landscape, overall visual sensitivity is High .				
Assessment					
Predicted View:	<p>The Proposed Development would be seen to the south east within the existing cluster on the eastern edge of the Group 1 clusters and backdropped by the Group 2 developments. The proposed turbines would be noticeably taller owing to their greater height in comparison to the operational sites.</p> <p>All seven of the aviation lights would be visible from this location at angles between 0° to 3° resulting in light intensities of 200 ca at a distance of 14.0 km. Aviation lights would be seen in the context of lights from properties and vehicles in the foreground landscape.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would add seven turbines to a view where wind turbines are currently already present and extend the existing cluster of Group 1 developments eastwards. A combination of distance and the open and larger scale landscape contribute to reducing the size and scale of the change which would occupy a small horizontal extent of the overall view obtained.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium-low.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Medium-low magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. The effect is considered to be significant as a consequence of the elevated views obtained and lack of screening where all seven turbines would be visible in their entirety. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>				
Cumulative Assessment – Scenario 2:	<p>Scenario 2 developments would further increase the number of turbines forming the Group 1 cluster to the south east, with Golticlay extending turbines further south beyond this cluster, and Slickly to the east increasing the size of Stroupster. With the exception of Golticlay which would be more distant and extend turbines southwards from the Group 1 cluster, magnitude of change and effects would be similar to that assessed for Scenario 1.</p>				
Cumulative Assessment – Scenario 3:	<p>Scenario 3 developments would result in the addition of Tormsdale to the baseline scenario, this would be closer to the viewpoint location, more prominent as a result of its closer proximity, and extend turbines in the view further west, infilling a gap between Bad a Cheo and the distant Golticlay.</p> <p>The introduction of the Proposed Development to this baseline scenario would further increase the number of turbines viewed within the foreground cluster. However, it is not considered that this would lead to an</p>				

Viewpoint 6:	Ben Dorrey (Figures 6.22a-f)
	increase in cumulative magnitude and effect as the horizontal extent of turbines would largely remain the same.

Source: Natural Power, 2023

Table A6.8: Viewpoint 7: Harpsdale Crossroads - Assessment

Viewpoint 7: Harpsdale Crossroads (Figures 6.23a-f)					
Grid Coordinate:	313275, 954658	Distance to nearest turbine:	7.4 km	Direction:	South east
Landscape Character Type:	LCT 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Road users
Baseline					
Location:	This viewpoint represents views of the Proposed Development from a short section of a minor road between Westerdale and Halkirk.				
Existing View:	<p>Views are open across rough grassland, with patches of conifer plantations visible and tend to be focussed on the direction of travel. Extensive views to the south can be obtained over foreground farmland and the peatlands beyond, backdropped by the lone mountains.</p> <p>Achlachan I, Bad a Cheo, Causeymire and Halsary form a large cluster of turbines located to the south east and are prominent within the view.</p> <p>Artificial lighting is limited to vehicles travelling along the road as well as lights from nearby properties.</p>				
Sensitivity:	<p>This road is not a promoted tourist route and is mainly used to access nearby settlements and properties. The road passes through low-lying farmland that is not designated as a sensitive landscape. Views from the road are considered to be Medium.</p> <p>Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be Medium.</p>				
Assessment					
Predicted View:	<p>The blades of 5 turbines would be visible above coniferous forestry located along the ridgeline to the south east, with turbines 1 and 2 being fully screened by forestry.</p> <p>No aviation lights would be visible from this location due to the screening of hubs by intervening forestry.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would extend turbines further north from the existing Group 1 cluster but due to screening would not be as prominent.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a Medium sensitivity to change, combined with a Low magnitude of change resulting in a Minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases. The effect is not considered to be significant as a result of screening by forestry. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>				
Cumulative Assessment – Scenario 2:	<p>Scenario 2 wind farms would result in further turbines within the Scenario 1 cluster to the south east and include Achlachan II, Tachur and beyond Golticlay.</p> <p>The Proposed Development would extend turbines further north, however, due to screening this is not considered to result in an increase to the magnitude of change or effect assessed for Scenario 1.</p>				
Cumulative Assessment – Scenario 3:	<p>Scenario 3 would result in further turbines seen to the south in the form of Tormsdale which would be prominent within the view due to their proximity.</p> <p>The introduction of the Proposed Development is not considered to increase the magnitude or effects assessed in Scenario 1 and 2 as a result of screening by forestry.</p>				

Source: Natural Power, 2023

Table A6.9: Viewpoint 8: Watten - Assessment

Viewpoint 8: Watten (Figures 6.24a-f)					
Grid Coordinate:	323859, 954413	Distance to nearest turbine:	3.4 km	Direction to the Proposed Development:	South west
Landscape Character Type:	LCT 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Residents
Baseline					
Location:	This viewpoint is located next to the playpark and recreation ground in Watten village.				
Existing View:	<p>This location represents the views obtained from properties on the southern edge of the village. Rising topography restricts the extent of the view in combination with woodland and field boundary trees resulting in a series of ridgelines backdropped by higher ground, elsewhere, trees and buildings restrict views.</p> <p>Operational wind farms are a visible presence in views from the southern part of the village, are set back and partially screened by landform and trees. These include heavily filtered views of the blades of Halsary and Bad a Cheo developments to the south, and Wathegar I and II to the south east of the village.</p> <p>During hours of darkness, artificial lighting would be from nearby properties within Watten.</p>				
Sensitivity:	This viewpoint is representative of views from properties at Watten, all residential receptors are considered to be of High sensitivity to change in their view. This considers that people at their home attach High value to their existing view and visual amenity and are more susceptible to being affected by changes in their visual amenity.				
Assessment					
Predicted View:	<p>The Proposed Development would be closer to the settlement and more prominent than the operational schemes. This would include views of all seven turbines but influenced by a combination of screening by landform and filtering by trees. The turbine bases and infrastructure would be completely screened by foreground landform, and the towers and hubs heavily filtered by broadleaf field boundary trees, the exception being turbines 1 and 2 which would be seen above the canopy.</p> <p>All seven aviation lights would be visible at angles between -1° to -3° resulting in light intensities of 75 to 8 ca. With the exception of turbines 1 and 2, this would be filtered by trees and rotating blades.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would result in turbines being more prominent within the view from the southern part of the village, albeit influenced by filtering from a boundary broadleaf trees.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium.</p>				
Scenario 1 – Visual Effects	This viewpoint is assessed as having a High sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.				
Cumulative Effects – Scenario 2:	The majority of Scenario 2 developments would be screened by a combination of landform and buildings, the exception being Camster II which would occupy a gap between the operational sites of Wathegar, Burn of Whilk and Camster I to the south east of the viewpoint. Open views of turbines would be experienced, and the introduction of the Proposed Development would result in an increase the horizontal extent of the view affected by turbines in the view from the south of the village. Therefore, the magnitude of change would increase to High-medium resulting in a Major-moderate and significant effect.				
Cumulative Effects – Scenario 3:	No Scenario 3 wind farms would be visible from this location.				

Source: Natural Power, 2023

Table A6.10: Viewpoint 9: A882 East of Watten- Assessment

Viewpoint 9: A882 East of Watten (Figures 6.25a-f)					
Grid Coordinate:	326872, 953616	Distance to nearest turbine	5.6 km	Direction to the nearest Turbine:	South west
Landscape Character Type:	LCT 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Road users
Baseline					
Location:	This viewpoint is located on the A882 to the east of the village of Watten near Bilbster.				
Existing View:	<p>Views from this location are influenced by roadside beech hedging which restricts the extent of view obtained depending on the time of year and whether the hedge has been cut. To the south, glimpses of farmland rising to a low-lying ridgeline can be seen with trees and coniferous forestry terminating views further afield.</p> <p>Operational wind farms are visible to the south and include Causeymire which is partially visible between two coniferous plantations, and Wathegar I and II and Bilbster which are the most prominent. Group 1 developments are screened by intervening forest.</p> <p>Sources of artificial lighting include vehicles travelling along the road, properties and skyglow from Wick to the east.</p>				
Sensitivity:	<p>The A882 road is not a promoted tourist route and is mainly used to access settlements and individual properties. The road passes through low-lying farmland that is not designated as a sensitive landscape. Views from the road are considered to be Medium.</p> <p>Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be Medium.</p>				
Assessment					
Predicted View:	The Proposed Development would be seen above a forestry plantation to the south west, with the towers of turbines 3, 4 and 7 partially screened by forestry and open views of the remaining seven turbines further west. All seven of the aviation lights would be visible from this location at angles between -1° to -3° resulting in light intensities of 75 to 8 ca.				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would extend turbines further west and be closer to the viewpoint location.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium.</p>				
Scenario 1 – Visual Effects	This viewpoint is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. The effect is considered to be significant as a result of the proximity of the development to the viewpoint location, combined with the size and scale of the change in view. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.				
Cumulative Effects – Scenario 2:	<p>Several of the Scenario 2 wind farms would be screened by a combination of screening from the roadside hedgerow and coniferous forestry. Scenario 2 developments to the south and south east would be partially visible and include Camster II and Golticlay in the distance.</p> <p>It is not considered that the introduction of the Proposed Development to the baseline would lead to an increase in effect assessed for Scenario 1.</p>				
Cumulative Effects – Scenario 3:	No Scenario 3 developments would be visible from this location.				

Source: Natural Power, 2023

Table A6.11: Viewpoint 10: Spittal

Viewpoint 10: Spittal (Figures 6.26a-f)					
Grid Coordinate:	316889, 953440	Distance to nearest turbine	3.6 km	Direction to the Proposed Development:	South east
Landscape Character Type:	LCT 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Road users
Baseline					
Location:	This viewpoint is located on the A9 south of the settlement of Spittal.				
Existing View:	<p>Views from this location tend to be focused on the direction of travel north to south on the A9, with more open views experienced to the south as a result of the gradual falling away of landform, offering extensive views across foreground farmland, peatlands and distant lone mountains. Views in other directions screened by landform and vegetation to immediate farmland.</p> <p>Operational wind farms are a common feature in views to the south, the most prominent being Halsary, Bad a Cheo, Achlachan I and Causeymire which are partially visible above forestry.</p> <p>Artificial lighting is limited to vehicles travelling along the road as well as lights from nearby properties at Spittal and close to the road junction with the A870.</p>				
Sensitivity:	<p>The A9 road is not a promoted tourist route and is mainly used to access settlements and individual properties as well as the main route between Inverness and Thurso. The road passes through low-lying farmland that is not designated as a sensitive landscape. Views from the road are considered to be Medium.</p> <p>Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be Medium.</p>				
Assessment					
Predicted View:	<p>The Proposed Development would be closer to the viewpoint location and more prominent than the operational schemes. This would include views of all seven turbines but influenced by a combination of screening by landform and filtering by trees. The turbine bases and infrastructure would be completely screened by foreground landform, and the towers and hubs of turbines 3, 4 and 5 heavily filtered by broadleaf field boundary trees.</p> <p>A total of five aviation lights would be visible at angles between -1° to -2° resulting in light intensities of 75 to 8 ca. Aviation lights on turbines 3, 4 and 5 would be fully to partially filtered by trees, and more visible during winter months.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would result in turbines being more prominent within the view from this location, albeit influenced by filtering from a broadleaf trees.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>				
Cumulative Effects – Scenario 2:	<p>The majority of Scenario 2 developments would be screened by a combination of landform and forestry, the exception being Achlachan II which would be seen within the Achlachan I and Camster cluster.</p> <p>The addition of the Proposed Development to this baseline is not considered to result in an increase in magnitude of change or effect.</p>				
Cumulative Effects – Scenario 3:	<p>The addition of Scenario 3 wind farms would result in views of Tormsdale next to Causeymire and Achlachan I and II developments. This would increase the number of turbines visible within the existing cluster but is not considered that the introduction of the Proposed Development would result in an increase in magnitude and effect.</p>				

Source: Natural Power, 2023

Table A6.12: Viewpoint 11: North Wick A99 road – Assessment

Viewpoint 11: North Wick A99 (Figures 6.27a-f)					
Grid Coordinate:	335973, 951944	Distance to nearest turbine	14.5 km	Direction to the nearest Turbine:	West
Landscape Character Type:	LCT 143: Farmed Lowland Plain	Landscape Designation:	None	Visual Receptors:	Road users
Baseline					
Location:	This viewpoint is located close to the Wick War Memorial on the northern periphery of Wick.				
Existing View:	<p>Extensive and open views over farmland to the west can be obtained, these are distant and include Group 1 and 2 developments. Due to the angle of view, all of the developments appear as one large cluster at varying distances from the viewpoint location. In other directions, views are obstructed by the built form of buildings in the north of Wick.</p> <p>During hours of darkness, there are several sources of artificial lighting affecting this location including nearby street lights, property lighting, and vehicles travelling along the A99 road. Further afield, views of lights from small settlements and isolated farms can be observed in the landscape to the west.</p>				
Sensitivity:	<p>This location is on the A99 road which forms part of the North West Coast 500 tourist route, as well as a War memorial and the views are considered to be of High value.</p> <p>Susceptibility is also considered to be High, as road users on this route are expected to have some appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be High.</p>				
Assessment					
Predicted View:	<p>All seven turbines would be visible, forming part of the existing Group 1 and 2 clusters of wind farms to the west. Turbine 1 would result in a very slight extension of turbines northwards in the view. However, the proposed turbines would appear as part of a larger wind farm cluster and would be difficult to ascertain as a separate development.</p> <p>All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 14.5 km. Aviation lights would be seen in the context of lights from foreground properties and vehicles in the intervening landscape.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would result in a slight increase in the number of turbines being viewed from this location but would form distant features within the view.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low due to the small extent that the Proposed Development would occupy within the view and be seen within an existing cluster of turbines.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>				
Cumulative Effects – Scenario 2:	<p>Scenario 2 wind farms would predominantly be screened from this location as a result of landform screening. The exception to this would be Camster II and Tachur which would infill the existing cluster of operational wind farms. The introduction of the Proposed Development to this baseline is not considered to result in an increase in magnitude or effect.</p>				
Cumulative Effects – Scenario 3:	<p>Scenario 3 would include Tormsdale which would be barely visible due to screening by landform. It is not considered that the introduction of the Proposed Development would lead to an increase in magnitude or effect assessed for Scenario 1.</p>				

Source: Natural Power, 2023

Table A6.13: Viewpoint 12: Westerdale- Assessment

Viewpoint 12: Westerdale (Figures 6.28a-f)					
Grid Coordinate:	313050, 951798	Distance to nearest turbine	6.7 km	Direction to the Proposed Development:	North west
Landscape Character Type:	LCT 134 Sweeping Moorland & Flows	Landscape Designation:	None	Visual Receptors:	Road user
Baseline					
Location:	Located on the B870 road at the eastern end of the hamlet of Westerdale.				
Existing View:	<p>Open views can be obtained from this viewpoint location across rough pasture. Rising landform and coniferous forestry restricts the extent of views in all directions.</p> <p>Operational wind farms are a prominent feature in views to the east and include close views of Causeymire, Achlachan I, Bad a Cheo and Halsary turbines. south, the most prominent being Halsary, Bad a Cheo, Achlachan I and Causeymire. Views of other operational wind farms are restricted by a combination of landform and vegetation.</p> <p>Artificial lighting is limited to vehicles travelling along the road as well as lights from nearby properties at Westerdale and close to the road junction with the A9.</p>				
Sensitivity:	<p>This road is not a promoted tourist route and is mainly used to access settlements and individual properties. The road passes through low-lying farmland that is not designated as a sensitive landscape. Views from the road are considered to be Medium.</p> <p>Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be Medium.</p>				
Assessment					
Predicted View:	<p>The Proposed Development would be seen beyond Achlachan I and Halsary turbines. Foreground landform would screen views of the turbine bases and infrastructure. Despite the turbines being taller, from this elevation and angle they would appear as a similar size to nearby Halsary turbines within the view.</p> <p>Foreground forestry would screen part of the towers although all seven of the hubs would be visible above forestry.</p> <p>Six of the aviation lights would be visible at angles of between -1° to -2° resulting in light intensities of 75 to 8 ca. at a distance of 6.7 km.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would result in further turbines being seen within the existing operational cluster to the east, albeit influenced by screening by forestry.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium, due to the proposed turbines extending the density of turbines viewed beyond Achlachan 1.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>				
Cumulative Effects – Scenario 2:	<p>The majority of Scenario 2 developments would be screened by a combination of landform and forestry, the exception being Achlachan II which would be seen within the Achlachan I and Camster cluster to the east. It is predicted that Tachur and Golticlay would also be visible, however, the small number of turbines of Tachur, and distance of Golticlay, it is not considered that the addition of the Proposed Development would result in an increase in magnitude or effect.</p>				
Cumulative Effects – Scenario 3	<p>The addition of Scenario 3 wind farms would result in close views of Tormsdale which would form a standalone development and extend turbines further south in the view.</p> <p>The introduction of the Proposed Development would not result in an increase in magnitude and effect.</p>				

Natural Power, 2023

Table A6.14: Viewpoint 13: Minor road north of Grey Cairns of Camster - Assessment

Viewpoint 13: Minor road north of Grey Cairns of Camster (Figures 6.29a-f)					
Grid Coordinate:	324217, 948493	Distance to nearest turbine	4.1 km	Direction to the nearest Turbine::	North west
Landscape Character Type:	LCT 134 Sweeping Moorland & Flows	Landscape Designation:	None	Visual Receptors:	Road users
Baseline					
Location:	This viewpoint is situated on a bend of a minor road north west of Camster Cairns and west of Camster Wind Farm.				
Existing View:	<p>From this location, open and extensive views to the west can be obtained over foreground farmland, peatlands backdropped by distant mountains.</p> <p>As well as close views of Camster Wind Farm to the east, several other operational wind farms to the north west are prominent in views and include Halsary, Bad a Cheo, Causeymire and Achlachan I. To the north east, the hubs and rotors of Wathegar I and II, Bilbster and Achairn can be seen above the foreground ridgeline.</p> <p>During darkness, there is little artificial lighting affecting this location with light sources being limited to individual properties, and vehicles travelling along the minor road, and other roads to the west.</p>				
Sensitivity:	<p>This road is not a promoted tourist route or designated but is used to access the Camster Cairns. Views from the road are considered to be High.</p> <p>Susceptibility is also considered to be High, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be High.</p>				
Assessment					
Predicted View:	<p>All seven of the proposed turbines would be visible from this location, prominent due to the closer proximity and extend turbines further east from the existing cluster of operational turbines.</p> <p>The supporting infrastructure would also be partially visible, more so during its creation during construction, gradually reducing in visibility as reinstatement establishes.</p> <p>All seven of the aviation lights would be visible between -1° to -2° resulting in light intensities of 75 to 8 ca. at a distance of 4.1 km.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would result in further turbines being extended eastwards from the existing operational cluster closer to the viewpoint location where the size and scale of the change would be large.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as High, due to proximity to the viewpoint location where the size and scale is large.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a High magnitude of change resulting in a Major adverse significant effect during construction/decommissioning, and operation and maintenance phases. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>				
Cumulative Effects – Scenario 2:	<p>Scenario 2 developments visible from this location include Slickly and Cogle Moss to the north, Camster II to the north east, Achlachan II to the north west, and Golticlay to the south west.</p> <p>This viewpoint is already considered to receive a Major adverse significant effect. It's addition to Scenario 2 baseline would be similar in that the proposed turbines would be the closest turbines to the viewpoint location and therefore prominent.</p>				
Cumulative Effects – Scenario 3:	<p>Tormsdale and Hollandmey would both be visible from this location but would be more distant within the view and there would be no change to the magnitude of change and effect assessed for Scenarios 2 and 3.</p>				

Source: Natural Power, 2023

Table A6.15: Viewpoint 14: Loch More Cottage - Assessment

Viewpoint 14: Loch More Cottage (Figures 6.30a-g)					
Grid Coordinate:	308413, 946109	Distance to nearest turbine	12.4 km	Direction to the Proposed Development:	North east
Landscape Character Type:	LCT 134 Sweeping Moorland & Flows	Landscape Designation:	Causeymire – Knockfin Flows WLA Flow Country and Berriedale Coast SLA	Visual Receptors:	Recreational users
Baseline					
Location:	This viewpoint is located on the road above Loch More Cottage.				
Existing View:	<p>Extensive views across Loch More and the surrounding peatlands can be obtained including the distinctive profile of the Lone Mountains to the south.</p> <p>Operational wind farms can be seen to the north east and include Group 1 and 2 developments forming a large cluster.</p> <p>Artificial lighting is very limited at this viewpoint due to its isolation within the peatlands of the Flow Country.</p>				
Sensitivity:	<p>This viewpoint is located on the periphery of the Causeymire – Knockfin Flows WLA and Flow Country and Berriedale Coast SLA and value is considered to be High.</p> <p>Susceptibility is also considered to be High, as recreational users are expected to appreciate the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be High.</p>				
Assessment					
Predicted View:	<p>The Proposed Development would be viewed within the existing cluster of Halsary, Causeymire and Bad a Cheo appearing as part of a larger development, and partially screened by the foreground turbines.</p> <p>All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 12.4 km and would appear as flickering lights on account of the rotating blades of the foreground turbines.</p>				
Scenario 1 - Magnitude of Change:	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, as the proposed turbines would be viewed within the existing Group 1 cluster and difficult to perceive as a separate development.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This is due to being viewed beyond the existing cluster of turbines, some of which would screen the proposed turbines. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>				
Cumulative Effects – Scenario 2:	<p>Scenario 2 would include Achlachan II, Tachur, and Camster II, visible above the ridgeline forming part of the existing cluster, and Golticlay further to the east.</p> <p>The introduction of the Proposed Development to this baseline would not result in an increase to the magnitude or effects assessed for Scenario 1 for the same reasons provided.</p>				
Cumulative Effects – Scenario 3:	<p>Scenario 3 baseline would include Tormsdale which be closer to this viewpoint location and more prominent with hubs and blades visible above the ridgeline to the north east, appearing as part of the existing Scenario 1 and 2 cluster.</p> <p>It is not considered that the Proposed Development would result in an increase to the magnitude and effects for the reasons stated.</p>				

Source: Natural Power, 2023

Table A6.16: Viewpoint 15: Loch of Yarrows Trail - Assessment

Viewpoint 15: Loch of Yarrows Trail (Figures 6.31a-f)					
Grid Coordinate:	330436, 943207	Distance to nearest turbine	12.3 km	Direction to the Proposed Development:	North west
Landscape Character Type:	LCT 144 Coastal Crofts & Small Farms	Landscape Designation:	None	Visual Receptors:	Walkers
Baseline					
Location:	This viewpoint is located on the Archaeology Trail and close to the car park on the minor road leading to the Lochs of Yarrow.				
Existing View:	<p>The existing view is open to the north east and west, and enclosed by higher ground to the south and includes extensive views across the Flow Country to the west, and the coast to the east. Many of the Archaeological remains are visible above ground as rocky outcrops weathered with lichens.</p> <p>Several operational wind farms can be observed from higher ground during clear weather, these include close views of two of the blades of Burn of Whilk to the south west, Camster, Achairn, Wathegar I and II and Bilbster to the north. To the north west, a large cluster containing Halsary, Bad a Cheo, Causeymire, and Achlachan I. The tips of the Offshore Beatrice Wind Farm are just visible to the east.</p> <p>Artificial lighting is very limited at this viewpoint due to its isolation although distant views include properties, vehicles travelling along the road network, and a light on the transmitter near Thrumster.</p>				
Sensitivity:	<p>This viewpoint is located on an Archaeological Trail promoted locally and value is considered to be High.</p> <p>Susceptibility is also considered to be High, as recreational users are expected to appreciate the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be High.</p>				
Assessment					
Predicted View:	<p>The Proposed Development would be viewed to the north west and would sit entirely behind the foreground Camster I development, which would provide some screening to the proposed turbines, appearing as one development.</p> <p>All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 12.5 km and would appear as blinking lights on account of the rotating blades of the foreground turbines.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would result in turbines being seen beyond Camster I reinforce the number of turbines visible and increasing stacking.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, as the proposed turbines would be viewed within the existing Camster cluster and difficult to perceive as a separate development.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This is due to being viewed beyond the existing cluster of turbines, some of which would screen the proposed turbines. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location.</p>				
Cumulative Effects – Scenario 2:	<p>Scenario 2 would include Achlachan II, Tachur, forming part of the existing cluster, and Camster II further north.</p> <p>The introduction of the Proposed Development to this baseline would not result in an increase to the magnitude or effects assessed for Scenario 1 for the same reasons provided.</p>				
Cumulative Effects – Scenario 3:	<p>Scenario 3 baseline would include Tormsdale which be distant and be seen close to Causeymire appearing as the same development.</p> <p>The introduction of the Proposed Development to this baseline would not result in an increase to the magnitude or effects assessed for Scenario 1 for the same reasons provided.</p>				

Source: Natural Power, 2023

Table A6.17: Viewpoint 16: A9, North of Rangag – Assessment

Viewpoint 16: A9, North of Rangag (Figures 6.32a-f)					
Grid Coordinate:	317720, 945795	Distance to nearest turbine	5.4 km	Direction to the Proposed Development:	North east
Landscape Character Type:	LCT 134 Sweeping Moorland & Flows	Landscape Designation:	None	Visual Receptors:	Road users
Baseline					
Location:	This viewpoint is located next to a farm track turning marked by two white bollards on the A9 road in the north bound direction. The viewpoint has been moved slightly north from the original location put forward during consultation due to intervening forestry obscuring visibility of the site.				
Existing View:	<p>Extensive views across the Flow Country can be obtained from this viewpoint which also includes some coniferous forestry to the east of the A9 which limits views.</p> <p>Operational wind farms are a prominent feature and include nearby Halsary, Bad a Cheo, Causeymire and Achlachan I, with the blades of Camster I visible further to the north east. An electricity transmission line running parallel with the A9 also forms an detracting feature within the view.</p> <p>Artificial lighting is limited to vehicles travelling along the road as well as lights from nearby properties close to the road junction with the A870.</p>				
Sensitivity:	<p>The A9 road is not a promoted tourist route and is mainly used to access settlements and individual properties as well as the main route between Inverness and Thurso. The road passes through low-lying farmland and peatland that is not designated as a sensitive landscape. Views from the road are considered to be Medium. Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be Medium.</p>				
Assessment					
Predicted View:	<p>The Proposed Development would be viewed to the north east extending turbines eastwards from Halsary and appearing as a standalone development. All seven turbines would be seen with the bases and infrastructure screened by foreground topography. From this location, there would be some stacking involving turbines 1 and 4, 2 and 3, and 5 and 7.</p> <p>All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 5.4 km.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would result in the horizontal extent of turbines being extended from the existing Group 1 operational cluster and would feature in close views from this location as a standalone development.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as High-medium, due to proximity and the proposed turbines increasing the horizontal extent of turbines within the view.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a Medium sensitivity to change, combined with a High-medium magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. This is due the proximity of the Proposed Development to the viewpoint location where the size and scale of the change would be moderate.</p>				
Cumulative Effects – Scenario 2:	<p>Tachur and Achlachan II would be the most prominent of the Scenario 2 schemes visible from this location due to proximity and lack of screening. These developments would appear as part of the existing operational cluster increasing the number of turbines visible. Further Scenario 2 developments are set back and predominantly screened by landform.</p> <p>The addition of the Proposed Development to this baseline would be similar to that assessed for Scenario 1, as the Scenario 2 turbines are viewed as part of the existing operational cluster. The Proposed Development would extend the horizontal extent of turbines.</p>				
Cumulative Effects – Scenario 3:	<p>The Tormsdale turbines would also be prominent from this location, extending turbines westwards from the Scenario 1 and 2 clusters. The addition of the Proposed Development to this baseline scenario would also contribute to an increase in the horizontal extent of turbines visible. Magnitude of change is therefore increased to High-medium, but the overall effect would remain as Moderate adverse and significant.</p>				

Source: Natural Power, 2023

Table A6.18: Viewpoint 17: Coire na Beinne - Assessment

Viewpoint 17: Coire na Beinne (Figures 6.33a-g)					
Grid Coordinate:	315109, 940170	Distance to nearest turbine	11.6 km	Direction to the Proposed Development:	North east
Landscape Character Type:	LCT 134 Sweeping Moorland & Flows	Landscape Designation:	Causeymire – Knockfin Flows WLA, Flow Country and Berriedale Coast SLA	Visual Receptors:	Walkers
Baseline					
Location:	This viewpoint is located on the summit of Coire na Beinne and is accessible via track leading from the A9 road.				
Existing View:	<p>Extensive 360-degree views of the surrounding foreground Flow Country, merging into farmland as the distance increase. The A9 road forms a distinctive linear feature dividing farmland and peatland to the east. Operational wind farms feature in views from the summit of this hill and include Causeymire, Bad a Cheo, Halsary and Achlachan I to the north east, and further to the east the cluster of Bilbster, Wathegar I and II, Achairn and Camster I.</p> <p>Artificial lighting is very limited at this viewpoint due to its isolation within the peatlands of the Flow Country. The lights from vehicles travelling along the A9 can be observed along with isolated properties to the north and east, as well as skyglow from Wick.</p>				
Sensitivity:	<p>This viewpoint is located on the periphery of the Causeymire – Knockfin Flows WLA and Flow Country and Berriedale Coast SLA and value is considered to be High.</p> <p>Susceptibility is also considered to be High, as recreational users are expected to appreciate the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be High.</p>				
Assessment					
Predicted View:	<p>The Proposed Development would be viewed to the north east extending turbines eastwards from Halsary and appearing as a standalone development. All seven turbines would be seen with the bases and infrastructure screened by foreground topography. From this location, there would be some stacking involving turbines 1 and 4, 2 and 3, and 5 and 7.</p> <p>All seven of the aviation lights would be visible at angles between 0° to 3° resulting in light intensities of 200 ca. at a distance of 11.6 km.</p>				
Scenario 1 - Magnitude of Change:	<p>The addition of the Proposed Development to the baseline would result in the horizontal extent of turbines being extended from the existing operational cluster and would feature in mid-distant views from this location as a standalone development.</p> <p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium-low, due to the distance between the viewpoint location and Proposed Development which reduces the size and scale of the change.</p>				
Scenario 1 – Visual Effects	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Medium-low magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. This is due the distance of the Proposed Development to the viewpoint location where the size and scale of the change would be small. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location</p>				
Cumulative Effects – Scenario 2:	<p>Tachur and Achlachan II would be the most prominent of the Scenario 2 schemes visible from this location due to proximity and lack of screening. These developments would appear as part of the existing operational</p>				

Viewpoint 17:	Coire na Beinne (Figures 6.33a-g)
	cluster increasing the number of turbines visible. Further Scenario 2 developments are set back and predominantly screened by landform. The addition of the Proposed Development to this baseline would be similar to that assessed for Scenario 1, as the Scenario 2 turbines are viewed as part of the existing operational cluster. The Proposed Development would extend the horizontal extent of turbines.
Cumulative Effects – Scenario 3:	The Tormsdale turbines would also be prominent from this location, extending turbines westwards from the Scenario 1 and 2 clusters. The addition of the Proposed Development to this baseline scenario would result in the proposed turbines being viewed in the foreground of the distant Hollandmey and Lochend developments and is not considered to increase the magnitude of change or effects previously assessed.

Source: Natural Power, 2023

Table A6.19: Viewpoint 18: Ben Alisky - Assessment

Viewpoint 18:	Ben Alisky (Figures 6.34a-f)				
Grid Coordinate:	304559, 938626	Distance to nearest turbine	19.6 km	Direction to the Proposed Development:	North east
Landscape Character Type:	LCT 134 Sweeping Moorland & Flows	Landscape Designation:	Causeymire – Knockfin Flows WLA, Flow Country and Berriedale Coast SLA	Visual Receptors:	Walkers
Baseline					
Location:	This viewpoint is located on the summit of Ben Alisky which can be accessed from the north east and west via footpath popular with walkers.				
Existing View:	<p>Extensive 360° views across the Flow Country to the north, east and west can be obtained, and the lone mountains to the south.</p> <p>Due to the elevation, the majority of the operational wind farms located in Caithness are visible. These can be seen in distinct clusters including Group 1 and Group 2 developments.</p> <p>Artificial lighting is very limited at this viewpoint due to its isolation within the peatlands of the Flow Country. The lights from vehicles travelling along the A9 can be observed along with isolated properties to the north and east, as well as skyglow from Wick and Thurso. Artificial light sources are distant and have limited influence on views during night-time.</p>				
Sensitivity:	<p>This viewpoint is located on the periphery of the Causeymire – Knockfin Flows WLA and Flow Country and Berriedale Coast SLA and value is considered to be High.</p> <p>Susceptibility is also considered to be High, as recreational users are expected to appreciate the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be High.</p>				
Assessment					
Predicted View:	<p>The Proposed Development would be viewed behind Halsary and Bad a Cheo developments, which would provide some screening of the proposed turbines. The introduction of the Proposed Development would further concentrate turbines within this cluster.</p> <p>All seven of the aviation lights would be visible at angles between 0° to 3° resulting in light intensities of 200 ca. at a distance of 19.6 km and flicker due to a combination of distance and foreground turbines.</p>				
Scenario 1 - Magnitude of Change:	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low , due to distance which reduces the size and scale of the change combined with the proposed turbines being visible within an existing cluster.				

Viewpoint 18:	Ben Alisky (Figures 6.34a-f)
Scenario 1 – Visual Effects	This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This is due the distance of the Proposed Development to the viewpoint location where the size and scale of the change would be small. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location
Cumulative Effects – Scenario 2:	Scenario 2 would include Achlachan II, Tachur, and Camster II, visible above the ridgeline forming part of the existing cluster, and Golticlay further to the east. The introduction of the Proposed Development to this baseline would not result in an increase to the magnitude or effects assessed for Scenario 1 for the same reasons provided.
Cumulative Effects – Scenario 3:	Scenario 3 baseline would result in Tormsdale being visible to the north east and appear within the same extent of the Achlachan I and II, and Causeymire developments. It is not considered that the addition of the Proposed Development to this baseline would result in an increase to the magnitude and effect predicted for Scenario 1.

Source: Natural Power, 2023

Table A6.20: Viewpoint 19: Scaraben Peak - Assessment

Viewpoint 19:	Scaraben Peak (Figures 6.35a-f)				
Grid Coordinate:	306608, 926826	Distance to nearest turbine	27.4 km	Direction to the Proposed Development:	North east
Landscape Character Type:	LCT 138 Lone Mountains	Landscape Designation:	Causeymire – Knockfin Flows WLA, Flow Country and Berriedale Coast SLA	Visual Receptors:	Walkers
Baseline					
Location:	This viewpoint is located on the summit of Scaraben and is accessible via track popular with hill walkers..				
Existing View:	<p>Extensive 360-degree views of the surrounding Flow Country, merging into farmland as the distance increase. The A9 road forms a distinctive linear feature dividing farmland and peatland to the east.</p> <p>Operational wind farms feature in views from the summit of this hill and include Group 1 and 2 developments. Burn of Whilk appears as a standalone development further to the east.</p> <p>Artificial lighting is very limited at this viewpoint due to its isolation within the peatlands of the Flow Country. The lights from vehicles travelling along the A9 can be observed along with isolated properties to the north and east, as well as skyglow from Wick.</p>				
Sensitivity:	<p>This viewpoint is located on the periphery of the Causeymire – Knockfin Flows WLA and Flow Country and Berriedale Coast SLA and value is considered to be High.</p> <p>Susceptibility is also considered to be High, as recreational users are expected to appreciate the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be High.</p>				
Assessment					
Predicted View:	<p>The Proposed Development would be viewed to the north east extending turbines slightly eastwards from Halsary and appearing as a standalone development. From this location, there would be some stacking involving turbines 1 and 4, 2 and 3, and 5 and 7.</p> <p>All seven of the aviation lights would be visible at angles between 0° to 3° resulting in light intensities of 200 ca. at a distance of 27.4 km.</p>				

Viewpoint 19:	Scaraben Peak (Figures 6.35a-f)
Scenario 1 - Magnitude of Change:	The addition of the Proposed Development to the baseline would result in the horizontal extent of turbines being extended from the existing operational cluster and would feature in distant views from this location as a standalone development. Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low , due to distance which reduces the size and scale of the change.
Scenario 1 – Visual Effects	This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse and not significant effect during construction/decommissioning, and operation and maintenance phases. This is due the distance of the Proposed Development to the viewpoint location where the size and scale of the change would be small. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location
Cumulative Assessment – Scenario 2:	Tachur and Achlachan II would appear as part of the existing operational cluster increasing the number of turbines visible. Further Scenario 2 developments are set back and include Slickly and Golticlay further to the east. The addition of the Proposed Development to this baseline would be similar to that assessed for Scenario 1, as the Scenario 2 turbines are viewed as part of the existing operational cluster. The Proposed Development would extend the horizontal extent of turbines.
Cumulative Effects – Scenario 3:	The Tormsdale turbines would extend turbines westwards from the Scenario 1 and 2 clusters. The addition of the Proposed Development to this baseline scenario would also contribute to an increase in the horizontal extent of turbines visible. Magnitude of change is therefore increased to Medium , and the overall effect would be Moderate adverse and not significant on account of the distance from the Proposed Development.

Source: Natural Power, 2023

Viewpoint 20:	Dunnet Head (Figures 6.36a-f)
	All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 - 75 ca at a distance of 24.3 km. These would be viewed within the existing context of lights from properties and vehicles travelling in the intervening landscape.
Scenario 1 - Magnitude of Change:	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low , due to the distance between the viewpoint location and Proposed Development where the size and scale of the change would be small within the overall view.
Scenario 1 – Visual Effects	This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse and not significant effect during construction/decommissioning, and operation and maintenance phases. This is due the distance of the Proposed Development to the viewpoint location where the size and scale of the change would be small. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this viewpoint location
Cumulative Magnitude of Change	Cogle Moss and Camster II would appear as part of the operational cluster to the south east. Tachur and Achlachan II would appear as part of the existing operational cluster increasing the number of turbines visible to the south west. The addition of the Proposed Development to this baseline would be similar to that assessed for Scenario 1, as the Scenario 2 turbines are viewed as part of the existing operational cluster. The Proposed Development would extend the horizontal extent of turbines.
Cumulative Effects	The Tormsdale turbines would extend turbines westwards from the Scenario 1 and 2 clusters and be backclothed against the lone mountains. However, these would be barely perceptible with the distance involved and be partially screened by landform. The introduction of the Proposed Development is not considered to result in an increase of the magnitude or effect.

Source: Natural Power, 2023

Table A6.21: Viewpoint 20: Dunnet Head – Assessment

Viewpoint 20:	Dunnet Head (Figures 6.36a-f)				
Grid Coordinate:	320532 , 976491	Distance to nearest turbine	24.3 km	Direction:	South
Landscape Character Type:	LCT 141 High Cliffs & Sheltered Bays	Landscape Designation:	Dunnet Head SLA	Visual Receptors:	Walkers, Core path (CA05.06)
Baseline					
Location:	This viewpoint is taken from a viewing area at Dunnet Head and is accessible from the lighthouse car park.				
Existing View:	Extensive 360° views of the surrounding coastline and landscape can be obtained from this location. This includes the sweeping moorland of Dunnet Head within the foreground, merging to farmland. On clear days, the peatlands of the Flow Country backdropped by the lone mountains can be observed. Distant views of operational wind farms can be observed from this location. This includes Group 1 developments to the south west, and Group 2 developments to the south Artificial lighting is very limited at this viewpoint due to its isolation with sources of light coming from lights of vehicles travelling along the A9 can be observed along with isolated properties to the south, as well as skyglow from Wick and Thurso.				
Sensitivity:	This viewpoint is located on Dunnet Head, a popular visitor attraction to see the former remains of World War Two buildings, coastal walks, Dunnet Head Lighthouse, and adjacent cliffs that are popular for bird watching. Value is considered High. Susceptibility is also considered to be High, as recreational users are expected to appreciate the surrounding landscape. The overall sensitivity of the viewpoint location is considered to be High .				
Assessment					
Predicted View:	The Proposed Development would be seen in between the Group 1 and 2 clusters of operational wind farms and would be closer and more distinctive above the skyline in distant views.				

A6.3. Summary

A6.3.1. Table A6.22 provides a summary of the assessment of viewpoints undertaken in this Technical Appendix.

Table A6.22: Viewpoint Summary Table

Viewpoint	Sensitivity	Magnitude of Change	Significance of Effect	Cumulative Effects – Scenario 2	Cumulative Effects – Scenario 3
1. Thurso	High	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate-minor (not significant)
2. North of Hoy on B876	Medium	Low	Minor (not significant)	Minor (not significant)	Minor (not significant)
3. Georgemas	Medium	Negligible	Minor (not significant)	Minor (not significant)	Minor (not significant)
4. North Watten	High	High-medium	Major-moderate (significant)	Major (significant)	Major (significant)
5. Scotscalder	High	Medium-low	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)
6. Ben Dorrey	High	Medium-low	Moderate	Moderate	Moderate

Viewpoint	Sensitivity	Magnitude of Change	Significance of Effect	Cumulative Effects – Scenario 2	Cumulative Effects – Scenario 3
			(significant)	(significant)	(significant)
7. Harpsdale Cross Roads	Medium	Low	Minor (not significant)	Minor (not significant)	Minor (not significant)
8. Watten	High	Medium	Moderate (significant)	Major-moderate (significant)	Major-moderate (significant)
9. A882, east of Watten	Medium	Medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
10. Spittal	Medium	Medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
11. North Wick, A99 Road	High	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate-minor (not significant)
12. Westerdale	Medium	Medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
13. Minor road north of Grey Cairns of Camster	High	High	Major (significant)	Major (significant)	Major (significant)
14. Loch More Cottage	High	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate-minor (not significant)
15. Loch of Yarrows Trail	High	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate-minor (not significant)
16. A9, North of Rangag	Medium	High-medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
17. Coire na Beinne	High	Medium-low	Moderate (significant)	Moderate (significant)	Moderate (significant)
18. Ben Alisky	High	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate-minor (not significant)
19. Scaraben Peak	High	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate-minor (not significant)
20. Dunnet Head	High	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate (not significant)

Source: <Insert Source or notes>

Technical Appendix A6.7

Sequential Routes Assessment

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Glossary

Term	Definition
Direct effect	<i>'An effect that is directly attributable to the proposed development.'</i> *
Environmental Impact Assessment (EIA)	Environmental Impact Assessment (EIA) is a means of drawing together by the developer, in a systematic way, a description of the development and information relating to an assessment of the likely significant environmental effects arising from the Proposed Development.
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5.
Garden and Designed Landscape	A garden or landscape included in Historic Environment Scotland's Inventory of Gardens and Designed Landscapes <i>'The inventory recognises grounds intentionally laid out for artistic effect which are of national importance.'</i> (HES, 2019)
Indirect effects	<i>'Indirect effects that result indirectly from the proposed project as a consequence of the direct effects., often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.'</i> *
Landform	<i>'The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.'</i> *
Landscape	<i>'An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.'</i> *
Landscape & Visual Impact Assessment (LVIA)	<i>'A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.'</i> *
Landscape effects	<i>'Effects on the landscape as a resource in its own right.'</i> *
Landscape receptors	<i>'Defined aspects of the landscape resource that have the potential to be affected by a proposal'</i> *
The Proposed Development	The proposed Watten Wind Farm development.
The Proposed Development Area	The area within the red line boundary where the Proposed Development will be located (application area).

* Taken from *Guidelines for Landscape and Visual Impact Assessment, Third Edition. 2013*

List of Abbreviations

Abbreviation	Description
EIAR	Environmental Impact Assessment Report
LVIA	Landscape and Visual Impact Assessment
ZTV	Zone of Theoretical Visibility

A6.1. Introduction

A6.1.1. This Technical Appendix supports Chapter 6: Landscape and Visual of the Environmental Impact Assessment Report (EIAR) for Watten Wind Farm (the Proposed Development). The Appendix includes a preliminary assessment of route receptors within the 15 km study area and identifies which are to be scoped in and out of the Landscape and Visual Impact Assessment (LVIA), followed by a detailed assessment.

A6.1.2. This Technical Appendix should be read in conjunction with the following EIAR documents:

- Technical Appendix A6.1: LVIA Methodology;
- Figure 6.1: LVIA Study Area;
- Figure 6.2: Cumulative Study Areas;
- Figure 6.3a : Zone of Theoretical Visibility to Tip Height (ZTV) (A3 Size);
- Figure 6.3b: Zone of Theoretical Visibility to Tip Height (A0 Size);
- Figure 6.4: Zone of Theoretical Visibility to Hub Height;
- Figure 6.5: Horizontal Angle Zone of Theoretical Visibility;
- Figures 6.6a-g – Aviation Lighting Intensity ZTV;
- Figure 6.10 – Visual Receptors; and
- Figures 6.11a-f – Sequential Route ZTVs;

A6.2. Preliminary Assessment of Route Receptors

A6.2.1. Route receptors have been identified within 15 km of the Proposed Development following a desk-top review of Ordnance Survey 1:50,000 and 1:25,000 mapping, a review of the ZTVs, and site visit to route receptors and viewpoint locations to verify the extent of visibility of the Proposed Development.

A6.2.2. Table A6.1 provides an overview of the extent of theoretical visibility for each route identified and justification for being scoped in or out of the LVIA.

Table A6.1: Preliminary Assessment of Route Receptors within 15 km

Route Receptor	Extent of Theoretical Visibility	Included in the Assessment
Roads		
A9	Extends between Scrabster and Latheron in the study area generally in a north to south orientation. This road would be located 2.8 km at its nearest point to the proposed turbines to the west. Widespread theoretical visibility is predicted within 6 km of the Proposed Development, thereafter, affecting shorter sections within the study area.	Yes , due to the close proximity of the road to the Proposed Development and theoretical visibility predicted.
A99	Extends between John o Groats and Latheron, generally following the east coast of Caithness. Theoretical visibility is predicted to be patchy of 1-7 turbines.	Yes , due to the road forming part of the North Coast 500, a promoted road.
A882	Extending between Georgemas Junction and Wick, this road is orientated north west to south east 3.3 km to the north of the Proposed Development. The ZTV indicates theoretical visibility to be widespread along much of the route.	Yes , due to proximity to the Proposed Development and widespread theoretical visibility predicted.

Route Receptor	Extent of Theoretical Visibility	Included in the Assessment
B870	Located 1.7 km to the north of the proposed turbines, this road generally follows an east to west direction between the A874 and B876 roads. Theoretical visibility is predicted to occur along much of the road.	Yes , due to the road's close proximity to the Proposed Development and widespread theoretical visibility predicted.
B874	Extends between Thurso in the north and the A99 road in the east. Between Thurso and Halkirk, this road is orientated north to south, from Halkirk to the A99 road, orientation is in a north west to south east direction. The ZTV predicts theoretical visibility along much of the route.	Yes , due to the road's proximity to the Proposed Development and extent of theoretical visibility predicted.
B876	Extending between Castletown and the A99 road, this road is orientated in a north west to south east direction 9.6 km to the north east of the Proposed Development. The ZTV indicates that theoretical visibility would be widespread for much of the road within 15 km.	Yes , due to the extent of theoretical visibility.
Railway		
Inverness – Thurso/Wick Railway Line	This railway line passes through the Flow Country to the west, before changing direction at Georgemas Junction, heading north to Thurso, or east towards Wick, and is 4.6 km from the nearest turbine. Theoretical visibility is predicted to be widespread to the west and cover shorter sections elsewhere.	Yes , due to the extent of theoretical visibility predicted, and importance of the route to the north of Scotland.
Core Paths		
8 – Loch More to Altnabreac	Located 11.3 km at its nearest point to the south west of the proposed turbines. Theoretical visibility is predicted to be widespread.	Yes – due to the widespread theoretical visibility predicted and sensitive location.
10 – Loch More to Dalnawillan	Located 13.4 km at its nearest point to the south west of the proposed turbines. Theoretical visibility is predicted to be widespread.	Yes – due to the widespread theoretical visibility predicted and sensitive location.
12 – Bower Roadside Link	Located 10.8 km at its nearest point to the north east of the proposed turbines. Theoretical visibility would be limited to a short section of track to the west where 1-2 blades would be visible.	No, due to the small extent of the Proposed Development that would be visible.
17 – Hill Orlig	Located 13.9 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of all seven turbines is predicted.	Yes – due to the widespread theoretical visibility predicted from an elevated location.
58 – Brawl Castle and Pond	Located 10.7 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of 3-4 blades is predicted, which combined with screening by vegetation would reduce visibility.	No, due to screening from vegetation and small extent of the Proposed Development That would be visible.
59 – Halkirk Riverside	Located 10.7 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of 3-4 blades is predicted, which combined with screening by vegetation and buildings would reduce visibility.	No, due to screening from vegetation and small extent of the Proposed Development That would be visible.
60 – Ben Dorrery	Located 12.9 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of all seven turbines is predicted.	Yes – due to the widespread theoretical visibility predicted from an elevated location.
61 – Causeymire Wind Farm	Located 3.0 km at its nearest point to the west of the proposed turbines. Theoretical visibility of all seven turbines is predicted.	Yes – due to the close proximity of the Core Path to

Route Receptor	Extent of Theoretical Visibility	Included in the Assessment
		the Proposed Development and widespread theoretical visibility predicted.
62 – Lane Along East Edge of Village	Located 9.8 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of 1-2 blades is predicted.	No, due to the small extent of the Proposed Development that would be visible.
63 – Water Access by Loch Calder	Located 12.9 km at its nearest point to the north west of the proposed turbines. A small section of the eastern and western extent of the Core Path is predicted to receive theoretical visibility; however, a nearby coniferous forest would screen visibility to the south east.	No – due to screening by forestry.
64 – Achnarras Quarry	Located 4.2 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of all seven turbines is predicted.	Yes – due to the close proximity of the Core Path to the Proposed Development and widespread theoretical visibility predicted.
65 – The Old Quarry	Located 4.0 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of all seven turbines is predicted.	Yes – due to the close proximity of the Core Path to the Proposed Development and widespread theoretical visibility predicted.
66 – Footway B874	Located 10.3 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of 1-2 blades is predicted.	No, due to the small extent of the Proposed Development that would be visible.
67 – Halkirk Railside to River Link	Located 9.7 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of 1-2 hubs and 5-6 blades is predicted due to its elevated location.	No, due to the small extent of the Proposed Development that would be visible.
68 – Brawl Castle Riverside Link	Located 10.5 km at its nearest point to the north west of the proposed turbines. Theoretical visibility of 3-4 blades is predicted; however, adjacent tree screening will reduce views.	No, due to the small extent of the Proposed Development that would be visible combined with screening by trees.
70 – Dirlot Gorge Egress / Ingress	Located 6.5 – 8.7 km at its nearest point to the south west of the proposed turbines. Theoretical visibility of all seven turbines is predicted.	Yes – due to the close proximity of the Core Path to the Proposed Development and widespread theoretical visibility predicted.
97 - Rumster	Located 11.3 km to the south of the proposed turbines. No theoretical visibility is predicted.	No.
98 – Rumster Mast Loop	Located 11.5 km to the south of the proposed turbines. No theoretical visibility is predicted.	No.
100 – Camster Forest	Located 9.6 km at its nearest point to the south east of the proposed turbines. Theoretical visibility of all seven turbines is predicted; however, this would be in a coniferous plantation which would screen views of the Proposed Development.	No, due to screening from forestry.

Route Receptor	Extent of Theoretical Visibility	Included in the Assessment
101 – Rumster to A99	Located 13.6 km to the south of the proposed turbines. No theoretical visibility is predicted.	No.
105 – Achavanich and Munsary	Located 5.6 km at its nearest point to the south of the proposed turbines. Theoretical visibility of all seven turbines is predicted.	Yes – due to the close proximity of the Core Path to the Proposed Development and widespread theoretical visibility predicted.
121 – The Mast	Located 14.2 km to the south east, theoretical visibility is predicted to be limited to 1-2 turbines.	No, due to the limited amount of theoretical visibility predicted.
122 – Thrumster House Track	Located 13.3 km to the south east, the ZTV predicts no theoretical visibility.	No.
124 – Yarrows Archaeological Trail	Located 12.2 km to the south west, the ZTV shows that a very short section covering elevated ground is receives theoretical visibility of all 7 turbines. An assessment has been undertaken from this location in Technical Appendix A6.6, see Figure 6.31a-f.	No, due to the very limited theoretical visibility predicted.
125 – Cairn o Get	Located 14.3 km to the south east, no theoretical visibility is predicted from this Core Path.	No.
126 – Blingrey Forest	Located 7.4 km at its nearest point to the south east of the proposed turbines, this track passes through Camster Forest but obtains open views at its western extent next to Camster Wind Farm.	Yes – due to the close proximity of the Core Path to the Proposed Development and widespread theoretical visibility predicted.
127 – Camster Cairns Boardwalk	Located 8.4 km at its nearest point to the south east of the proposed turbines. No visibility is predicted due to screening by forestry.	No, due to screening by forestry.
158 – Watten Roadside Link to Loch Watten	Located 3.6 km at its nearest point to the north east of the proposed turbines. Experiences face on views framed by the buildings in Watten on either side of the road.	Yes – due to the close proximity of the Core Path to the Proposed Development and widespread theoretical visibility predicted.
160 – Sports Pitch	Located 3.4 km at its nearest point to the north east of the proposed turbines. Experiences face on views framed by the buildings in Watten on either side of the road.	Yes – due to the close proximity of the Core Path to the Proposed Development and widespread theoretical visibility predicted.
161 – Watten to Camster Roadend Link	Located 3.7 km at its nearest point to the north east of the proposed turbines. Experiences face on views framed by the buildings in Watten on either side of the road.	Yes – due to the close proximity of the Core Path to the Proposed Development and widespread theoretical visibility predicted.
162 – Watten Riverside Link	Located 3.8 km at its nearest point to the north east of the proposed turbines. Experiences face on views framed by the buildings in Watten on either side of the road.	Yes – due to the close proximity of the Core Path to the Proposed Development and widespread theoretical visibility predicted.

Route Receptor	Extent of Theoretical Visibility	Included in the Assessment
164 – Wick Riverside	Located 12.7 km to the east of the proposed turbines, the ZTV indicates that widespread theoretical visibility although this would be restricted by vegetation along the river.	No, due to screening by vegetation.
168 – Charity Farm Link	Located 13.8 km to the east, no theoretical visibility is predicted.	No
169 – Reiss Track	Located 13.0 km at its nearest point to the north east of the proposed turbines. The northern section of the Core Path is predicted to receive theoretical visibility of all seven turbines. The main focus from the Links is towards the sea in the opposite direction to the Proposed Development.	No, due to the direction of the Proposed Development in relation to the Core Path and limited part of the Links affected.
177 – Wick to Ackergillshore by Roadside Footway	Located 13.6 km at its nearest point to the east of the proposed turbines. Widespread theoretical visibility is predicted for all of this Core Path.	Yes , due to the widespread theoretical visibility predicted.
178 - Ackergillshore	Located 14.5 km at its nearest point to the east of the proposed turbines. This Core Path is predicted to receive theoretical visibility of all seven turbines. The main focus is towards the sea in the opposite direction to the Proposed Development.	No, due to the direction of the Proposed Development in relation to the Core Path.
179 – Keiss/Reiss Shore	Located 13.4 km at its nearest point to the north east of the proposed turbines. The northern section of the Core Path is predicted to receive theoretical visibility of all seven turbines. The main focus from the Links is towards the sea in the opposite direction to the Proposed Development.	No, due to the direction of the Proposed Development in relation to the Core Path and limited part of the Links affected.
Wick Core Paths	Located between 12.3 – 15 km from the proposed turbines, all of the Core Paths listed are predicted to receive theoretical visibility. However, this is based on bare ground and in reality, only very short section would receive views of the Proposed Development beyond Camster Wind Farm on account of foreground screening by buildings and vegetation.	No - due to screening by buildings and vegetation.
167 – Lovers Lane		
173 – Wick to Milton Roadside Link		
174 – Academy Braes		
185 – Bignold Park		
186 – George Park V		
187 – George Park V		
188 – Wick Riverside Park North		
189 – Wick Riverside Park		
192 – Wick Cemetery		

Route Receptor	Extent of Theoretical Visibility	Included in the Assessment
189 – Wick Riverside Park		
192 – Wick Cemetery		

A6.2.3. Of the fifty-five route receptors identified within 15 km study area, the following have been taken forward for detailed assessment:

- Roads
 - A9;
 - A99;
 - A882;
 - B870;
 - B874; and
 - B876.
- Railway Lines
 - Inverness to Thurso/Wick.
- Core Paths:
 - 8 – Loch More to Altnabreac;
 - 10 – Loch More to Dalnawillan;
 - 17 – Hill Olig;
 - 60 – Ben Dorrery;
 - 61 – Causeymire Wind Farm;
 - 64 – Achnarras Quarry;
 - 65 – The Old Quarry;
 - 70 – Dirlot Gorge Egress / Ingress;
 - 105 – Achavanich and Munsary;
 - 126 – Blingrey Forest;
 - 158 – Watten Roadside Link to Loch Watten;
 - 160 – Sports Pitch;
 - 161 – Watten to Camster Roadend Link;
 - 162 – Watten Riverside Link; and
 - 177 – Wick to Ackergillshore by Roadside Footway.

A6.3. Detailed Assessment of Sequential Routes

A6.3.1. The following tables set out the baseline, sensitivity, magnitude of change and overall effect to views from each route receptor carried forward for assessment.

Table A6.2: Route Receptors

Route Receptor	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
Roads						
A9	<p>The A9 is a major road extending between the Central Belt of Scotland and Scrabster in the north for approximately 273 miles. Generally orientated north to south, the road extends between Scrabster and Latheron in the 45 km study area passing through a variety of landscapes including farmland between Scrabster and Spittal, peatland, and forestry between Spittal and Latheron, before following the coastline of Caithness and Sutherland to the south. This results in a variety of views, from open extensive views across the North Sea to the east and peatlands to the west, to enclosed views as a result of topography and adjacent forestry, and semi to open visibility across farmland in the north.</p> <p>Operational wind farms are a common feature and are experienced sequentially along the road. This includes the Beatrice Offshore Wind Farm to the east, and close views of Bad a Cheo, Achlachan I, and Halsary forming Group 1 developments on either side of the road south of Spittal. Other operational wind farms can be seen to the east breaking the skyline but further away. These include Camster, and Wathegar I and II, Achairn and Bilbster (Group 2 developments). Figures 6.6.26a-f: Viewpoint 10: Spittal, and Figures 6.32a-f: VP9 near Rangag represent the views experienced within 15 km of the Proposed Development.</p>	<p>The A9 road is not a promoted tourist route and is mainly used to access settlements and individual properties as well as the main route between Inverness and Thurso. The road passes through low-lying farmland that is not designated as a sensitive landscape. Views from the road are considered to be Medium.</p> <p>Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be Medium.</p>	<p>Widespread theoretical visibility of the Proposed Development is predicted within 6 km. To the south west of the Proposed Development visibility would be influenced by existing forestry, some of which has recently been clear-felled.</p> <p>From the west of the Proposed Development, the proposed turbines would be viewed behind the existing operational turbines, further increasing the stacking effects which would be constantly changing as the vehicle passes through the area. Beyond 5-6 km, theoretical visibility reduces, and the proposed turbines would be visible extending further east from the Group 1 developments, extending turbines across the horizontal plain. These would be experienced from a road with a 60 miles per hour (mph) speed limit.</p> <p>A total of 5 aviation lights would be visible at angles between -1° to -2° resulting in light intensities of 75 to 8 ca and viewed within the context of vehicles travelling along the A9.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium, due to the roads proximity to the Proposed Development which would be visible from short sections to the west in open views.</p> <p>As the distance increases, magnitude would reduce due to distance and influence of screening by vegetation, forestry, and landform.</p>	<p>This route is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect within 6 km. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights. Thereafter, reducing to Minor levels as distances increases and screening by landform and forestry reduces the visual envelope influences the extent of the view.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>Scenario 2 developments would include Achlachan II which would infill a gap between Achlachan I and Causeymire to the west of the road, Tachur on the southern extent of Bad a Cheo, again to the west of the road, and Golticlay forming a standalone development 2.3 km to the east of the road near Stemster Hill.</p> <p>With the exception of Golticlay which would add further turbines around Rumster and closer to the road, the other two developments would further increase the number of turbines forming the Group 1 cluster by six turbines.</p> <p>The addition of the Proposed Development to this baseline would be similar to that assessed for Scenario 1, where the proposed turbines would be visible beyond the existing cluster and further away from the road.</p> <p>Scenario 3 would result in further turbines being located to the west beyond Causeymire, and from certain sections of the road, separate from the Group 1 cluster. The introduction of the Proposed Development to this baseline would be seen beyond the existing cluster of Group 1 developments in both combined visibility when heading towards the cluster from the north and south, and successively as vehicles pass through the Group 1 cluster. However, the Proposed Development would be further away from the road and viewed through operational turbines and is not considered to add to the effects assessed for Scenario 1.</p>
A99	<p>The A99 road extends between Wick and Latheron and follows the east coast of Caithness. Views from the road are mainly open, the North Sea to the east forming the main focal point including Beatrice and Moray East Offshore Wind Farms. Views elsewhere are influenced by landform, especially to the west as the road passes through a mixture of crofting and agricultural landscapes,</p>	<p>This road is on the A99 road which forms part of the North West Coast 500 tourist route, as well as a War memorial and the views are considered to be of High value.</p> <p>Susceptibility is also considered to be High, as road users on this route are expected to have some appreciation of the surrounding landscape.</p>	<p>All seven turbines would be glimpsed between buildings and vegetation on the western side of Wick, and short sections at Everley, Hill of Harley, between Nybster and Keiss Links, and Thrumster.</p> <p>From the north of Wick, the Proposed Development would be viewed in front of Group 1 developments, and from the west and south of Wick, viewed beyond Camster and Group 2 developments,</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low due to distance which reduces the size and scale of the change occurring from short sections of the road.</p>	<p>This route is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would</p>	<p>Scenario 2 baseline would result in several developments being visible from this location including Camster II, which would further reinforce the number of turbines forming Group 2 developments, Cogle Moss to the west, and Slickly next to Stroupster forming one larger wind farm. The Proposed Development would be further west and seen in combination with the Group 1 developments.</p>

Route Receptor	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
	allowing glimpses inland, before foreground screening from landform reduces the extent of visibility. Figure 6.27a-f: North of Wick is representative of the baseline views experienced from this location.	The overall sensitivity of the viewpoint location is considered to be High .	and in front of the Group 1 developments. All 7 of the aviation lights would be visible at 0° to -1° degrees and experienced within the context of foreground lighting sources from properties in the intervening area, vehicles travelling along nearby roads, and skyglow from Wick. Figures 6.27a-f are representative of the views from this road.		be reversible following decommissioning where no components of the Proposed Development would be visible from this route.	Scenario 3 developments would result in Hollandmey near Lochend Wind Farm, and further west Tormsdale, which would be partially screened by landform. It is not considered that the introduction of the Proposed Development to these baselines would increase the assessment conclusions for Scenario 1.
A882	The A882 road extends between Georgemas Junction and Wick and is orientated in a north west to south east direction. Predominantly passing through farmland, views vary to extensive visibility to the south including distant views across peatlands towards the Lone Mountains, to short to middle distance views as a result of roadside vegetation, woodland, and a series of ridgelines. Figure 6.25a-f: Viewpoint 9: A882 East of Watten provides a representation of the views obtained from the road.	The A882 road is not a promoted tourist route and is mainly used to access settlements and individual properties. The road passes through low-lying farmland that is not designated as a sensitive landscape. Views from the road are considered to be Medium. Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape. The overall sensitivity of the viewpoint location is considered to be Medium .	The Proposed Development would be in the foreground of Group 1 developments, often extending turbines further eastwards and more prominent due to its proximity to the Proposed Development. The addition of the Proposed Development will appear as infilling between the Group 1 and Camster and Group 2 developments. However, this is a 60-mph road and roadside vegetation, and intervening landform and woodland would reduce the views obtained. All seven of the aviation lights would be visible from this location at angles between -0° to -3° resulting in light intensities of 200 to 4 ca and not always visible as a result of screening by landform and woodland. Figures 6.25a-f: Viewpoint 9: East of Watten provides a representation of the Proposed Development.	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium. This would occur in the vicinity of Watten to approximately 6 km from the Proposed Development, reducing thereafter to Low levels as a result of distance and screening.	This route is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases within 6 km from the Proposed Development. The effect is considered to be significant as a result of the proximity of the development, combined with the size and scale of the change in view. Thereafter, reducing to Moderate-minor and Minor levels and not significant as the distance increases. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.	Scenario 2 developments would result in the introduction of a new standalone wind farm to the north in Coggle Moss, and further turbines forming part of the Group 2 developments. There would be a slight increase in the number of turbines viewed sequentially along this road, however, the overall effect on the road would be similar to that assessed for Scenario 1. Scenario 3 developments are distant from this road which would have limited visibility of both Hollandmey and Tormsdale and has therefore not been considered further.
B870	This road extends between Watten and Westerdale in an east to west direction, before heading north at Westerdale to Glengolly. The road is situated within a transitional landscape, mainly passing through farmland with extensive views to the south over the Peatlands of the Flow Country towards the Lone Mountains. Intervening screening by landform and woodland restricts views in places. Group 1 operational developments form a prominent feature within views, especially to the west of the A9 road. Figures 6.23a-f: Viewpoint 7: Harpsdale Crossroads, and Figures 6.24a-f: Viewpoint 8:Watten provide a representation of the baseline view.	The B870 road is not a promoted tourist route and is mainly used as a short-cut avoiding longer journeys around the north east corner of Caithness on the busier A836 and A99 roads via John o Groats. The road passes through low-lying farmland that is not designated as a sensitive landscape. Views from the road are considered to be Medium. Susceptibility is also considered to be Medium , as road users on this route are expected to have less appreciation of the surrounding landscape. The overall sensitivity of the viewpoint location is considered to be Medium.	The Proposed Development would be seen in the foreground of Group 1 developments extending turbines further eastwards and more prominent due to its proximity to the road. The addition of the Proposed Development will appear as infilling between the Group 1 and Camster and Group 2 developments. Roadside vegetation, and intervening landform and woodland would reduce the views obtained. All seven of the aviation lights would be visible from this location at angles between -1° to -2° resulting in light intensities of 75 to 4 ca and not always visible as a result of screening by landform and woodland. Figures 6.23a-f: Viewpoint 7: Harpsdale Crossroads and Figures 6.24a-f: Viewpoint 8: Watten	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium . This would occur in the vicinity of Watten to approximately 6 km from the Proposed Development, reducing thereafter to Low levels as a result of distance and screening.	This route is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases within 6 km from the Proposed Development. The effect is considered to be significant as a result of the proximity of the development, combined with the size and scale of the change in view. Thereafter, reducing to Moderate-minor and Minor levels and not significant as the distance increases. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed	Similar to the A882, Scenario 2 developments would result in the introduction of a new standalone wind farm to the north in Coggle Moss, and further turbines forming part of the Group 2 developments. There would be a slight increase in the number of turbines viewed sequentially along this road, however, the overall effect on the road would be similar to that assessed for Scenario 1. Of the Scenario 3 developments, Tormsdale would be the most prominent extending turbines further west from Achlachan II and Causeymire. This would increase the size of the Group 1 developments with the assessment being similar to that assessed for Scenario 1.

Route Receptor	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
			provides a representation of the Proposed Development.		Development would be visible from this route.	
B874	<p>Extends between Thurso in the north and the A99 road in the east. Between Thurso and Halkirk, this road is orientated north to south, from Halkirk to the A99 road, orientation is in a north west to south east direction. Predominantly passing through farmland, topography drops away to the south allowing extensive visibility over the Flow Country peatlands towards the Lone Mountains to be experienced from sections. Figures 6.17a-f: Viewpoint 1: provides a representation of the baseline view.</p>	<p>The B876 road is not a promoted tourist route and is mainly used to access the various settlements between Thurso and Wick</p> <p>Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be Medium.</p>	<p>The Proposed Development would be in the foreground of Group 1 developments, often extending turbines further eastwards and more prominent due to its proximity to the Proposed Development. The addition of the Proposed Development will appear as infilling between the Group 1 and Camster and Group 2 developments. However, this is a 60-mph road and roadside vegetation, and intervening landform and woodland would reduce the views obtained.</p> <p>All seven of the aviation lights would be visible from this location at angles between -0° to -3° resulting in light intensities of 200 to 4 ca and not always visible as a result of screening by landform and woodland. Figures 6.17a-f: Viewpoint 1: Thurso provides a representation of the Proposed Development.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, this would be due to screening and the short sections of the road affected and screening.</p>	<p>This route is assessed as having a Medium sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases. The effect is not significant owing to screening.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>Scenario 2 developments would result in the introduction of a new standalone wind farm to the north in Coggle Moss, and further turbines forming part of the Group 1 and 2 developments.</p> <p>There would be a slight increase in the number of turbines viewed sequentially along this road, however, the overall effect on the road would be similar to that assessed for Scenario 1.</p> <p>Scenario 3 developments are distant from this road which would have limited visibility of both Hollandmey and Tormsdale and has therefore not been considered further.</p>
B876	<p>Extending between Castletown and the A99 road, this road is orientated in a north west to south east direction 9.6 km to the north east of the Proposed Development. Views are predominantly over adjacent farmland with occasional glimpse to the south west of the peatlands of the Flow Country and Lone Mountains beyond.</p> <p>Operational wind farms are visible to the south and west in two distinct clusters and include Group 1, Camster and Group 2 developments and Camster are screened by coniferous forestry within the mid-ground of the view.</p> <p>Dark skies mapping shows that the viewpoint location is situated in an area of relative darkness. Sky glow can be seen to the north west from coastal settlements including nearby Castletown, and Thurso. Other sources of artificial lighting include vehicles travelling along roads and from properties and farms within the wider landscape. Figures 6.18a-f: Viewpoint 2: North of Hoy provide a representation of the baseline view.</p>	<p>The B876 road is not a promoted tourist route and is mainly used as a short-cut avoiding longer journeys around the north east corner of Caithness on the busier A836 and A99 roads via John o Groats. The road passes through low-lying farmland that is not designated as a sensitive landscape. Views from the road are considered to be Medium.</p> <p>Susceptibility is also considered to be Medium, as road users on this route are expected to have less appreciation of the surrounding landscape.</p> <p>The overall sensitivity of the viewpoint location is considered to be Medium.</p>	<p>The Proposed Development would be located closer to the viewpoint location in comparison to the operational wind farms mentioned above.</p> <p>All seven turbines would be visible to the south from short sections where landform and vegetation has limited influence on the openness of the view and occupy an area between the Group 1 and Group 2 developments.</p> <p>During periods of darkness and poor visibility, all seven aviation lights would be visible from the viewpoint location between 200 – 75 ca.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, due to a combination of screening and the distance from the Proposed Development</p>	<p>This route is assessed as having a Medium sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>Scenario 2 baseline would result in several developments being visible from this location including further developments reinforcing Group 1 and 2 developments in distant views to the south. Cogle Moss and Slickly would be prominent in views from some sections of the road.</p> <p>The Proposed Development would be further to the south west and seen in combination with the Group 1 developments.</p> <p>Scenario 3 developments would result in Hollandmey near Lochend Wind Farm, and further west Tormsdale, which would be partially screened by landform. It is not considered that the introduction of the Proposed Development to these baselines would increase the assessment conclusions for Scenario 1.</p>

Route Receptor	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
Railway Line						
Inverness to Thurso / Wick Railway Line	This railway line forms the main rail route between Inverness and Thurso and Wick. Passing through a variety of landscapes, within the study area, the railway line passes between the Causeymire – Knockfin Flows and East Halladale Wild Land Areas from Strath Halladale in the west, before traversing farmland in the north and east of Georgemas Junction. This allows extensive views across the peatlands of the Flow Country towards the Lone Mountains.	The railway line is the main route through Caithness between Inverness and Wick/Thurso and promoted as a tourist route. Value is therefore High. Susceptibility is also considered to be High, as d rail users on this route are expected to appreciate the views of the surrounding landscape. The overall sensitivity of the viewpoint location is considered to be High .	The Proposed Development would be viewed alongside the Group 1 developments, extending turbines further east as the railway line progresses eastwards. This would periodically be screened by intervening landform and woodland to the south of the railway line. During periods of darkness and poor visibility, all seven aviation lights would be visible from the viewpoint location between 200 – 8 ca.	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low . As the distance increases, magnitude would reduce due to distance and influence of screening by vegetation, forestry, and landform to Low.	This route is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect. This is due to distance and the influence of screening by landform and vegetation. Thereafter, reducing to Minor levels as distances increases and screening by landform and forestry reduces the visual envelope influences the extent of the view. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.	Scenario 2 developments would include Achlachan II which would infill a gap between Achlachan I and Causeymire to the east and south of the railway line, Tachur on the southern extent of Bad a Cheo, again to the east of the railway line, and Golticlay forming a standalone development 2 to the east of the road near Stemster Hill. With the exception of Golticlay which would add further turbines around Rumster, the other two developments would further increase the number of turbines forming the Group 1 cluster by six turbines. The addition of the Proposed Development to this baseline would be similar to that assessed for Scenario 1. Scenario 3 would result in further turbines being located to the west beyond Causeymire, and from certain sections of the road, separate from the Group 1 cluster. The introduction of the Proposed Development to this baseline would be seen beyond the existing cluster of Group 1 developments However, the Proposed Development would be viewed through operational turbines and is not considered to add to the effects assessed for Scenario 1.
Core Paths						
8 – Loch More to Altnabreac	Located 11.3 km at its nearest point to the south west of the proposed turbines. From this footpath, extensive views across Loch More and the surrounding peatlands can be obtained including the distinctive profile of the Lone Mountains to the south. Operational wind farms can be seen to the north east and include Group 1 developments the hubs and blades are visible above the foreground ridgeline. Artificial lighting is very limited at this viewpoint due to its isolation within the peatlands of the Flow Country. Figures 6.30a-g proved a representation of the baseline view.	All walking routes are assessed as having a High sensitivity to change as it is considered that the receptors' attention will be on the surrounding landscape.	The Proposed Development would be viewed beyond the existing cluster of Group 1 developments appearing as part of a larger development, and partially screened by the foreground turbines. All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 11.3 km and would appear as blinking lights on account of the rotating blades of the foreground turbines. Figures 6.30a-g proved a representation of the Proposed Development.	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low due to distance and screening which reduces the size and scale of the change in view.	This route is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This is due to being viewed beyond the existing cluster of turbines, some of which would screen the proposed turbines. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.	Scenario 2 would include Achlachan II, Tachur, and the more distant Camster II, visible above the ridgeline forming part of the existing Group 1 and 2 developments, and Golticlay further to the east. The introduction of the Proposed Development to this baseline would not result in an increase to the magnitude or effects assessed for Scenario 1 for the same reasons provided due to being located further away behind Group 1 developments. Scenario 3 baseline would include Tormsdale which be closer to this route and more prominent with hubs and blades visible above the ridgeline to the north east, appearing as part of the existing Scenario 1 and 2 cluster.

Route Receptor	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
10 – Loch More to Dalnawillan	<p>Located 13.4 km at its nearest point to the south west of the proposed turbines. From this footpath, extensive views across Loch More and the surrounding peatlands can be obtained including the distinctive profile of the Lone Mountains to the south.</p> <p>Operational wind farms can be seen to the north east and include Group 1 developments the hubs and blades are visible above the foreground ridgeline. Artificial lighting is very limited at this viewpoint due to its isolation within the peatlands of the Flow Country. Figures 6.30a-g proved a representation of the baseline view.</p>	High	<p>The Proposed Development would be viewed beyond the existing cluster of Group 1 developments appearing as part of a larger development and extend turbines further eastwards from the southern extents of the footpath.</p> <p>All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 11.3 km and would appear as blinking lights on account of the rotating blades of the foreground turbines. Figures 6.30a-g proved a representation of the Proposed Development.</p>	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low due to distance which reduces the size and scale of the change.	<p>This route is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This is due to being viewed beyond the existing cluster of turbines, some of which would screen the proposed turbines.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>It is not considered that the Proposed Development would result in an increase to the magnitude and effects for the reasons stated.</p> <p>Scenario 2 would include Achlachan II, Tachur, and Camster II, visible above the ridgeline forming part of the existing cluster, and Golticlay further to the east. The introduction of the Proposed Development to this baseline would not result in an increase to the magnitude or effects assessed for Scenario 1 for the same reasons provided.</p> <p>Scenario 3 baseline would include Tormsdale which be closer to this route and more prominent with hubs and blades visible above the ridgeline to the north east, appearing as part of the existing Scenario 1 and 2 cluster. It is not considered that the Proposed Development would result in an increase to the magnitude and effects for the reasons stated.</p>
17 – Hill Orlig	<p>Located 13.9 km at its nearest point to the north west of the proposed turbines. This Core Path accesses the small Hill of Orlig and transmitter mast. As a result of the slight increase of elevation, open and extensive views of the surrounding farmland can be experienced including distant views to the south across the peatlands of the Flow Country towards the Lone Mountains.</p>	High	<p>The Proposed Development would be viewed to the south and extend turbines eastwards from the Group 1 developments, appearing a part of the same cluster.</p> <p>All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 11.3 km.</p>	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium-low due to distance which reduces the size and scale of the change.	<p>This route is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>Scenario 2 and 3 developments would form distant features within views from this Core Path. The introduction of the Proposed Development to this baseline would result in the same levels of effects assessed for Scenario 1.</p>
60 – Ben Dorrery	<p>Located 12.9 km at its nearest point to the north west of the proposed turbines, this Core Path accesses the hill of Ben Dorrery.</p> <p>Due to its elevation and the surrounding landscape being low-lying, extensive panoramic views of the Caithness landscape can be obtained, including the coastline and sea to the north and east across foreground farmland, and the peatlands forming the Flow Country to the south, backdropped by the lone mountains.</p>	High	<p>The Proposed Development would be seen to the south east within the existing cluster of operational wind farms and beyond the foreground turbines. The proposed turbines would be noticeably taller owing to their greater height in comparison to the operational sites.</p> <p>Owing to the proposed turbine occupying the horizon. Turbines would sit within the existing Halsary cluster, and ground level infrastructure will be screened by the foreground conifer forestry.</p>	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium-low due to distance which reduces the size and scale of the change.	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Medium-low magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. The effect is considered to be significant as a consequence of the elevated views obtained and lack of screening where all seven turbines would be visible in their entirety.</p> <p>Effects would be short-term during construction and decommissioning, and</p>	<p>Scenario 2 developments would further increase the number of turbines forming the Scenario 1 cluster to the south east, with Golticlay extending turbines further south beyond this cluster, and Slickly to the east increasing the size of Stroupster.</p> <p>The addition of the Proposed Development to this baseline would not result in an increase in the magnitude or effects assessed for Scenario 1.</p> <p>Scenario 3 developments would result in the addition of Tormsdale to the baseline scenario, this would be closer to the</p>

Route Receptor	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
	<p>Due to its elevation, the majority of operational wind farms are visible, the most prominent of these are the Group 1 developments to the south east, with Camster and Group 2 forming a distant cluster beyond.</p> <p>During hours of darkness, the influence of artificial lighting is limited owing to the viewpoint being more isolated away from built development. Lighting sources can be observed from isolated properties, larger settlements including skyglow from Thurso and Wick, and vehicles travelling of the network of roads to the north, east and south of the viewpoint location. Figures 6.22a-f: Viewpoint 6: Ben Dorrery is a representation of the baseline view.</p>		<p>All seven of the aviation lights would be visible from this location at angles between 0° to 3° resulting in light intensities of 200 ca (poor visibility) at a distance of 14.0 km.</p> <p>Figures 6.22a-f: Viewpoint 6: Ben Dorrery is a representation of the Proposed Development.</p>		<p>long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>viewpoint location, more prominent as a result of its closer proximity, and extend turbines in the view further west, infilling a gap between Bad a Cheo and Golticlay.</p> <p>The introduction of the Proposed Development to this baseline scenario would further increase the number of turbines viewed within the foreground cluster. However, it is not considered that this would lead to an increase in magnitude and effect.</p>
61 – Causeymire Wind Farm	<p>This Core Path utilises the access tracks between turbines within the Causeymire Wind Farm.</p> <p>Open views of the surrounding farmland to the north and peatlands to the south including distant views of the Lone Mountains can be obtained. Wind turbines and the supporting infrastructure form a key feature within views alongside neighboring developments of Achlachan I, Bad a Cheo and Halsary.</p>	High	<p>The Proposed Development would be seen beyond Bad a Cheo and Halsary developments adding to the cluster of turbines further to the east of the A9 road.</p> <p>All seven of the aviation lights would be visible, with some flickering occurring as a result of turbine blades passing in front of the lights.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low due to the Proposed Development being viewed beyond the existing cluster of Group 1 developments.</p>	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse and not significant effect during construction/decommissioning, and operation and maintenance phases. The effect is considered to not be significant as wind turbines and the supporting structure are key features of the view.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>Scenario 2 baseline would result in further turbines to the north in Achlachan II, and 3 further turbines to the south – Tachur.</p> <p>Scenario 3 would result in turbines further to the west and prominent as a result of Tormsdale.</p> <p>As stated, for the assessment of Scenario 1, turbines and supporting infrastructure are key features within views from this wind farm and it is not considered that there will be an increase in effect as a result of the Proposed Development.</p>
64 – Achnarras Quarry	<p>Achnarras Quarry is a nature reserve for fossils and is designated as a Special Site of Scientific Interest S(SSi).</p> <p>Operational wind farms are a common feature and close views Group 1 developments can be viewed to the south east.</p>	High	<p>Widespread theoretical visibility of the Proposed Development is predicted within from the footpath where the proposed turbines would be viewed beyond the Group 1 developments extending turbines further east away from the footpath.</p> <p>Aviation lights would be visible at angles between -0° to -2° resulting in light intensities of 200 to 8 ca and viewed within the context of vehicles travelling along the A9.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium due to proximity and the proposed turbines extending the current horizontal extent of operational turbines.</p>	<p>This route is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>Scenario 2 developments would include Achlachan II which would infill a gap between Achlachan I and Causeymire, Tachur on the southern extent of Bad a Cheo but more distant, and Golticlay forming a distant standalone development 2 to the south east.</p> <p>This would result in a further increase the number of turbines forming the Group 1 cluster by six turbines.</p> <p>The addition of the Proposed Development to this baseline would be similar to that assessed for Scenario 1, where the proposed turbines would be visible beyond the existing cluster and further away from the Core Path.</p>

Route Receptor	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
65 – The Old Quarry	<p>The Old Quarry is located to the west of Spittal Museum and Community Centre. Views from the path are generally open with some screening occurring from landform and vegetation.</p> <p>Operational wind farms are a common feature and close views Group 1 developments can be viewed to the south east.</p>	High	<p>Widespread theoretical visibility of the Proposed Development is predicted from the footpath where the proposed turbines would be viewed beyond the Group 1 developments extending turbines further east away from the footpath.</p> <p>Aviation lights would be visible at angles between -0° to -2° resulting in light intensities of 200 to 8 ca and viewed within the context of vehicles travelling along the A9.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium due to proximity and the proposed turbines extending the current horizontal extent of operational turbines.</p>	<p>This route is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>Scenario 3 would result in further turbines being located to the west of Causeymire in the form of Tormsdale although existing forestry would screen the extent of views and would not increase the effects assessed for Scenario 1.</p> <p>Scenario 2 developments would include Achlachan II which would infill a gap between Achlachan I and Causeymire, Tachur on the southern extent of Bad a Cheo but more distant, and Golticlay forming a distant standalone development to the south.</p> <p>This would result in a further increase the number of turbines forming the Group 1 cluster by six turbines.</p> <p>The addition of the Proposed Development to this baseline would be similar to that assessed for Scenario 1, where the proposed turbines would be visible beyond the existing cluster and further away from the Core Path.</p> <p>Scenario 3 would result in further turbines being located to the west of Causeymire in the form of Tormsdale although existing forestry would partially screen the extent of views and would not increase the effects assessed for Scenario 1.</p>
70 – Dirlot Gorge Egress / Ingress	<p>Located 6.5 – 8.7 km at its nearest point to the south west of the proposed turbines, this Core Path accesses Dirlot Gorge.</p> <p>Due to its elevation and the surrounding landscape being low-lying, extensive panoramic views can be obtained, including the peatlands forming the Flow Country to the south, backdropped by the lone mountains.</p> <p>Group 1 developments to the north east, are the most prominent from the two short sections of Core Path</p> <p>During hours of darkness, the influence of artificial lighting is limited owing to the viewpoint being more isolated away from built development. Lighting sources can be observed from isolated properties, larger settlements including skyglow from Thurso and Wick, and vehicles</p>	High	<p>The Proposed Development would be viewed beyond the existing cluster of Group 1 developments appearing as part of a larger development, and partially screened by the foreground turbines.</p> <p>All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 11.3 km and would appear as blinking lights on account of the rotating blades of the foreground turbines. Figures 6.30a-g proved a representation of the Proposed Development.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low due to the Proposed Development being viewed beyond the existing cluster of Group 1 developments.</p>	<p>This route is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This is due to being viewed beyond the existing cluster of turbines, some of which would screen the proposed turbines.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>Scenario 2 would include Achlachan II, Tachur, and the more distant Camster II, visible above the ridgeline forming part of the existing Group 1 and 2 developments, and Golticlay further to the east.</p> <p>The introduction of the Proposed Development to this baseline would not result in an increase to the magnitude or effects assessed for Scenario 1 for the same reasons provided due to being located further away behind Group 1 developments.</p> <p>Scenario 3 baseline would include Tormsdale which be closer to this route and more prominent with hubs and blades visible above the ridgeline to the north east, appearing as part of the existing Scenario 1 and 2 cluster.</p> <p>It is not considered that the Proposed Development would result in an increase</p>

Route Receptor	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
	travelling of the network of roads to the north and east.					to the magnitude and effects for the reasons stated.
105 – Achavanich and Munsary	Located 5.6 km at its nearest point to the south of the proposed turbines. Open view of the surrounding farmland and peatland can be obtained with forestry to the north along the ridgeline. Group 1 developments are prominent from this location and viewed above forestry to the north.	High	The Proposed Development would be visible to the north extending turbines further east from the Group 1 developments and seen above forestry. All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca.	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium due to proximity and the proposed turbines extending the current horizontal extent of operational turbines.	This route is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.	Scenario 2 developments would include the more distant Achlachan II which would infill a gap between Achlachan I and Causeymire, Tachur on the southern extent of Bad a Cheo and prominent but more distant, and Golticlay forming a distant standalone development to the south east. This would result in a further increase the number of turbines forming the Group 1 cluster by six turbines. The addition of the Proposed Development to this baseline would be similar to that assessed for Scenario 1, where the proposed turbines would be visible beyond the existing cluster and further away from the Core Path. Scenario 3 would result in further turbines being located to the west of Causeymire in the form of Tormsdale although existing forestry would partially screen the extent of vies and would not increase the effects assessed for Scenario 1.
126 – Blingrey Forest	Located 7.4 km at its nearest point to the south east of the proposed turbines, this track passes through Camster Forest but obtains open views at its western extent next to Camster Wind Farm. Open views of the surrounding peatland and farmland including distant views to the south west of the Lone Mountains can be obtained. Wind turbines and the supporting infrastructure of Camster form a key feature within views alongside neighboring developments of Group 2 developments. Elsewhere, views are curtailed as a result of forestry.	High	The Proposed Development would be seen beyond Camster in front of Group 1 developments to the west from a short section of the Core Path but otherwise screened by foreground forestry. All seven of the aviation lights would be visible, with some flickering occurring as a result of turbine blades passing in front of the lights.	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low due screening for much of the Core Path.	This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse and not significant effect during construction/decommissioning, and operation and maintenance phases. The effect is considered to not be significant as wind turbines and the supporting structure are key features of the view. Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.	Scenario 2 baseline would result in further turbines on either side of the Core Path in the form of Camster II which would infill a gap between Camster I and Group 2 developments. To the west in Achlachan II, and Tachur would increase the Group 1 developments, Tachur, extending turbines further south. Scenario 3 developments would be barely perceptible from the Core Path due to distance and screening by forestry. As stated, for the assessment of Scenario 1, turbines and supporting infrastructure are key features within views from the Core Path and it is not considered that there will be an increase in effect as a result of the Proposed Development.
158 – Watten Roadside Link to Loch Watten 160 – Sports Pitch	These Core Paths are located in and around Watten. Wind turbines tend to be partially visible from the Core Paths in the mid-ground and influenced by screening from trees and woodland.	High	The Proposed Development would be closer to the settlement and more prominent than the operational schemes. This would include views of all seven turbines but influenced by a combination	The addition of the Proposed Development to the baseline would result in turbines being more prominent within the view from the southern part of the village, albeit influenced by filtering	These Core Paths are assessed as having a High sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect during	The majority of Scenario 2 developments would be screened by a combination of landforms and buildings, the exception being Camster II which would occupy a gap between Group 2

Route Receptor	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
<p>161 – Watten to Camster Roadend Link</p> <p>162 – Watten Riverside Link</p>	<p>Nevertheless, the upper parts of the Halsary turbines can be seen to the south west, and Group 2 developments to the south east. Figures 6.24a-f provide baseline context.</p>		<p>of screening by landform and filtering by trees. The turbine bases and infrastructure would be completely screened by foreground landform, and the towers and hubs heavily filtered by broadleaf field boundary trees. Figures 6.24a-f provide a representation of the view of the Proposed Development.</p> <p>All seven aviation lights would be visible at angles between -1° to -2° resulting in light intensities of 75 to 8 ca.</p>	<p>from a boundary broadleaf trees. Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium.</p>	<p>construction/decommissioning, and operation and maintenance phases. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>developments and Camster I to the south east.</p> <p>No Scenario 3 wind farms would be visible from this location.</p> <p>It is not considered that there would be an increase in effects assessed for Scenario 1.</p>
<p>177 – Wick to Ackergillshore by Roadside Footway</p>	<p>Located 13.6 km at its nearest point to the east of the proposed turbines.</p> <p>Views from this Core Path tend to be open onto surrounding farmland and Wick Airport.</p> <p>Operational wind farms are a common feature in views to the west and include Group2 developments in the foreground to the west, and beyond Group 1 developments as distant features.</p> <p>During hours of darkness, there are several sources of artificial lighting affecting this location including nearby street lights, Wick Airfield, property lighting, and vehicles travelling along the A99 road. Further afield, views of lights from small settlements and isolated farms can be observed in the landscape to the west.</p>	<p>High</p>	<p>All seven turbines would be visible, forming part of the existing operational cluster of wind farms to the west and appear as part of a larger Group 1 development as a distant feature.</p> <p>All seven of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 13.6 km and beyond.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low due to distance from the Proposed Development which reduces the size and scale of the change.</p>	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases.</p> <p>Effects would be short-term during construction and decommissioning, and long-term during operation. This would be reversible following decommissioning where no components of the Proposed Development would be visible from this route.</p>	<p>Scenario 2 wind farms would form distant features with Cogle Moss to the north east, and Camster II being the most prominent.</p> <p>Scenario 3 developments would be barely perceptible due to distance. It is not considered that the introduction of the Proposed Developments to these baselines would increase the effects assessed for Scenario 1.</p>

A6.4. Summary

A6.4.1. Table A6.3 provides a summary of the assessment of sequential routes undertaken in this Technical Appendix.

Table A6.3: Sequential Routes Summary Table

Sequential Route	Sensitivity	Magnitude of Change	Significance of Effect	Cumulative Effects – Scenario 2	Cumulative Effects – Scenario 3
Road Receptor					
A9	Medium	Medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
A99	High	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate-minor (not significant)
A882	Medium	Medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
B870	Medium	Medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
B874	Medium	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate-minor (not significant)
B876	Medium	Low	Moderate-minor (not significant)	Moderate-minor (not significant)	Moderate-minor (not significant)
Railway Receptor					
Inverness to Thurso / Wick Railway Line	High	Low	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)
Core Path Receptor					
8 – Loch More to Altnabreac	High	Low	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)
10 – Loch More to Dalnawillan	High	Low	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)
17 – Hill Orlig	High	Medium-low	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)
60 – Ben Dorrery	High	Medium-low	Moderate (significant)	Moderate (significant)	Moderate (significant)
61 – Causeymire Wind Farm	High	Low	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)
64 – Achnarras Quarry	High	Medium	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)

Sequential Route	Sensitivity	Magnitude of Change	Significance of Effect	Cumulative Effects – Scenario 2	Cumulative Effects – Scenario 3
65 – The Old Quarry	High	Medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
70 – Dirlot Gorge Egress / Ingress	High	Low	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)
105 – Achavanich and Munsary	High	Medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
126 – Blingrey Forest	High	Low	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)
158 – Watten Roadside Link to Loch Watten	High	Medium	Moderate (significant)	Moderate (significant)	Moderate (significant)
160 – Sports Pitch					
161 – Watten to Camster					
162 – Watten Riverside Link					
177 – Wick to Ackergillshore by Roadside Footway	High	Low	Moderate (not significant)	Moderate (not significant)	Moderate (not significant)

Appendix 6.8

Settlement Assessment

Contents

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Glossary

Term	Definition
Direct effect	<i>'An effect that is directly attributable to the proposed development.'</i> **
Environmental Impact Assessment (EIA)	Environmental Impact Assessment (EIA) is a means of drawing together by the developer, in a systematic way, a description of the development and information relating to an assessment of the likely significant environmental effects arising from the Proposed Development.
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5.
Garden and Designed Landscape	A garden or landscape included in Historic Environment Scotland's Inventory of Gardens and Designed Landscapes <i>'The inventory recognises grounds intentionally laid out for artistic effect which are of national importance.'</i> (HES, 2019)
Indirect effects	<i>'Indirect effects that result indirectly from the proposed project as a consequence of the direct effects., often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.'</i> **
Landform	<i>'The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.'</i> **
Landscape	<i>'An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.'</i> **
Landscape & Visual Impact Assessment (LVIA)	<i>'A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.'</i> **
Landscape effects	<i>'Effects on the landscape as a resource in its own right.'</i> **
Landscape receptors	<i>'Defined aspects of the landscape resource that have the potential to be affected by a proposal'</i> **
National Scenic Area	National Scenic Area (NSAs) are described as areas <i>'of outstanding scenic value in a national context'</i> , for which special protection measures are required.' (Town and Country Planning. (Scotland) Act 1997 as amended)
Special Landscape Area	Special Landscape Areas (SLAs) are regionally valuable landscapes identified to protect and enhance landscape qualities and promote their enjoyment.
The Proposed Development	The proposed Watten Wind Farm development
The Proposed Development Area	The area within the red line boundary where the Proposed Development will be located

Wild Land Area Wild Land Areas (WLAs) are the most extensive areas of high wildness. They are identified as nationally important in Scottish Planning Policy but are not a statutory designation.

* Taken from *Guidelines for Landscape and Visual Impact Assessment, Third Edition*. 2013

List of Abbreviations

Abbreviation	Description
EIAR	Environmental Impact Assessment Report
GDL	Garden and Designed Landscape
L VIA	Landscape and Visual Impact Assessment
NSA	National Scenic Area
SNH	Scottish Natural Heritage (now NatureScot)
SLA	Special Landscape Area
WLA	Wild Land Area
ZTV	Zone of Theoretical Visibility

A6.1. Introduction

A6.1.1. This Appendix supports Chapter 6: Landscape and Visual of the Environmental Impact Assessment Report (EIAR) for Watten Wind Farm (the Proposed Development). The appendix includes a preliminary assessment of settlements within the 15 km study area and identifies which are to be scoped in and out of the Landscape and Visual Impact Assessment (LVIA), followed by a detailed assessment.

A6.1.2. This Appendix should be read in conjunction with the following EIAR documents:

- Appendix 6.1: LVIA Methodology;
- Figure 6.1: LVIA and Cumulative Study Areas;
- Figure 6.3a : Zone of Theoretical Visibility to Tip Height (A3 Size);
- Figure 6.3b: Zone of Theoretical Visibility to Tip Height (A0 Size);
- Figure 6.4: Zone of Theoretical Visibility to Hub Height;
- Figure 6.5: Horizontal Angle Zone of Theoretical Visibility;
- Figures 6.6a-h – Aviation Lighting Intensity ZTV; and
- Figure 6.10 – Visual Receptors.

A6.2. Preliminary Assessment of Settlements

A6.2.1. Settlements have been identified within 15 km of the Proposed Development following a desk-top review of Ordnance Survey 1:50,000 and 1:25,000 mapping, a review of the Zone of Theoretical Visibility (ZTVs), and site visit to verify the extent of visibility of the Proposed Development.

A6.2.2. Table A6.1 provides an overview of the extent of theoretical visibility for each route identified and justification for being scoped in or out of the LVIA.

Table A6.1: Preliminary Assessment of Settlements within 15 km

Settlements	Extent of Theoretical Visibility	Included in the Assessment
Watten	Located 3.5 km to the north of the Proposed Development, the ZTV indicates theoretical visibility of all 7 turbines.	Yes , due to the close proximity of the settlement to the Proposed Development and widespread theoretical visibility predicted.
Bylbster Mains	This settlement is situated 4.6 km to the north east of the Proposed Development and is predicted to receive theoretical visibility of all 7 turbines proposed.	Yes , due to the close proximity of the settlement to the Proposed Development and widespread theoretical visibility predicted.
Spittal	Located 4.2 km to the north west of the Proposed Development, theoretical visibility of all 7 turbines is predicted.	Yes , due to the close proximity of the settlement to the Proposed Development and widespread theoretical visibility predicted.

Settlements	Extent of Theoretical Visibility	Included in the Assessment
North Watten / Cachory / Brabertdorran / Myrelandhorn	Comprises several linear settlements located 6.6 km to the north east of the Proposed Development. Theoretical visibility is predicted to be widespread.	Yes , due to the close proximity of the settlement to the Proposed Development and widespread theoretical visibility predicted.
Westerdale	Situated 6.6 km to the west of the Proposed Development and predicted to receive theoretical visibility of all 7 turbines.	Yes , due to the close proximity of the settlement to the Proposed Development and widespread theoretical visibility predicted.
Georgemas Junction	Located 9.0 km to the north west of the Proposed Development, theoretical visibility is predicted of all 7 turbines proposed.	Yes , due to the widespread theoretical visibility predicted.
Durran	Situated 11.8 km to the north of the Proposed Development, the ZTV indicates widespread theoretical visibility.	Yes , due to the widespread theoretical visibility predicted.
Bower	Located 12.1 km to the north east of the Proposed Development, theoretical visibility is predicted to be limited.	No.
Lyth / Howth	Situated 12.5 km to the north east of the Proposed Development, the ZTV indicates widespread theoretical visibility.	Yes , due to the widespread theoretical visibility predicted.
Killmster / Reiss	Located 10.5 km to the north east of the Proposed Development, theoretical visibility is predicted of all 7 turbines proposed.	Yes , due to the widespread theoretical visibility predicted.
Wick / Milton	Located 12.5 km to the east of the Proposed Development, theoretical visibility is predicted of all 7 turbines proposed.	Yes , due to the widespread theoretical visibility predicted.
Halkirk	Situated 9.8 km to the north west of the Proposed Development, the ZTV indicates widespread theoretical visibility.	Yes , due to the widespread theoretical visibility predicted.
Raggra / Gansclet	Located 12.2 km to the south east of the Proposed Development, no theoretical visibility is predicted.	No.
Upper Lybster	Situated 13.5 km to the south west of the Proposed Development, no theoretical visibility is predicted.	No.

A6.2.3. Of the fourteen route receptors identified within 15 km study area, the following have been taken forward for detailed assessment:

- Watten;
- Bylbster Mains;
- Spittal;
- North Watten / Cachory / Brabertdorran / Myrtledhorn;
- Westerdale;
- Georgemas Junction;
- Durran;
- Lyth / Howth;
- Killmster / Reiss; and
- Wick / Milton; and

- Halkirk.

A6.3. Detailed Assessment of Settlements Routes

A6.3.1. The following tables set out the baseline, sensitivity, magnitude of change and overall effect to views from each settlements carried forward for assessment.

A6.3.2. All settlements are assessed as having a **High** sensitivity to change as it is considered that the receptors attention will be on the surrounding landscape.

Table A6.1: Assessment of Settlements

Settlement	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
Watten	<p>Located 3.5 km to the north of the Proposed Development, this settlement is orientated east to west along the B870 road. Rising topography to the south of the settlement restricts the extent of the view in combination with woodland and field boundary trees resulting in a series of ridgelines backdropped by higher ground, elsewhere, trees and buildings restrict views.</p> <p>Operational wind farms are a visible presence in views from the southern part of the village, are set back and partially screened and filtered by trees. These include heavily filtered views of Halsary, Bad a Cheo to the south, and Wathegar I and II to the south east of the village.</p> <p>During hours of darkness, artificial lighting would be from nearby properties.</p>	High	<p>The Proposed Development would be closer to the settlement and more prominent than the operational schemes. This would include views of all 7 turbines but influenced by a combination of screening by landform and filtering by trees. The turbine bases and infrastructure would be completely screened by foreground landform, and the towers and hubs heavily filtered by broadleaf field boundary trees, the exception being turbines 1 and 2 which would be seen above the canopy.</p> <p>All 7 aviation lights would be visible at angles between -1° to -3° resulting in light intensities of 75 to 8 ca. With the exception of turbines 1 and 2, this would be filtered by trees. Figures 6.24a-f provide a representation of the Proposed Development.</p>	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium , short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.	This viewpoint is assessed as having a High sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights.	The majority of Scenario 2 developments would be screened by a combination of landforms and buildings, the exception being Camster II which would occupy a gap between the operational sites of Group 2 developments and Camster I to the south east of the settlement. No Scenario 3 developments would be visible from this location. It is not considered that the introduction of the Proposed Development would result in an increase in significance assessed for Scenario 1.
Bylbster Mains	<p>This settlement is linear and spread out along the B870 road 4.6 km to the north east of the Proposed Development. Views from this settlement include glimpses of farmland rising to a low-lying ridgeline to the south with trees and coniferous forestry terminating views further afield.</p> <p>Operational wind farms are visible to the south and include Causeymire which is partially visible between two coniferous plantations, and Wathegar I and II and Bilbster which are the most prominent. Sources of artificial lighting include vehicles travelling along the road, properties and skyglow from Wick to the east.</p>	High	<p>The Proposed Development would be seen in the foreground of the existing Group 1 developments, much of which are screened by coniferous forestry. The proposed turbines would be partially visible above this,</p> <p>All 7 of the aviation lights would be visible from this location at angles between -1° to -3° resulting in light intensities of 75 to 8 ca.</p>	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Medium , short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.	This viewpoint is assessed as having a Medium sensitivity to change, combined with a Medium magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. The effect is considered to be significant as a result of the proximity of the development to the viewpoint location, combined with the size and scale of the change in view.	Several of the Scenario 2 wind farms would be screened by a combination of screening from the roadside hedgerow and coniferous forestry. Scenario 2 developments to the south and south east would be partially visible and include Camster II and Golticlay in the distance. It is not considered that the introduction of the Proposed Development to the baseline would lead to an increase in effect assessed for Scenario 1. No Scenario 3 developments would be visible from this location.
Spittal	<p>Located 4.2 km to the north west of the Proposed Development, this settlement is orientated north to south along the A9 road</p> <p>Views from this location tend to be east and west onto the surrounding farmland. Operational wind farms are a common feature in views to the south, the most prominent being Group 1 developments to the south.</p> <p>Artificial lighting is limited to vehicles travelling along the road as well as lights</p>	High	<p>The Proposed Development would extend turbines eastwards from the Group 1 cluster, albeit partially screened by intervening forestry. This would include views of all 7 turbines but influenced by a combination of screening by landform and filtering by trees.</p> <p>Aviation lights would be visible at angles between -1° to -2° resulting in light intensities of 75 to 8 ca.</p>	Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low , short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.	This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases. This is due to the proximity of the Proposed Development to the viewpoint, and extension of effect during hours of darkness by aviation lights.	The majority of Scenario 2 developments would be screened by a combination of landform and forestry, the exception being Achlachan II which would be seen within the Achlachan I and Camster cluster. It is not considered that there would be an increase in effects assessed for Scenario 1.

Settlement	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
<p>North Watten / Cachory / Brabertdorran / Myrtledhorn</p>	<p>from nearby properties at Spittal and close to the road junction with the A870.</p> <p>Comprises several linear settlements located 6.6 km to the north east of the Proposed Development on slightly elevated land and is orientated north to south and north east to south west. This allows extensive views to the south including the flat peatlands of the Flow Country towards the Lone Mountains.</p> <p>Several operational wind farms are visible to the south and include both Group 1 and 2 developments.</p> <p>Dark skies mapping shows that the viewpoint location is situated in an area of relative darkness. Sources of artificial lighting include nearby Watten, scattered properties, Ruther Quarry and vehicles travelling along the A882, B870 and several nearby minor roads.</p>	<p>High</p>	<p>The Proposed Development would be seen to the south west occupying the ridgeline, where it would appear in the foreground of Halsary and extend turbines eastwards.</p> <p>During periods of darkness and poor visibility, all 7 aviation lights would be visible from the viewpoint location between 200 – 75 ca at a distance of 6.7 km.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as High-medium, short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.</p>	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a High-medium magnitude of change resulting in a Major-moderate adverse significant effect during construction/decommissioning, and operation and maintenance phases.</p>	<p>Scenario 2 wind farms visible from this location include Cogle Moss to the south east, which would be prominent due to proximity to the viewpoint location, Camster II which would be seen within the existing Group 2 cluster to the south, and Golticlay partly infilling a gap between the operational cluster to the west which would include Tachur and Achlachan II leading to a slight increase in turbines forming the cluster.</p> <p>The addition of the Proposed Development to this baseline would increase the number of turbines viewed successively, where Cogle Moss would be the closest and most prominent development, followed by the Proposed Development which would be viewed in front of the existing Scenario 1 and 2 clusters.</p> <p>Magnitude of change would increase to High resulting in a Major significant adverse effect.</p> <p>Scenario 3 baseline would include Tormsdale which would be predominantly screened due to landform with a few blade tips being visible above the ridgeline.</p> <p>Therefore, it is not considered that there would be an increase in cumulative effects for Scenario 3 which are already considered Major and significant for Scenario 2.</p>
<p>Westerdale</p>	<p>Situated 6.6 km to the west of the Proposed Development, this settlement comprises scattered properties along the B870 road. Orientated in a north west to south east direction, open views can be obtained across farmland and peatland.</p> <p>Operational wind farms are a prominent feature in views to the east and include close views of Group 1 turbines to the east.</p> <p>Artificial lighting is limited to vehicles travelling along the road as well as lights from nearby properties and close to the road junction with the A9.</p>	<p>High</p>	<p>The Proposed Development would be seen beyond Group 1 developments. .</p> <p>Foreground landform and forestry would reduce the vertical extent of turbines visible.</p> <p>Foreground forestry would screen part of the towers although all 7 of the hubs would be visible above forestry.</p> <p>All 7 of the aviation lights would be visible at angles of between -1° to -2° resulting in light intensities of 75 to 8 ca. at a distance of 6.7 km.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.</p>	<p>This viewpoint is assessed as having a Medium sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This is due to screening by landform and forestry.</p>	<p>The majority of Scenario 2 developments would be screened by a combination of landform and forestry, the exception being Achlachan II which would be seen within the Group 1. It is predicted that Tachur and Golticlay would also be visible, however, the small number of turbines of Tachur, and distance of Golticlay, it is not considered that the addition of the Proposed Development would result in an increase in magnitude or effect. The addition of Scenario 3 wind farms would result in close views of Tormsdale which would form a standalone development and extend turbines further south in the view.</p>

Settlement	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
Georgemas Junction	<p>Located 9.0 km to the north west of the Proposed Development, Views from this settlement are limited by buildings, vegetation and railway infrastructure.</p> <p>To the west, the blade tips of Causeymire and Achlachan operational wind farms are visible breaking the skyline.</p> <p>During hours of darkness, there are several sources of artificial lighting affecting this location including nearby lights associated with the railway line, nearby properties, and vehicles travelling along the A9 road. Further lights would be observed of trains on the Inverness to Wick railway line, although the service is limited. Further afield, views of lights from small settlements and isolated farms can be observed in the landscape to the south.</p>	High	<p>The blade tips of the proposed turbines would be visible to the south east, The Proposed Development would be predominantly screened from this location by landform and the size and scale of the change in view would be minimal. No aviation lights would be visible from this location.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.</p>	<p>This viewpoint is assessed as having a Medium sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This is due to screening by landform and forestry.</p>	<p>The introduction of the Proposed Development would not result in an increase in magnitude and effect.</p> <p>Scenario 2 would result in a further two wind farms being theoretically visible, Achlachan II to the south west which would be seen against the existing Achlachan and Causeymire operational developments, and Cogle Moss and Slickly to the north east. In reality, only the blades of Achlachan II would be visible with the other two wind farms being screened by intervening woodland.</p> <p>The introduction of the Proposed Development to this baseline would not result in an increase in magnitude or effects.</p> <p>One application site would be visible, Tormsdale to the south west. This would extend turbines further west in the view, although only the blades tips of some of the turbines would be visible.</p> <p>The introduction of the Proposed Development into this baseline scenario would not increase the effects assessed for Scenario 1 and 2.</p>
Durran	<p>Situated 11.8 km to the north of the Proposed Development. Comprises scattered properties of mixed orientation on slightly elevated land This allows extensive views to the south including the flat peatlands of the Flow Country towards the Lone Mountains.</p> <p>Several operational wind farms are visible to the south and include both Group 1 and 2 developments.</p> <p>Dark skies mapping shows that the viewpoint location is situated in an area of relative darkness. Sources of artificial lighting include nearby settlements, scattered properties and vehicles of roads.</p>	High	<p>The Proposed Development would be seen to the south west occupying the ridgeline, where it would appear in the foreground of Halsary and extend turbines eastwards although these views would be partially screened by foreground forestry.</p> <p>During periods of darkness and poor visibility, all 7 aviation lights would be visible from the viewpoint location between 200 – 75 ca.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.</p>	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This effect is considered to be not significant as a result of screening and distance from the Proposed Development.</p>	<p>The addition of the Proposed Development to the Scenario 2 baseline would increase the number of turbines viewed successively, where Cogle Moss would be the closet and most prominent development, followed by the Proposed Development which would be viewed in front of the existing Group 1 development extending it eastwards.</p> <p>Scenario 3 baseline would include Tormsdale which would be predominantly screened due to landform with a few blade tips being visible above the ridgeline.</p> <p>It is not considered that there would be an increase in the assessment of Scenario 1.</p>
Lyth / Howth;	<p>Situated 12.5 km to the north east of the Proposed Development is a scattered linear settlement located to the north east. Mainly orientated north east to south west, views are onto the surrounding farmland with some distant views towards the Flow Country and</p>	High	<p>The Proposed Development would be seen to the south west occupying the ridgeline, where it would appear in the foreground of Halsary and extend turbines eastwards although these views would be partially screened by foreground forestry.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be</p>	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This</p>	<p>The addition of the Proposed Development to the Scenario 2 baseline would increase the number of turbines viewed successively, where Cogle Moss would be the closet and most prominent development, followed by the Proposed Development which would be viewed in</p>

Settlement	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
	<p>Lone Mountains to the south. Forestry within the surrounding landscape influences the extent of views.</p> <p>visible to the south and include both Group 1 and 2 developments.</p> <p>Dark skies mapping shows that the viewpoint location is situated in an area of relative darkness. Sources of artificial lighting include nearby settlements, scattered properties, and vehicles of roads.</p>		<p>During periods of darkness and poor visibility, all 7 aviation lights would be visible from the viewpoint location between 200 – 75 ca.</p>	<p>reversible following decommissioning where no components of the Proposed Development would be visible.</p>	<p>effect is considered to be not significant as a result of screening and distance from the Proposed Development.</p>	<p>front of the existing Group 1 development extending it eastwards.</p> <p>Scenario 3 baseline would include Tormsdale which would be predominantly screened due to landform with a few blade tips being visible above the ridgeline.</p> <p>It is not considered that there would be an increase in the assessment of Scenario 1.</p>
Killmster / Reiss	<p>Located 10.5 km to the north east of the Proposed Development, theoretical visibility is predicted of all 7 turbines proposed.</p> <p>The settlement is linear, scattered and orientated north east to south west with views are onto the surrounding farmland with some distant views towards the Flow Country and Lone Mountains to the south, and north sea to the east. Forestry within the surrounding landscape influences the extent of views.</p> <p>visible to the south and include both Group 1 and 2 developments.</p> <p>Dark skies mapping shows that the viewpoint location is situated in an area of relative darkness. Sources of artificial lighting include nearby settlements, scattered properties, and vehicles of roads.</p>	High	<p>The Proposed Development would be seen to the south west occupying the ridgeline, where it would appear in the foreground of Halsary and extend turbines eastwards although these views would be partially screened by foreground forestry.</p> <p>During periods of darkness and poor visibility, all 7 aviation lights would be visible from the viewpoint location between 200 – 75 ca.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.</p>	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This effect is considered to be not significant as a result of screening and distance from the Proposed Development.</p>	<p>The addition of the Proposed Development to the Scenario 2 baseline would increase the number of turbines viewed successively, where Cogle Moss would be the closet and most prominent development directly to the west, followed by the Proposed Development which would be viewed in front of the existing Group 1 development extending it eastwards.</p> <p>Scenario 3 baseline would include Tormsdale which would be predominantly screened due to landform with a few blade tips being visible above the ridgeline.</p> <p>It is not considered that there would be an increase in the assessment of Scenario 1.</p>
Wick / Milton	<p>Located 12.5 km to the east of the Proposed Development, with mixed orientation.</p> <p>Extensive and open views over farmland to the west can be obtained, these are distant and include Group 1 and 2 developments.</p> <p>During hours of darkness, there are several sources of artificial lighting affecting this location including nearby street lights, property lighting, and vehicles travelling along the A99 road. Further afield, views of lights from small settlements and isolated farms can be observed in the landscape to the west.</p>	High	<p>All 7 turbines would be visible, forming part of the Group 1 developments where the proposed turbines would appear as part of a larger wind farm cluster and would be difficult to ascertain as a separate development.</p> <p>All 7 of the aviation lights would be visible at angles between 0° to -1° resulting in light intensities of 200 to 75 ca. at a distance of 14.5 km.</p>	<p>Magnitude of change during construction/decommissioning, and operation and maintenance phases is assessed as Low, short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.</p>	<p>This viewpoint is assessed as having a High sensitivity to change, combined with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases.</p>	<p>Scenario 2 wind farms would predominantly be screened from this location as a result of landform screening. The exception to this would be Camster II and Tachur which would infill the existing cluster of operational wind farms. The introduction of the Proposed Development to this baseline is not considered to result in an increase in magnitude or effect.</p> <p>Scenario 3 would include Tormsdale which would be barely visible due to screening by landform. It is not considered that the introduction of the Proposed Development would lead to an increase in magnitude or effect assessed for Scenario 1.</p>
Halkirk	<p>Located 9.0 km to the north west of the Proposed Development,</p>	High	<p>The proposed turbines would be partially visible to the south east and extend</p>	<p>Magnitude of change during construction/decommissioning, and</p>	<p>This viewpoint is assessed as having a High sensitivity to change, combined</p>	<p>Scenario 2 would result in a further two wind farms being theoretically visible,</p>

Settlement	Baseline	Sensitivity	Predicted View	Magnitude of Change	Effect and Significance	Cumulative Effects
	<p>Located 9.0 km to the north west of the Proposed Development, properties are orientated at several angles and trees provide a degree of screening in views beyond the settlement.</p> <p>To the south, the blade tips of Group 1 developments can be seen breaking the horizon.</p> <p>During hours of darkness, there are several sources of artificial lighting affecting this location including nearby lights associated with the railway line, properties, and vehicles travelling along the road network.</p>		<p>turbines eastwards from the Group 1 developments, This would be partially screened from this location by landform and the size and scale of the change in view would be minimal. No aviation lights would be visible from this location.</p>	<p>operation and maintenance phases is assessed as Low, short-term during construction and decommissioning phases, and long-term during operation and maintenance. This would be reversible following decommissioning where no components of the Proposed Development would be visible.</p>	<p>with a Low magnitude of change resulting in a Moderate-minor adverse not significant effect during construction/decommissioning, and operation and maintenance phases. This is due to screening by landform and forestry.</p>	<p>Achlachan II to the south west which would be seen against the existing Achlachan and Causeymire operational developments, and Cogle Moss and Slickly to the north east. In reality, only the blades of Achlachan II would be visible with the other two wind farms being screened by intervening woodland.</p> <p>The introduction of the Proposed Development to this baseline would not result in an increase in magnitude or effects.</p> <p>One application site would be visible, Tormsdale to the south west. This would extend turbines further west in the view, although only the blades tips of some of the turbines would be visible.</p> <p>The introduction of the Proposed Development into this baseline scenario would not increase the effects assessed for Scenario 1 and 2.</p>

Technical Appendix A6.9

Residential Visual Amenity Assessment

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Glossary

Term	Definition
Direct effect	<i>'An effect that is directly attributable to the proposed development.'</i> *
Environmental Impact Assessment (EIA)	Environmental Impact Assessment (EIA) is a means of drawing together by the developer, in a systematic way, a description of the development and information relating to an assessment of the likely significant environmental effects arising from the Proposed Development.
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 Regulation 5.
Garden and Designed Landscape	A garden or landscape included in Historic Environment Scotland's Inventory of Gardens and Designed Landscapes <i>'The inventory recognises grounds intentionally laid out for artistic effect which are of national importance.'</i> (HES, 2019)
Indirect effects	<i>'Indirect effects that result indirectly from the proposed project as a consequence of the direct effects., often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.'</i> *
Landform	<i>'The shape and form of the land surface which has resulted from combinations of geology, geomorphology, slope, elevation and physical processes.'</i> *
Landscape	<i>'An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors.'</i> *
Landscape & Visual Impact Assessment (LVIA)	<i>'A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.'</i> *
Landscape effects	<i>'Effects on the landscape as a resource in its own right.'</i> *
Landscape receptors	<i>'Defined aspects of the landscape resource that have the potential to be affected by a proposal'</i> *

National Scenic Area	National Scenic Area (NSAs) are described as areas <i>'of outstanding scenic value in a national context', for which special protection measures are required.'</i> (Town and Country Planning. (Scotland) Act 1997 as amended)
Special Landscape Area	Special Landscape Areas (SLAs) are regionally valuable landscapes identified to protect and enhance landscape qualities and promote their enjoyment.
The Proposed Development	The proposed Watten Wind Farm development
The Proposed Development Area	The area within the red line boundary where the Proposed Development will be located
Wild Land Area	Wild Land Areas (WLAs) are the most extensive areas of high wildness. They are identified as nationally important in Scottish Planning Policy but are not a statutory designation.

*Taken from *Guidelines for Landscape and Visual Impact Assessment, Third Edition*. 2013

List of Abbreviations

Abbreviation	Description
CMLI	Chartered Members of the Landscape Institute
EIAR	Environmental Impact Assessment Report
GDL	Garden and Designed Landscape
GLVIA3	Guidelines for Landscape and Visual Impact Assessment, Third Edition
LVIA	Landscape and Visual Impact Assessment
NSA	National Scenic Area
OS	Ordnance Survey
RVAA	Residential Visual Amenity Assessment
SNH	Scottish Natural Heritage (now NatureScot)
SLA	Special Landscape Area
SPP	Scottish Planning Policy
TGN	Technical Guidance Note
THC	The Highland Council
WLA	Wild Land Area
ZTV	Zone of Theoretical Visibility

A6.1. Introduction

- A6.1.1. This Residential Visual Amenity Assessment (RVAA) focusses on the visual amenity of views from residential properties. It is intended to assist the decision maker in a judgement as to the overall effect of the Proposed Development in the planning balance i.e., *'is the effect of the development on Residential Visual Amenity of such nature and / or magnitude that it potentially affects 'living conditions' or Residential Amenity'* (Landscape Institute, 2021).¹
- A6.1.2. Residential amenity comprises a range of sensory components which can be affected by development such as noise, air quality, dust, vibration, traffic, low light levels, shadow flicker and visual amenity, often referred to as *'living conditions'*. This RVAA does not consider or provide information on the other components of residential amenity but concentrates on the potential effects of the visual component of *'residential amenity'* or *'living conditions'*. It is for the decision makers to weigh all the components and assessments relating to residential amenity in determining the acceptability of the Proposed Development.
- A6.1.3. The assessment comprises the following main activities:
- Identification of properties to be considered for detailed visual amenity assessment;
 - Description and evaluation of existing visual amenity (and views) as experienced by people in and around their properties included in the RVAA;
 - Identification and description of components of the Proposed Development that could have potential effects on visual amenity at the property, including aviation lighting;
 - Evaluation of the nature, magnitude of change and overall effect on views and visual amenity at the property; and
 - Provide a reasoned judgement with regard to the effect of the Proposed Development on visual amenity at the property.
- A6.1.4. This Technical Appendix is supported by the following Appendices and Figures:
- Technical Appendix A6.1: LVIA Methodology; and
 - Figure 6.7.2 – 6.7.26: Residential Visual Amenity Figures;

A6.2. Methodology

- A6.2.1. The *Guidelines for Landscape and Visual Impact Assessment, Third Edition* (GLVIA3)² defines people's visual amenity as follows:
- 'the overall pleasantness of the views they enjoy of their surroundings'*
- A6.2.2. The approach to the RVAA accords with the principles and processes of GLVIA3 as follows:
- 'An assessment of visual effects deals with the effects of change on views available to people and their visual amenity. The concern here is with assessing how the surroundings of individuals or groups of people may specifically be affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements.'*

- A6.2.3. GLVIA3 recognises that RVAA is a stage beyond and is distinct from Landscape & Visual Impact Assessment (LVIA), the latter focusing on public amenity and views, whereas the RVAA focuses on private visual amenity at individual properties exclusively. Paragraph 6.17 of GLVIA3 states:

'Effects of development on private property are frequently dealt with mainly through 'residential amenity assessments'. These are separate from LVIA although visual effects assessment may sometimes be carried out as part of a residential amenity assessment, in which case this will supplement and form part of the normal LVIA for a project. Some of the principles set out here for dealing with visual effects may help in such assessments but there are specific requirements in residential amenity assessment.'

- A6.2.4. There is no published formal or statutory guidance available as to how to assess the visual component of living conditions. However, in response the Landscape Institute has published *Technical Guidance Note 2/19: Residential Visual Amenity Assessment* (2019)³ to assist landscape professionals undertaking RVAAs.
- A6.2.5. The Technical Guidance Note (TGN) defines RVAA as:
- 'the overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from gardens and domestic curtilage'*
- A6.2.6. This guidance draws on several previous planning decisions which have become the basis for how decision makers throughout the UK have considered residential visual amenity. The TGN sets out a 4-step process based on the principles and processes established in GLVIA3 as follows:
1. *Definition of study area and scope of the assessment – informed by the description of the proposed development, defining the study area extent and scope of the assessment with respect to the properties to be included.*
 2. *Evaluation of baseline visual amenity at properties to be included having regard to the landscape and visual context and the development proposed.*
 3. *Assessment of likely change to visual amenity of included properties in accordance with GLVIA3 principles and processes.*
 4. *Further assessment of predicted change to visual amenity of properties to be included forming a judgement with respect to the Residential Visual Amenity Threshold.'*

Step 1 – Definition of the study area and scope of the assessment

- A6.2.7. There is currently no published guidance available on the distance from the Proposed Development that should be adopted for a detailed study of visual amenity from residential properties. Scottish Planning Policy (SPP) (2014)⁴ (replaced by National Planning Framework 4, (NPF4)) notes that 2 km from a wind farm development is generally considered appropriate. Following consultation with The Highland Council (THC), a 3 km study area from the outermost turbines of the Proposed Development has been agreed, as shown on Figure 6.7.1.

Step 2 – Evaluation of the Baseline Visual Amenity

- A6.2.8. The TGN sets out the following considerations when evaluating baseline:

¹ Landscape Institute (2019) *Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19* [Online] Available from - <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/03/tgn-02-2019-rvaa.pdf> [Accessed 07/08/2023]

² Landscape Institute, Institute of Environmental Management and Assessment.(2013) *Guidelines for Landscape and Visual Impact Assessment, Third Edition*. Routledge. London.

³ Landscape Institute (2019) *Residential Visual Amenity Assessment (RVAA) Technical Guidance Note 2/19* [Online] Available from - <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/03/tgn-02-2019-rvaa.pdf> [Accessed 07/08/2023]

⁴ Scottish Government (2014) Scottish Planning Policy. Available from - <https://www.gov.scot/publications/scottish-planning-policy/> [Accessed 07/08/2023]

- *'the nature and extent of all potentially available existing views from the property, and its garden / domestic curtilage, including the proximity and relationship of the property to surrounding landform, landcover and visual foci. This may include primary / peripheral views; and*
- *views as experienced when arriving at or leaving the property, for example from private driveways / access tracks.'*

A6.2.9. For the purpose of this assessment, all residential receptors are considered to be of High sensitivity to change in their view. This takes into account that people at their home attach high value to their existing view and visual amenity and are more susceptible to being affected by changes in their visual amenity.

Step 3 – Assessment of likely change to visual amenity of properties

A6.2.10. Step 3 of the assessment follows the principles and processes set out in GLVIA3 in considering the '*nature of the receptor*' (overall sensitivity, comprising value and susceptibility) with the '*nature of effect*'. The aim being to identify properties that require further assessment to establish the Residential Visual Amenity Threshold.

A6.2.11. To understand the effects of changes in views, it is necessary to understand the project components of the Proposed Development which could have potential effects on views. These are described in Chapter 5: Project Description and Chapter 6: Landscape and Visual and summarised below:

- Seven 220 m turbines with aviation mounted lights;
- Associated infrastructure specific to each turbine:
- turbine foundations;
- external transformer housing;
- crane hardstandings and erection areas;
- Onsite substation, control building and compound;
- New and floating access tracks; including watercourse crossings;
- Underground electricity cables connecting infrastructure within the Proposed Development Area;
- Temporary construction and storage compounds and ancillary infrastructure, 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 water drainage;
- Forestry felling and replating.

Description and Evaluation of Effect

A6.2.12. The TGN sets out a framework for describing and evaluating the predicted magnitude of change and visual effects as follows:

- *'Distance of property from the proposed development having regard to its size / scale and location relative to the property (e.g., on higher or lower ground);*
- *Type and nature of the available views (e.g., panoramic, open, framed, enclosed, focussed, etc.) and how they may be affected, having regard to seasonal and diurnal variations);*

- *Direction of view / aspect of property affected, having regard to both the main / primary and peripheral / secondary views from the property;*
- *Extent to which development / landscape changes would be visible from the property (or parts of) having regard to views from principal rooms, the domestic curtilage (i.e. garden) and the private access route, taking into account seasonal and diurnal variations;*
- *Scale of change in views having regard to such factors as the loss or addition of features and compositional changes including the proportion of view occupied by the development, taking account of seasonal and diurnal variations;*
- *Degree of contrast or integration of new features or changes in the landscape compared to the existing situation in terms of form, scale and mass, line, height, colour and texture, having regard to seasonal and diurnal variations;*
- *Duration and nature of the changes, whether temporary or permanent, intermittent or continuous, reversible or irreversible etc.; and*
- *Mitigation opportunities – consider implications of both embedded and potential further mitigation.'*

A6.2.13. Step 3 concludes with a statement on the likely magnitude of change which is informed by the size and scale of the change, geographical extent, the duration of the effect and reversibility. The nature of existing and predicted views (open, enclosed, panoramic, focused, framed etc.) will affect the magnitude of change. Definitions of High, High-medium, Medium, Medium-low, Low, and Negligible/No Change are used to evaluate the magnitude of change.

A6.2.14. The assessment then concludes with a judgement of significance of visual effects using the LVIA methodology detailed in Technical Appendix A6.1: Landscape & Visual Impact Assessment Methodology. Four main levels of visual effect are used: Major, Moderate, Minor and Negligible/No Change, two intermediates of Major-moderate and Moderate-low are also applied. The evaluation of potential effects makes allowance for the use of professional judgement and experience.

A6.2.15. Those effects considered to be **Major**, **Major-moderate** and **some Moderate** effects, by virtue of the more sensitive receptors and the greater magnitude of effects, are considered to be **significant** visual effects. Some Moderate, and all Minor, Minor and Negligible/No Change effects are considered to be not significant visual effects.

A6.2.16. In order to provide a focussed assessment, only those properties that are predicted to experience a significant change in view are considered in Step 4 as detailed below.

A6.2.17. As with the LVIA, the RVAA is based on professional judgements made by Chartered Members of the Landscape Institute (CMLI).

Step 4 – Forming the RVAA Judgement

A6.2.18. Step 4 considers properties identified in Step 3 as receiving a significant effect and forms a judgement regarding the effects of the predicted changes on the visual amenity component of residential amenity to inform the decision maker. The TGN defines this as:

'whether the predicted effects on visual amenity and views at the property are such that it has reached the Residential Visual Amenity Threshold, therefore potentially becoming a matter of Residential Amenity.'

Supporting Information Identification of Properties

A6.2.19. A desk-top review of properties within 3 km of the outermost turbines was undertaken which identified which properties would potentially receive visibility of the Proposed Development. This was followed up by a site visit to verify and deliver letters to residents requesting access.

A6.2.20. An assessment and photography were then undertaken from each property that access was granted. Where no response was received, the assessment and supporting photography was undertaken from the nearest publically accessible locations.

Field Surveys

A6.2.21. Field surveys and photography from each of the properties were undertaken between November 2022 and March 2023. This identified the following:

- the orientation, composition and type of view obtained from each property (including main aspect and direction of windows);
- layout and orientation of the external spaces and gardens associated with the property curtilage;
- views from access leading to and from the property; and
- the likely change to the existing view from each property.

A6.2.22. The field surveys were supported by Zone of Theoretical Visibility (ZTV) mapping and wirelines and considered local variations in landform, tree cover and vegetation, and potential screening by adjacent buildings. The assessments were undertaken from the closest publicly accessible points to the properties or from within the grounds of the property where access was granted by the resident. No properties were inspected internally.

Visualisations

A6.2.23. Ordnance Survey (OS) mapping and online aerial images were used for both the desktop research and to assist with fieldwork. Wireframe visualisations have been prepared for each of the properties using OS grid references selected from OS map data and checked during fieldwork (see Figures 6.7.2 – 6.7.26). Baseline photography from each property or nearest publically available location was undertaken to best practice guidance (NatureScot, 2017)⁵ during the fieldwork.

A6.2.24. Wireframe visualisations were generated using Resoft Wind Farm - Release 4, using a 1.5 metre viewing height and illustrate a bare ground situation which does not consider vegetation, buildings, or variation in local topography. From each property, a 90° (degree) cylindrical projection was produced focused on the Proposed Development and turbines numbered.

Assessment of Effects

A6.2.25. Thirty-two properties were identified as being within 3 km of the turbines of the Proposed Development. Some properties have been grouped together as shown in Table A6.1:

Table A6.1: Properties included in the RVAA

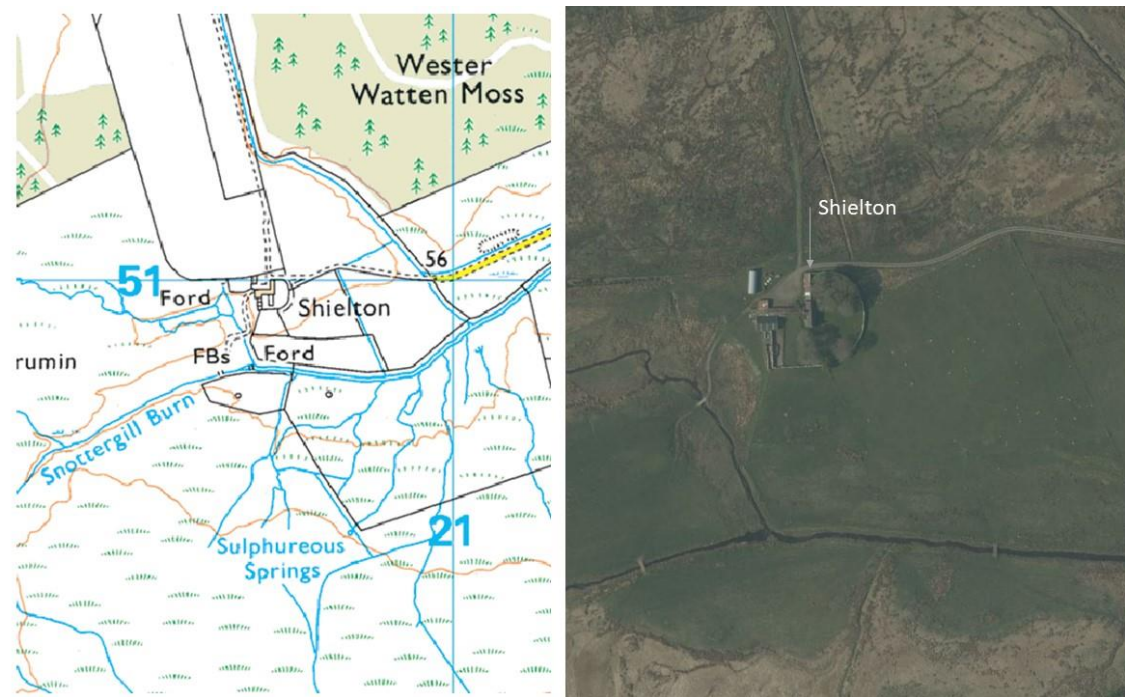
Property No.	Name	Easting	Northing
1	Shielton	320620	950994
2	No 22 West Watten	322120	950994
3	No 19 West Watten	322808	951726
4	No 18 West Watten	322715	951968
5	Scouthal	323720	952996

Property No.	Name	Easting	Northing
6	Millton	324012	953211
7	Achingale (includes Achingale Mill & Nether Banks)	323873	953779
8	Banks/ Properties to the south (Includes Banks & Balvatyn House)	323645	953663
9	West Watten/Strathview Cottage (includes Strathview & No 13 Tri-Deug)	323333	953709
10	Knockfarrie	323100	953739
11	Ballacharn/Aljolithsa	322861	953807
12	14 Watten	322716	953852
13	10 Watten	322821	954393
14	Newton	321665	953983
15	The Smiddy	321025	954077
16	Backlass (new build)	320756	953928
16a	Backlass Cottage	320366	953583
17	Leanmore	320974	953297
18	Houstry of Dunn	320657	954707
19	Backlass Hill Cottage	320426	954034
20	Backlass Croft	319979	954631
21	Balnasmurich/Markethill	319414	954873
22	Lanergill	319084	954440
23	Knockglass	317261	953339

A6.2.26. The following tables set out the assessment for each of the properties assessed in the RVAA.

Table A6.2: Property 1: Shielton Assessment

Property 1: Shielton (Financially Involved) – Figure A6.7.2			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	320620, 950994	Primary outlook:	North and west
Distance to nearest Turbine:	0.25 km	Direction of view to turbines:	North, east, and west
Potential No. of turbines visible:	7	Potential Number of aviation lights visible:	7



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Description of Property, Location and Context:

This property is situated within the Proposed Development Area and is financially involved with the project. This vacant property comprises a 1 storey L shaped cottage with attached outbuildings, located 200 m north of a tributary of the Burn of Acharole at approximately 57 m Above Ordnance Datum (AOD). Orientated in a north to south direction, the primary outlook of this property is to the north and west.

Access to the property is via a shared tarmac single track road leading from the B870 road between Watten and Mybster.

The surrounding landscape is undulating, open and comprises a mixture of moorland and rough grassland, intersected by a network of small burns. Coniferous plantations can be viewed to the south west along the ridgeline.

Description of Existing Views from the Property:

Views from the front of the property are to the north and west across the moorland and rough grassland and filtered by semi-mature deciduous mature trees to the east and south. This property obtains views of Halsary Windfarm 1.5 km west to the west. During hours of darkness, artificial lighting sources are very limited in this location due to its isolation.

Property 1: Shielton (Financially Involved) – Figure A6.7.2

Description of Likely Views of the Development from the Property: All of the proposed turbines would be visible at close distances to the house, garden and access track and viewed within the surrounding rough pasture. Turbines 1 and 2 would be visible to the north east at distances of 1.3 km and 1.2 km, Turbine 3 would be 250 m to the east, Turbines 4, 5 and 6 would be 300m, 860 m and 810 m to the north west, and Turbine 7 690 m to the south west. There would be limited screening to views, the exception being Turbine 6 which is located between two forest plantations which would screen the base of the turbine. No aviation lights would be directly visible as a result of the horizontal angle of the light, although there would be some reflection along the blade as it passes the vertical position.

Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change: The size and scale of the change would be considerable in views from the front of the property and approaching access track. Magnitude of change is **High**, due to the close proximity of the turbines on several sides of the property.

Effect: Sensitivity is considered to be High, which combined with a High magnitude of change results in a **Major** adverse effect and **significant** effect during construction, operation and decommissioning phases. Effects during construction and decommissioning phases will be short-term, and during operation long-term. Following decommissioning, effects will be reversible, the exception being the lower elements including access tracks and turbine foundations which will not be removed.

Step 4: Forming the RVAA judgement

RVAA Judgement There would be a significant effect on views from both within and outside the property with turbines on several sides and close views of turbines would be experienced. This would affect the experience of living in the property and would possibly reduce the number of people interested in living there. Potential effects on residents are considered to be overbearing.

Table A6.3: Property 2: No 22 West Watten Assessment

Property 2: No 22 West Watten - Figure A6.7.3			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	322120, 950994	Primary outlook:	South west- North west
Distance to nearest Turbine:	1.04 km	Direction of view to turbines:	North west
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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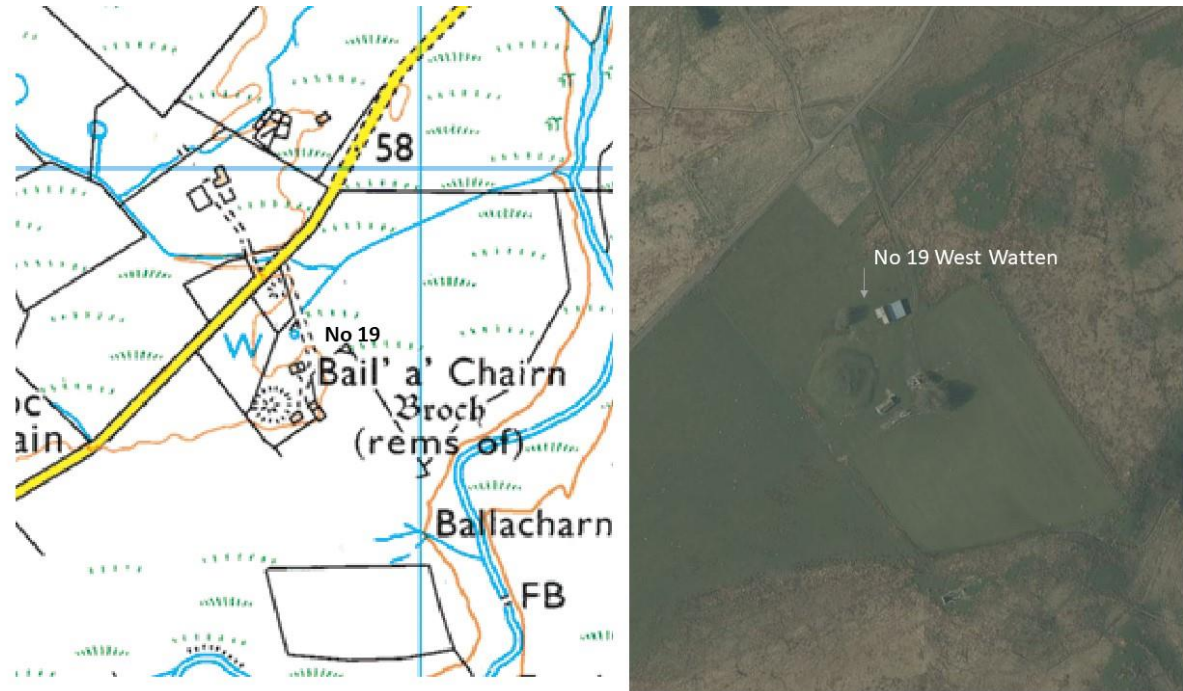
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Description of Property, Location and Context:	<p>This property is situated outside the Proposed Development Area and is a single storey property with outbuildings to the south east and a small garden to the south west. The cottage is orientated in a north east to south west direction and these walls facing the views have windows, the gable end nearest the access road has no windows. The property is situated at approximately 60m AOD on an extensive open plateau, intersected by a network of streams feeding into the Burn of Acharole.</p> <p>Access to the property is from a shared access tarmac track off the B870 road between Watten and Mybster. The property is accessed by a private road which passes over a bridge crossing a stream and is blocked by a gate.</p> <p>The surrounding landscape is generally open and comprises undulating rough grassland and moorland.</p>
Description of Existing Views from the Property:	<p>The surrounding landscape is gently undulating allowing open extensive views across rough grassland and moorland. Telephone and power lines mark the route of the access road, and in the distance Halsary Windfarm can be seen (3.0km west), Bad A Cheo and Achlachan I windfarms are also to the west, but more distant.</p> <p>During hours of darkness, artificial lighting sources are very limited to other isolated properties.</p>
Description of Likely Views of the Development from the Property:	<p>From the grounds surrounding the property, clear uninterrupted view of all seven turbines extending from the north west to the west. in the foreground of Halsary Windfarm and forestry. There would be some overlapping of the blades of Turbines 1 and 2, 3 and 7, and 4 and 6.</p>

Property 2: No 22 West Watten - Figure A6.7.3	
	<p>Turbine 5 would be seen in the middle joining the cluster of turbines to the north west, with the western turbines.</p> <p>The aviation lights of Turbines 6 and 7 would be visible at light intensities of 4 – 1 candela (ca), none of the other aviation lights would be directly visible as a result of the horizontal angle of the light, although there would be some reflection along the blade as it passes the vertical position.</p>
Step 3: Assessment of likely change to visual amenity of properties	
Magnitude of Change:	<p>The size and scale of the change would be considerable in views to the north west and west from the back of the property, garden and access track when approaching and leaving the property. Magnitude of change is High, temporary during construction and long-term during operation and reversible following decommissioning.</p>
Effect:	<p>Sensitivity is considered to be High, which combined with a High magnitude of change results in a Major adverse effect and significant effect. Effects during construction and decommissioning phases will be short-term, and during operation long-term. Following decommissioning, visual effects would be completely reversible.</p>
Step 4: Forming the RVAA judgement	
RVAA Judgement	<p>Although there would be a significant effect on views from outside the front of the property, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to the open landscape that the turbines would be observed in which would help to reduce their vertical extent and viewed in the foreground of several operational wind farms</p>

Table A6.4: Property 3: No 19 West Watten Assessment

Property 3: No 19 West Watten - Figure A6.7.4			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	322808, 951726	Primary outlook:	West
Distance to nearest Turbine:	1.31 km	Direction of view to turbines:	West south west
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context:	House no 19 West Watten is next to the remains of Bail a Chairn Broch. Access to the property is from a shared access tarmac track off the B870 road between Watten and Mybster, including views of Halsary and Causeymire Wind Farms to the south west.
Description of Existing Views from the Property:	The Broch is situated close to the property screening views to the north west. To the south east, views are open across gently undulating rough grassland and moorland towards Camster Wind Farm. Some broadleaf trees on the eastern boundary provide some screening. From the garden, open views across the surrounding semi-improved pasture and moorland can be obtained, the Broch in the foreground is substantial in size and obscures the property from the road to the west.
Description of Likely Views of the Development from the Property:	This property will have an uninterrupted view of all seven turbines to the west and mainly experienced from outside. All 7 turbines would be visible with some overlapping of blades occurring for Turbines 4 and 6. These turbines along with Turbine 5 would be seen in the foreground of Halsary and Causeymire turbines, but much closer to the property. The aviation lights of Turbines 3, 4, 5 would be visible at light intensities of 4 – 1 ca, and Turbines 6 and 7 between 8 and 4 ca. None of the other aviation lights would be directly visible as a result of the horizontal angle of the light, although there would be some reflection along the blade as it passes the vertical position.

Step 3: Assessment of likely change to visual amenity of properties

Property 3: No 19 West Watten - Figure A6.7.4

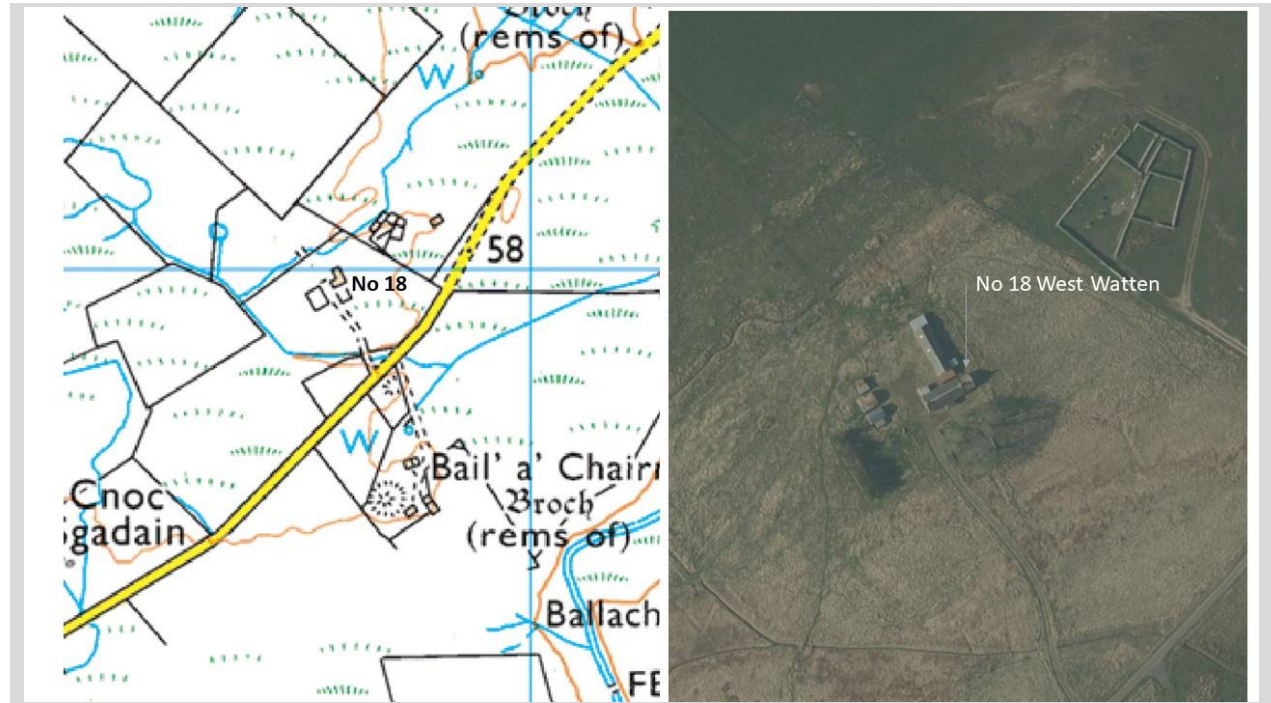
Magnitude of Change:	The size and scale of the change would be considerable in views to the west from outside or approaching and leaving the property. Magnitude of change is High , temporary during construction and long-term during operation and reversible following decommissioning.
Effect:	Sensitivity is considered to be High, which combined with a High magnitude of change results in a Major adverse effect and significant effect. Effects during construction and decommissioning phases will be short-term, and during operation long-term. Following decommissioning, visual effects would be completely reversible.

Step 4: Forming the RVAA judgement

RVAA Judgement	Although there would be a significant effect on views from outside the front of the property, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to the distance from the proposed turbines and openness of the view which reduces the vertical extent of the turbines.
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Table A6.5: Property 4: No 18 West Watten Assessment

Property 4: No 18-West Watten Financially Involved. Figure A6.7.5			
OS Grid Ref	322715, 951968	Primary outlook:	Northwest- South east
Distance to nearest Turbine:	1.21 km	Direction of view to turbines:	West
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context:	Comprises a single storey property located on the northern side of the tarmac access road with an outbuilding to the north, and west, and a greenhouse and polytunnel also to the west. Orientated in a north west to south east direction at approximately 60 m AOD in elevation, access to the property is along a driveway connected to a shared access tarmac track off the B870 road between Watten and Mybster.
Description of Existing Views from the Property:	Views from the property are open from this slightly elevated position north of the road. The view south east is partially screened by a line of mature deciduous trees, the view north west from the rear of the property is onto a conifer forestry plantation. There are no windows on the gable ends of the property (facing north east and south west). To the west there are several evergreen trees acting as a windbreak on the edge of the garden ground. Windfarms are part of the view in three directions from this location. There is a clear views to the east of Wathegar I and II, Bilbster Windfarm cluster (4.1 km east), and the Camster Windfarm cluster (4.1km south east) and Halsary Windfarm cluster (3.7 km west). During hours of darkness, artificial lighting sources are limited to vehicles travelling along the access road, other isolated properties nearby.
Description of Likely Views of the Development from the Property:	From inside this property there are no windows facing the direction of the Proposed Development. However, from the garden surrounding the property all seven turbines would be visible, Turbines 3, 4, 6 and 7 would appear in a line further back, with Turbines 1, 2 and 5 being more prominent due to their location with significant overlap occurring between Turbines 5 and 2.

Property 4: No 18-West Watten Financially Involved. Figure A6.7.5

The aviation lights of Turbines 3, 4, 5 would be visible at light intensities of 4 – 1 ca, and Turbines 6 and 7 between 8 and 4 ca. None of the other aviation lights would be directly visible as a result of the horizontal angle of the light, although there would be some reflection along the blade as it passes the vertical position.

Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change: The size and scale of the change would be considerable in views to the west from outside or approaching and leaving the property. Magnitude of change is **High**, temporary during construction and long-term during operation and reversible following decommissioning.

Effect: Sensitivity is considered to be High, which combined with a High magnitude of change results in a **Major** adverse effect and significant effect.

Step 4: Forming the RVAA judgement

RVAA Judgement Although there would be a significant effect on views from outside the front of the property, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, due to the distance from the proposed turbines and openness of the view which reduces the vertical extent of the turbines.

Table A6.6: Property 5: Scouthal (No 17 West Watten) Assessment

Property 5: Scouthal (No 17 West Watten)- Figure A6.7.6			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	323720, 952996	Primary outlook:	North west
Distance to nearest Turbine:	2.46 km	Direction of view to turbines:	South west
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context: Comprises traditional 2 storey house with an extension, creating a L shaped property. Access to the property is from a shared access tarmac track off the B870 road between Watten and Mybster. The more modern wing of the property, with large windows and patio doors, is orientated in a south west north east direction, and has an outbuilding to the rear of the property. The patio doors face onto a patio area to the south west and well maintained garden. The original part of the property faces north west, south east. The property lies at approximately 30 m AOD and the Burn of Acharole river passes close to the east of the property, and a tributary (Toftmary Burn) runs through this properties grounds. The garden grounds are planted with several mature deciduous trees and shrubs, forming screening to the south west. This property is also screened by high ground to the south west (Cuckoo Hill) and the Hill of Badarclay.

Description of Existing Views from the Property: This property is in a sheltered low lying spot close to the Burn of Acharole. The surrounding topography and vegetation screen the property well. To the south west the view is the mature tree planting in the garden grounds and the gorse covered slopes of Cuckoo Hill. To the south and east beside the Burn of Acharole is riparian tree planting and further deciduous mature trees in the garden ground on this side. West the view is more open, across the access road there is rough grazing land sloping upwards and there are two conifer forestry plantations here, one is north west (349 m away) and the other 453 m west of the property. The line of the access road is mirrored by the line of telephone poles and wires extending into the distance.

Property 5: Scouthal (No 17 West Watten)- Figure A6.7.6

During hours of darkness, artificial lighting sources are limited to the lights of vehicles travelling along the access road, neighbouring properties.

Description of Likely Views of the Development from the Property: All 7 turbines will be visible from here according to the ZTV and wireline. However intervening topography and vegetation will screen sections of the vertical extent of the turbines. Turbines 1 (2.4km west) and 2 (2.6km west) are closest to this property the blade tips and hubs will be partially visible from this property. Glimpses of the blade tips of turbines 3,4,5,6,7 will also be seen to the south west. These five turbines are further away (3.4-4.3km west) and will be largely screened. When approaching this property on the access road there will be glimpses of the proposed development, in gaps between intervening topography and vegetation.

The aviation lights on the hubs of all turbines will be visible from this property. However the intervening landform obscures the tower lights on turbines 3,4,5,6, 7, leaving the tower lights on turbines 1 and 2 visible.

Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change: The size and scale of the change would be medium in views from the south west rear of the property and garden over the summit of Cuckoo Hill. However, this would be limited to the hubs and blades of all seven turbines proposed and would be set back from the property. The change to the view would be long term and reversible. Magnitude of change is **Low**.

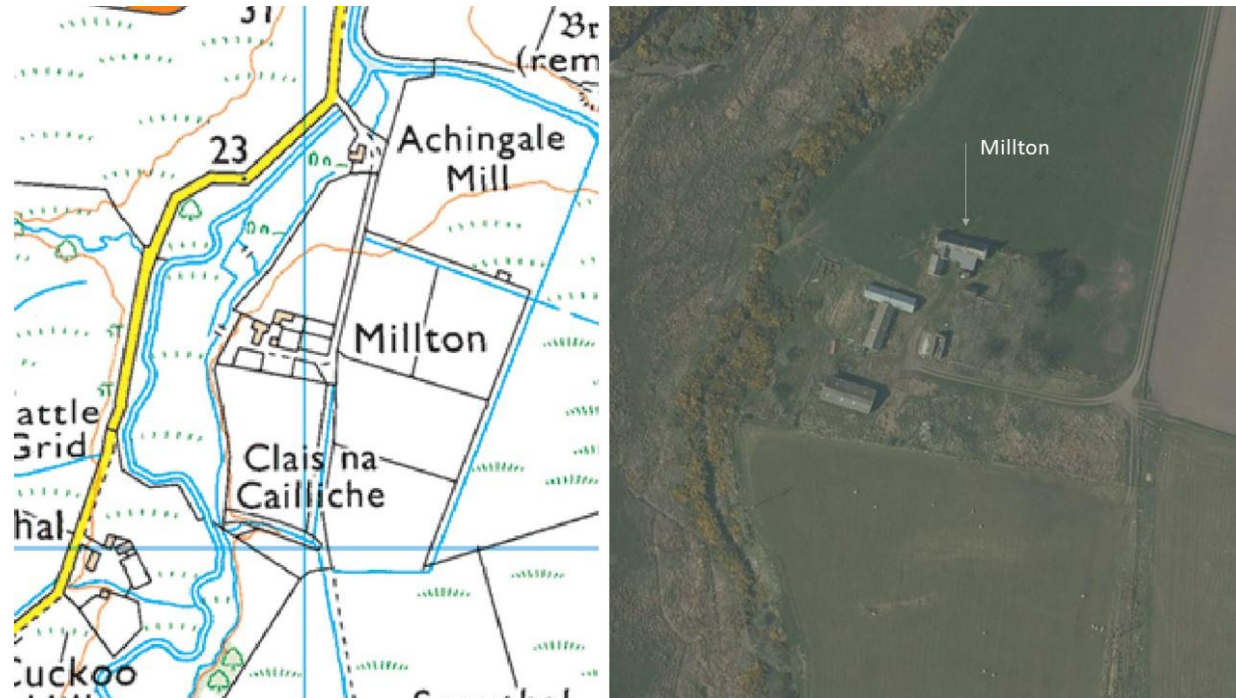
Effect: **Moderate** adverse effect and significant due to the proposed turbines appearing in filtered views from the rear of the property occupying a small extent of the overall view..

Step 4: Forming the RVAA judgement

RVAA Judgement Although there would be a significant effect on views from the rear of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.7: Property 6: Millton Assessment

Property 6: Millton Figure A6.7.7			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	324012, 953211	Primary outlook:	South, north
Distance to nearest Turbine:	2.82 km	Direction of view to turbines:	West
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context: This property comprises 1 storey residential property located on elevated ground east of a river (the Burn of Acharole). Situated at 31 m AOD. Access is by a short access track the turning is north of Achingale Mill. This access road is connected to the B870, road between Watten and Mybster.

This property is orientated in a north to south direction, with several outbuildings located to the south west of the property, the most southerly building appears to have no roof now. To the east the land slopes down gently towards another river, the Strath Burn.

Description of Existing Views from the Property: From the elevated position of this property there are open views to the north, west, and partially screened views to the south west (due to outbuildings and trees), and partially screened views to the east (due to a line of mature trees near the property). The views to the west are of the gorse covered slope and grazing field descending to the Burn of Acharole river and a single track road. Beyond this is an arable field, and a distinctive ridge of raised land running parallel to the access road. Views to the south west are glimpsed between outbuildings and trees, from this elevated position the views are far reaching across rough grazing land giving way to moorland with patches of conifer forestry. To the north views are across the Burn of Acharole river valley, patchwork of grazing and arable fields, with occasional farm buildings. The historic Achingale Mill is in the fore ground to the north.

To the south east (3.3 km south east) the Bilbster windfarm cluster is clearly visible. To the south is the Camster wind farm cluster(4.7 km south). To the south west the Halsary Windfarm cluster is visible (5.2 km south west) across a stretch of moorland.

Property 6: Millton Figure A6.7.7

During hours of darkness, artificial lighting sources are limited to the lights of vehicles travelling along the access road and neighbouring properties.

Description of Likely Views of the Development from the Property: The proposed development will appear as an extension of Halsary Windfarm cluster eastwards. From this slightly elevated location above the Achingale burn, the entire proposed development will be a clearly visible feature to the west but will occupy a small section of the view.

The wireline shows that all seven turbines will be visible from this property. Aviation lighting on the hubs of all turbines will be visible, however the two furthest away turbines no 6 and no 7, will have their aviation lights on the towers obscured by intervening landform and forestry.

Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change The size and scale of the change would be medium in views from the south west rear of the property and garden. Intervening landform and forestry will partially obscure the towers of all the turbines. The change to the view would be long term and reversible. Magnitude of change is **Low**.

Effect: **Moderate** adverse effect and significant due to the proposed turbines appearing in filtered views from the rear of the property occupying a small extent of the overall view.

Step 4: Forming the RVAA judgement

RVAA Judgement Although there would be a significant effect on views from the rear of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening and distance from the Proposed Development.

Table A6.9: Property 7: Achingale (includes Achingale Mill & Nether Banks) Assessment

Property 7: Achingale (includes Achingale Mill & Nether Banks). Figure A6.7.8			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	323873, 953779	Primary outlook:	South
Distance to nearest Turbine:	2.9 km	Direction of view to turbines:	South west
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context:	<p>The Nether Banks property comprises a 1.5 storey L shaped house located down a driveway off the B870 road between Watten and Mybster. This property is on elevated ground with open panoramic views in all directions. Situated on a ridge at 31m AOD, with the Burn of Achaerole river flowing 100m to the east of the property. The front door of the house is on the western elevation of the property, off a short drive leading from the B870 road. The property has a small area of garden land to the east, south and west, which is lawn with a few mature deciduous trees. The viewpoint is on the A870 next to the entrance to Nether Banks.</p> <p>This property comprises a 3 storey mid 19th century Water Mill next to the Burn of Acharole river, at 25m AOD. It is a listed building, with a L shaped floor plan and only has windows on the northern and western elevations.</p> <p>Access to the property is from a shared access tarmac track off the B870, road between Watten and Mybster.</p> <p>The Mill site is built on a low lying meander in the river, on the floor of the Burn of Achaerole valley. The drive to access the mill crosses a bridge over the river. Immediately south of the mill is a distinctive ridge with another property (Millton) in view. To the west of the Mill is the river and the access road, next to the road is an arable field, and a second distinctive ridge runs parallel to the road. There is a third ridge running to the east of the mill. The access road route is marked out by a line of power and telephone lines.</p>
Description of Existing Views from the Property:	<p>Views to the south and south west are open and extensive, across agricultural land and riparian woodland marking the course of the Burn of Achaerole river. Two windfarm clusters can be clearly seen from this location, they are Halsary Windfarm cluster (5.5 km south west) and Bad á Cheò (8.7 km south west) and to the south east Bilbster (3.8 km).</p>

Property 7: Achingale (includes Achingale Mill & Nether Banks). Figure A6.7.8

Views to the north are across farmland and some residential properties in the village of Watten. During hours of darkness, artificial lighting sources are limited to the lights of vehicles travelling along the B870 road neighbouring properties, and the two windfarm clusters described.

Step 3: Assessment of likely change to visual amenity of properties

Description of Likely Views of the Development from the Property:	<p>All 7 turbines will be visible from this elevated location, although turbine 5 is aligned with turbine 1 which means only the blades will be visible. The proposed development will appear to be an easterly extension to Halsary Windfarm cluster, with the nearest turbine (no 2) sited 2.9 km south west. All of the proposed turbines will be partially screened by intervening topography and conifer forestry, reducing their vertical extent.</p> <p>At night time the aviation hub lights and tower lights on turbines 1,2,3,4,6 and 7 will be visible. The aviation lights on Turbine 5 will be obscured by turbine 1.</p>
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Magnitude of Change:	The size and scale of the change would be medium in views from the south of the property and garden. The change to the view would be long term and reversible. Magnitude of change is Low .
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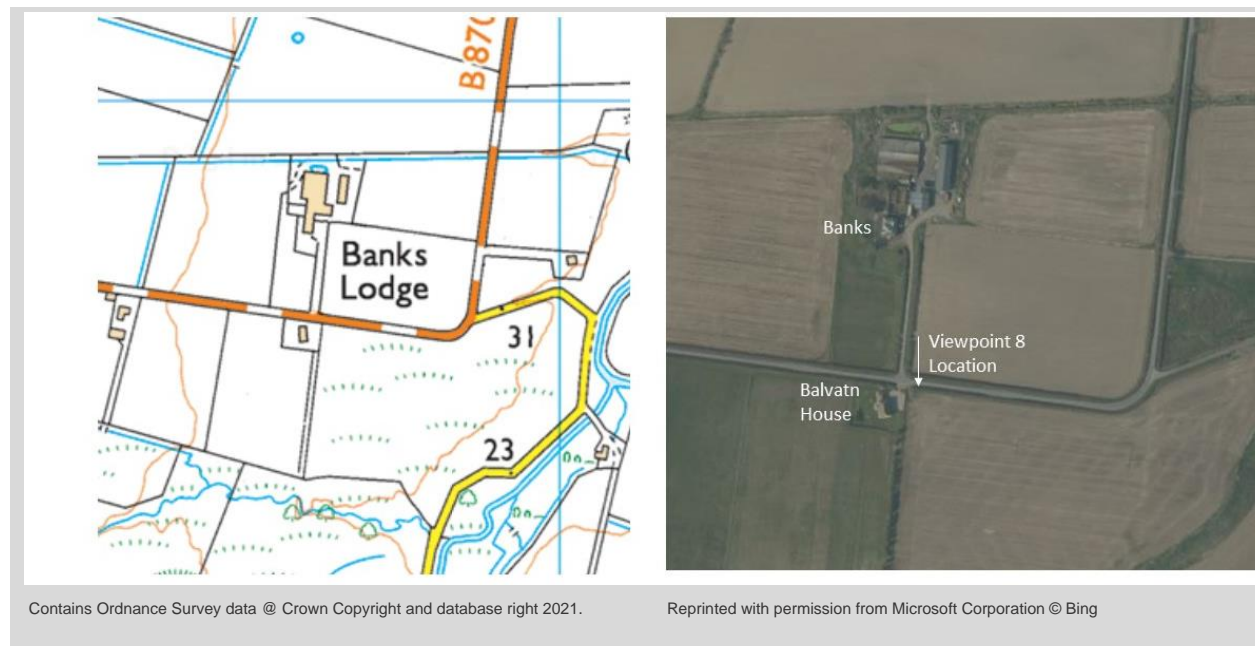
Effect:	Moderate adverse effect and significant due to the proposed turbines appearing in open views from the south side of the property occupying a small extent of the overall view.
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Step 4

RVAA Judgement	Although there would be a significant effect on views from the southside of the property and garden, it is not considered that living standards of the property would be affected overall or render it unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.
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Table A6.10: Property 8a: Banks/ Properties to the south Assessment

Property 8: Banks/Properties to the south - Figure A6.7.9			
OS Grid Ref	323645, 953663	Primary outlook:	East
Distance to nearest Turbine:	2.7 km	Direction of view to turbines:	South west
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



Description of Property, Location and Context: Banks is a 2 storey farmhouse with several outbuildings to the north. It is situated at 35 m AOD. Access is via a private driveway off the B870 road between Watten and Mybster. The property is surrounded by farmland under a mix of arable and grazing. The property is barely visible from the road because it is enclosed behind tall wide beech hedges. The windows on the first floor are above the height of the hedge and therefore have views of the open countryside to the south.

Balvatn House is a modern two storey house, built close to the B870 road between Watten and Mybster. The front of the house faces east (it wasn't possible to see if there are windows on the southern elevation). There is a garage to the north and garden grounds surrounding the property with lawn and some mature trees to the south and a perimeter hedge on all sides of the property, except on the east where there is a low drystone wall edging the entrance driveway. The property is situated at 35 m AOD. A beech hedge screens the property from the road, however the first floor windows of the property on all sides are higher than the hedges. The viewpoint is on the A870 at a field entrance close to the boundary of Balvatn House.

Description of Existing Views from the Property: The ground floor view from Banks will be limited to the immediate farmland enclosed by the perimeter beech hedge. The first floor windows will have a clear view of three windfarm clusters to the south and south west (Bilbster, Camster, Halsary) over the perimeter hedge. There are also patches of conifer forestry to the south, and wide open stretches of moorland between. To the east is a mix of arable and pasture farmland with occasional farm buildings and isolated residential properties. Residential properties often have a few mature trees as a windbreak. The view west are also across a mix of arable and pasture farmland, field boundary's are often hedges. From Balvatn there are open views to the east and south east from the front of the property, and also open views to the west. From the front of the property two windfarm clusters can be clearly

Property 8: Banks/Properties to the south - Figure A6.7.9

seen, these are Blibster cluster (3.8km south east), and the Camster cluster (5.4km south east). Theoretically Halsary cluster should also be visible from any south facing upstairs windows. The views to the windfarms are across farmland with the occasional farm or residential property, that then gives way to moorland in the mid distance and blocks of dark green conifer forestry. During hours of darkness, artificial lighting sources are limited to the lights of vehicles travelling along the B870 road, neighbouring properties, and windfarms. .

Description of Likely Views of the Development from the Property: All 7 of the proposed turbines will be visible from the first floor of this property looking south, although the wireline indicates that turbine 5 is aligned with turbine 1, therefore only the blades of turbine 5 are visible behind turbine 1. The proposed turbines will appear as an easterly extension of the Halsary cluster of turbines in the south west, with some overlap of the proposed turbines with the existing ones. There will still be a part of the view with no windfarms (between the Halsary and Camster clusters) . The intervening topography and patches of conifer forestry will partially screen the vertical extent of the turbine tower and the associated infrastructure. From Balvatn the ZTV indicates that all seven turbines should be visible from this location, however the site visit confirmed that there are several mature trees in the garden surrounding this property, especially on the south west side. Some of these are evergreen species and will provide a lot of screening all year. Glimpses of the south west view between trees and from the upstairs windows may include the proposed development. In which case it will look as a easterly extension to the existing Halsary Windfarm cluster. At night time aviation lighting on the turbine hubs will be visible on six out of the seven turbines (Turbine 5 hub light will be obscured by turbine 1). The tower lights will be visible on the nearest four turbines (T1, T2, T3, T4) and not visible on turbines 5 (because it is obscured by T1),6,7 (due to intervening topography and forestry).

Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change: The size and scale of the change would be relatively small in views from within both properties, and within the garden grounds. The Proposed development will be noticeable when leaving the property down the driveway, and also when in the first floor rooms looking south. However, the proposed development will sit within the Halsary cluster of wind turbines, extending the existing site to the east. The change to the view would be long term and reversible. Magnitude of change is **Low**.

Effect: **Moderate** adverse effect and significant due to the proposed turbines appearing in open views from the front of the property occupying a small extent of the overall view.

Step 4: Forming the RVAA judgement

RVAA Judgement Although there would be a significant effect on views from the first floor of the properties and driveway, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening in reducing the vertical extent of turbines visible.

Table A6.12: Property 9: West Watten/ Strathview Cottage Assessment

Property 9: West Watten/ Strathview Cottage (includes Tri-Deug)- Figure A6.7.10			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	323333, 953709	Primary outlook:	South
Distance to nearest Turbine:	2.4 km	Direction of view to turbines:	South West
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context: Strathview Cottage is a single storey cottage built close to the B870 road between Watten and Mybster. The entrance is on the north side of the property behind a high beech hedge that borders the B870 road. Surrounding the property is garden ground that extends to the east and south, beyond this are fields and patches of conifer forestry. The property is situated at approximately 50 m AOD.

Tri-Deug is a single storey property set back from the B870 road (connecting Watten to Mybster) and accessed by a driveway. There are several outbuildings to the west of the property and an area of lawn surrounding the property on all sides. The only substantial hedges and trees are by the B870 road to the north of the property. The property is situated at around 50 m AOD.

Description of Existing Views from the Property: The main view from Strathview Cottage is to the south of this property. The view is enclosed by agricultural outbuildings to the east, and a block of conifer forestry to the west, between these two features is a view across open farmland to further standing conifer forestry. From the garden there is possibly a partial view to the three windfarm clusters nearby (Golticlay, Bad a Cheo, Halsary), if there is a view it will be filtered by outbuildings of the neighbouring property (13 West Watten) and by intervening forestry and topography.

The main view from Tri-Deug is from the front (north east side) of the property across farmland and to the hedge by the roadside. To the south west the main view is of outbuildings, and beyond this farmland then conifer plantations. To the south the view is across farmland and to conifer forestry and the moorland beyond.

Three windfarm clusters can be seen from the property (Blibster, Camster, and Halsary). Blibster (4.0 km south east), Camster (5.4 km south, Halsary 4.9 km south west).

Property 9: West Watten/ Strathview Cottage (includes Tri-Deug)- Figure A6.7.10

Description of Likely Views of the Development from the Property: During hours of darkness, artificial lighting sources are very limited and are associated with lights of vehicles travelling on the B870 road, and from other isolated properties.

All 7 turbines would be visible from this location looking south west. Turbines 2 and 3 appear close together and set apart from the rest of the windfarm, Turbines 7 and 4 are in alignment. At night time, the aviation lighting on the hubs of the turbines would be visible. However the aviation lights on the turbine towers would not all be visible, only the nearest five turbines ((T1,2,3,4,5) would be visible. The lights on T6 and T7 are further away and will be obscured by the intervening landform and forestry.

The proposed windfarm would be visible to the south west and all seven turbines will be visible, according to the wireline. The turbines will be spaced out, except for Turbines 7 and 4 which will be aligned with each other.

At nighttime the aviation lighting on the windfarms will be visible on all of the hubs. The aviation tower lights will only be visible on the five nearest turbines (T1, 2, 3, 4, 5).

Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change: The size and scale of the change would be considerable in views to the west from the back of Strathview Cottage. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is **High**.

From Tri-Deug the size and scale of the change would be considerable in views to the west from the front of the house and from a short section of the access track to the south when approaching and leaving the property. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is **High**.

Effect: **Minor** adverse effect and not significant

Step 4: Forming the RVAA judgement

RVAA Judgement Although there would be a significant effect on views from outside the back of Strathview Cottage, and Tri-Deug, it is not considered that living standards of either property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, contribution of landform screening limiting the vertical extent of the turbines seen, and the limited views experienced from within the property.

Table A6.14: Property 10: Knockfarrie House Assessment

Property 10: Knockfarrie House - Figure A6.7.11			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	323100, 953739	Primary outlook:	North East-South west
Distance to nearest Turbine:	2.5 km	Direction of view to turbines:	South west
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context: Comprises 1.5 storey modern house located adjacent to the B870 road between Watten and Mybster. Orientated in a north east to south west direction, the property lies at approximately 50 m AOD. The front door of the house is on the north eastern side off a short drive leading from the B870 road. To the north is a high deciduous hedge by the roadside. There is a lawn on all sides of the property.

Description of Existing Views from the Property: Views to the east, south and east are across farmland interspersed with regular patches of conifer forestry. The Views north are of the roadside hedges, and road, and farm beyond. Operational windfarm clusters that are visible from Blibster (4.3 km south east), Camster (5.5 km south east), Halsary (4.6 km south west). During hours of darkness, artificial lighting sources are limited to the lights of vehicles travelling along the B870 road, other residential properties and the operational windfarms mentioned.

Step 3: Assessment of likely change to visual amenity of properties

Description of Likely Views of the Development from the Property: All seven turbines of the proposed turbines will be visible from this location. They will be seen as three small groups. Turbines 4,7 will be in the middle of the view south west. Turbines 2 and 3 are set apart to the left of the group, and turbines 1, 5 and 6 will be to the right of the middle group and turbines 6 and 1 are almost aligned. The aviation lights on the hubs and towers of all the turbines will be visible at night time in clear conditions. Turbine 7 is the furthest away from this location and sits close to turbine 1, this may

Property 10: Knockfarrie House - Figure A6.7.11

make it less visible at nighttime, as the blades of turbine 1 may obscure some of the lights on turbine 7.

Magnitude of Change: The size and scale of the change would be considerable in views to the west from the back of the house. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is **High**.

Effect: **Moderate** adverse effect and significant due to the proposed turbines appearing in open views from the rear of the property occupying a small extent of the overall view..

Step 4: Forming the RVAA judgement

RVAA Judgement Although there would be a significant effect on views from the rear of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.15: Property 11: Ballacharn/Aljolichsa Assessment

Property 11: Ballacharn / Aljolichsa- Figure A6.7.12			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	322861, 953807	Primary outlook:	South west, north east, east
Distance to nearest Turbine:	2.2 km	Direction of view to turbines:	South West
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context:

Ballacharn is a single storey property set back from the B870 road (between Watten and Mybster). There is a low hedge on the east and tall conifer hedge growing on the west perimeter of the property, and a low fence on the north and south sides. The front door is on the north east side of the property next to a driveway. The property lies at approximately 50 m AOD and is orientated in a north east to south west direction. Orientated in a south west to north east direction, and surrounded by lawns. There is a hedge and some conifers on the northern border of the property and to the north west. The remaining parts of the perimeter are post and wire fence.

Aljolichsa is a 1.5 storey residential building, accessed by a driveway off the B870 between Watten and Mybster. The building has a front door on the north east elevation (facing the road) and open views to the rear of the property. Orientated in a north east to south west direction, the property lies at approximately 50 m AOD

Orientated in a south west to north east direction and surrounded by lawns. There is a hedge and some conifers on the northern border of the property and to the north west. The remaining parts of the perimeter are post and wire fence.

Description of Existing Views from the Property:

There are open views to the north east and south west. To the north east the view is across the road and to the farmland beyond. To the south west is an open view across farmland and there are several conifer forestry plantations beyond the fields. Operational windfarms are visible from the property and from the garden grounds: Halsary Windfarm cluster is seen as turbine blades

Property 11: Ballacharn / Aljolichsa- Figure A6.7.12

above the tree tops (4.4 km south west), Blibster windfarm cluster (4.6km south east), Camster windfarm cluster (5.7 km south).

The main view is from the rear of the property across a mix of open farmland and several dark green conifer plantations. The operational windfarm at Halsary can be seen above the top of one forestry plantation, as blades and tips (Halsary windfarm cluster is 4.4 km south west). From the garden grounds to the east and south of the property Blibster windfarm cluster are visible (4.6 km east), and Camster wind farm cluster (5.7 km south east).

During hours of darkness, artificial lighting sources are limited to vehicles travelling along the B870 road, neighbouring property, and the operational windfarms already mentioned.

Description of Likely Views of the Development from the Property:

All seven of the proposed wind turbines will be visible from this location, they will appear as a well spaced cluster to the south west.

All seven of the proposed wind turbines will be visible from this location. However the intervening topography and forestry will obscure a large part of the turbine towers, only leaving the blades visible on five of the turbines (3,4,5,6,7). The two closest turbines to this property are turbines 1 and 2, and the tower and blades of these turbines will be clearly visible.

At nighttime the aviation hub lights and tower lights will be visible on all the turbines.

Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change:

The size and scale of the change would be considerable in views to the west from the back of both properties. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is **Medium**.

Effect:

Moderate adverse effect and significant due to the proposed turbines appearing in open views from the rear of the property occupying a small extent of the overall view

Step 4: Forming the RVAA judgement

RVAA Judgement

Although there would be a significant effect on views from the rear of both properties and gardens, it is not considered that living standards of the property would be affected overall or render it unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.17: Property 12: No 14 West Watten Assessment

Property 12: No 14 West Watten - Figure A6.7.13			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	322716, 953852	Primary outlook:	South west, North East
Distance to nearest Turbine:	2.1 km	Direction of view to turbines:	South West
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context: This property comprises a single storey property set back from the B870 road (between Watten and Mysbster). The property has an outbuilding to the north, and the main residence is surrounded by lawns. There is a post and wire perimeter fence, with some low growing hedge to the east and a small cluster of trees in the north east corner of the garden. To the north there are low growing shrubs and another small cluster of trees screening the road from the property. The topography is flat and the property is situated at approximately 55 m AOD.

Description of Existing Views from the Property: There are open views from all sides of this property. To the rear of the property is a conservatory and the view south west is probably the most enjoyed one. To the south west the view is across farmland interspersed with regular patches of conifer forestry. The landform is gently undulating, and descending to the east and south east, and rising to the north. Several operational windfarm clusters can be seen from here; Blibster (4.7km south east), Camster 5.7km south east), Halsary (4.5km south west). During hours of darkness, artificial lighting sources are limited to vehicles travelling along the B870 road, neighbouring property, and the operational windfarms already mentioned.

Description of Likely Views of the Development from the Property: All seven of the proposed wind turbines will be visible from this location, they will appear as a well spaced cluster to the south west (except for turbines 2,3 which are close together). At nighttime the aviation hub lights and tower lights will be visible on all the turbines.

Property 12: No 14 West Watten - Figure A6.7.13

Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change: The size and scale of the change would be considerable in views to the west from the back of the house. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is **Medium**

Effect: **Moderate** adverse effect and significant due to the proposed turbines appearing in open views from the rear of the property occupying a small extent of the overall view

Step 4: Forming the RVAA judgement

RVAA Judgement Although there would be a significant effect on views from the rear of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.18: Property 13: No 10 West Watten Assessment

Property 13: No 10 West Watten - Figure A6.7.14			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	322821, 954393	Primary outlook:	South east, north west
Distance to nearest Turbine:	2.7 km	Direction of view to turbines:	South west
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context: This property comprises a single storey cottage next to West Watten Holdings Farm. The property is situated on an elevated position at approximately 61 m AOD, east of the Hill of West Watten. There is a large driveway and a small amount of garden land surrounding the property. To the south west of the property are several large agricultural outbuildings.

The property is set back from the edge of a minor road connecting the B870 to the south with the A882 to the north, and is close to the Wester Watten Farm.

Description of Existing Views from the Property: The main views are to the east and west, there are no windows on the north and south elevations of this property. To the east the view is across farmland, with patchy hedges and occasional trees bordering pasture and arable fields, and a line of deciduous trees to the north east. To the south east there are open views across farmland with a few conifer forestry patches in the distance. To the south the view is blocked by agricultural farm buildings.

Several operational windfarm clusters are visible from this location: Blibster (4.9 km east), Camster (6.3 km south east), Halsary (4.9 km south west).

During hours of darkness, artificial lighting sources are limited to vehicles travelling along the minor road next to the property, neighbouring property, and the operational windfarms already mentioned.

Property 13: No 10 West Watten - Figure A6.7.14	
Description of Likely Views of the Development from the Property:	All seven of the proposed wind turbines will be visible from this location, they will appear as a cluster to the south west with turbines 1 and 7 aligned and Turbines 5 and 6 almost aligned. At night time the aviation hub lights and tower lights will be visible on all the turbines. However because there are no south or south west facing windows, it is unlikely that the Proposed Development will be noticed once inside the property. However when in the back garden, or driveway it maybe glimpsed to the south between farm buildings.
Step 3: Assessment of likely change to visual amenity of properties	
Magnitude of Change:	The size and scale of the change would be considerable in views to the west from the back of the house. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is Low .
Effect:	Minor adverse effect and not significant due to the proposed turbines appearing in open views from the rear of the property occupying a small extent of the overall view
Step 4: Forming the RVAA judgement	
RVAA Judgement	Although there would be a significant effect on views from the rear of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.19: Property 14: Newton Assessment

Property 14: Newton - Figure A6.7.15			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	321665, 953983	Primary outlook:	South east
Distance to nearest Turbine:	1.6 km	Direction of view to turbines:	South
Potential No. of turbines visible:	6	Potential Number of aviation lights:	2



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Description of Property, Location and Context:	This property comprises a 1.5 storey farmhouse with attached outbuildings extending to the rear. The main outlook is to the south east, and the property is situated at approximately 82 m AOD. Access is done a long private driveway off the B870 road between Watten and Mybster. The property is on the eastern flank of Backlass Hill.
Description of Existing Views from the Property:	The main view is from the front of the property looking south east. This property is surrounded by farmland, and in the mid distance several patches of conifer forestry can be seen. Three operational windfarm clusters can be seen from here; Blibster (5.8 km south east), Camster 6.4 km south east), Halsary (3.5 km south west). The intervening topography and conifer forestry reduce the vertical scale of the turbines. During hours of darkness, artificial lighting sources are limited to vehicles travelling along the B870 road, neighbouring property, and the operational windfarms already mentioned.
Description of Likely Views of the Development from the Property:	The wireline shows that intervening landform and forestry will obscure the majority of the proposed development from this location. Only the hubs and blades of the two closest turbines (T1, T2) will be visible. The remaining turbines (T3,4,5,6,7) will be glimpsed as only blade tips. At nighttime only the aviation lights on the hubs of turbines 1 and 2 will be visible.
Step 3: Assessment of likely change to visual amenity of properties	
Magnitude of Change:	Magnitude of change is low, because the proposed development will be almost entirely obscured by intervening landform from this location.

Property 14: Newton - Figure A6.7.15	
Effect:	Minor adverse effect
Step 4: Forming the RVAA judgement	
RVAA Judgement	Although there would be a significant effect on views from the rear of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.20: Property 15: The Smiddy Assessment

Property 15: The Smiddy - Figure A6.7.16			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	321025,954077	Primary outlook:	South west- North east
Distance to nearest Turbine:	1.8 km	Direction of view to turbines:	South
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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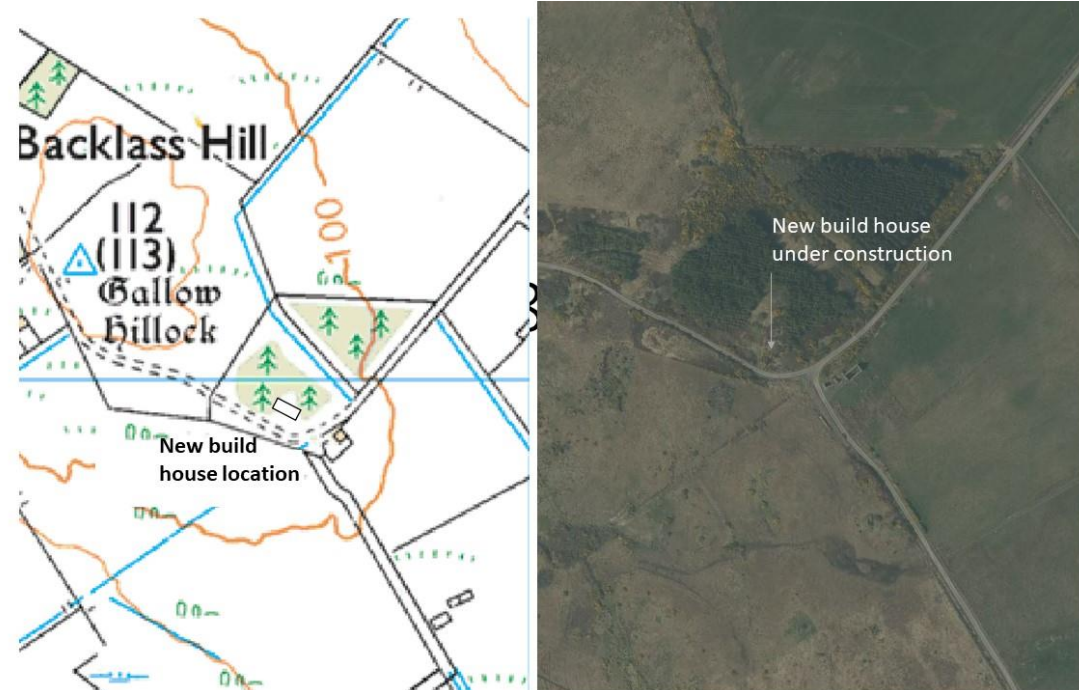
Description of Property, Location and Context: This property comprises a single storey house on elevated ground at approximately 95 m AOD. Situated on the eastern flank of Backlass Hill, with the main view to the north east and south west. There is an outbuilding to the rear of the property, south west of the main residence. There is garden ground to the east of the property, and a line of deciduous trees surrounding the property on three sides, west, south and east.

Description of Existing Views from the Property: The main view is from the front of the property back along the drive towards the B870 road as the landform gradually descends, towards Loch Watten and beyond. Views to the east from the property and garden are restricted by broadleaf trees, views south are restricted by a outbuilding and rising landform to the west combined with forestry. Operational windfarms to the east maybe partially visible through the broadleaf trees. These windfarm clusters are: Blibster (6.3 km south east), Camster (6.8 km south east), Halsary (3.5 km south west). During winter time these operational windfarm clusters maybe more visible after leaf fall. During hours of darkness, artificial lighting sources are limited to vehicles travelling along the B870 road, neighbouring property, and overhead aircraft and the operational windfarms mentioned above.

Property 15: The Smiddy - Figure A6.7.16	
Description of Likely Views of the Development from the Property:	All seven of the proposed wind turbines will be visible from this location, they will appear as a well spaced cluster to the south. At nighttime the aviation hub lights and tower lights will be visible on all the turbines.
Step 3: Assessment of likely change to visual amenity of properties	
Magnitude of Change:	Magnitude of change is low, because the proposed development will be almost entirely obscured by intervening landform from this location.
Effect:	Minor adverse effect
Step 4: Forming the RVAA judgement	
RVAA Judgement	Although there would be a significant effect on views to the south of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.21: Property 16: Backlass (New Build House under construction) Assessment

Property 16: Backlass (New build house under construction) - Figure A6.7.17			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	320756, 953928	Primary outlook:	South west
Distance to nearest Turbine:	2.8 km	Direction of view to turbines:	South
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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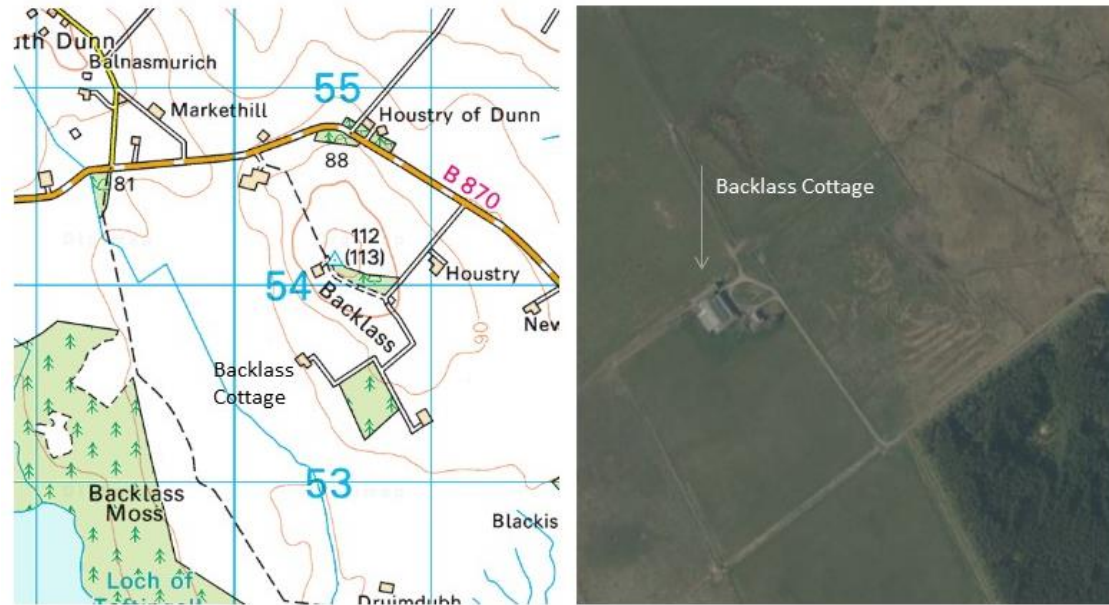
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Description of Property, Location and Context:	This property was in the process of being built during the site visit. It is a single storey property, access is by a shared access track off the B870 (between Watten and Mybster). It is located at approximately 112 m AOD and is close to the summit of Backlass Hill. This newbuild is on the opposite side of the road to two derelict cottages. Behind the new build is a conifer forestry plantation.
Description of Existing Views from the Property:	<p>The main view is from the front of the property looking south west looking down across farmland with patches of forestry onto the moorland beyond.</p> <p>The views to the north are screened by the conifer plantation. Views east are open and similar to the views south west and south.</p> <p>Several operational windfarm clusters are visible from this location: Halsary (3.1 km south west), Camster (6.9 km south east), Blibster (6.6 km south east).</p> <p>During hours of darkness, artificial lighting sources are limited to vehicles travelling along the access road, neighbouring property, and overhead aircraft.</p>
Description of Likely Views of the Development from the Property:	<p>The wireline indicates that all seven turbines would be visible from this location. They will appear as a well spaced group.</p> <p>All aviation lights on the hubs and towers will also be visible from this elevated location.</p>
Step 3: Assessment of likely change to visual amenity of properties	

Property 16: Backlass (New build house under construction) - Figure A6.7.17	
Magnitude of Change:	The size and scale of the change would be considerable in views to the south from the front of the house. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is Low .
Effect:	Minor adverse effect and not significant due to the proposed turbines appearing in open views from the rear of the property occupying a small extent of the overall view
Step 4: Forming the RVAA judgement	
RVAA Judgement	Although there would be a significant effect on views from the front of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.22: Property 16a: Backlass Cottage Assessment

Property 16a: Backlass Cottage Figure A6.7.17			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	320366, 953583	Primary outlook:	South east, south west
Distance to nearest Turbine:	1.9 km	Direction of view to turbines:	South
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context: This is a single storey farmhouse situated at the foot of Backlass Hill at approximately 80 m AOD. There is garden ground to the north east of the property, and a large outbuilding to the north west of it. The house is accessed down a long shared access track off the B870 (between Watten and Mybster).

Description of Existing Views from the Property: The main view is to the south east across farmland interspersed with large conifer forestry plantations. There are several operational windfarm clusters visible from the property; Camster (6.8 km south east), and Halsary (2.5 km south west).

During hours of darkness, artificial lighting sources are limited to vehicles travelling along the track to neighbouring property, and overhead aircraft and the operational windfarms already mentioned.

Description of Likely Views of the Development from the Property: The wireline indicates that all seven turbines will be visible from this location, however the towers of several of the turbines will be obscured by the intervening landform and forestry. The aviation hub lights will be visible on all the turbines. The tower lights will be visible on T4,5,6,7 and possibly also on T1 and T3. Turbine 2 is the most obscured by landform, only the hub and parts of the blade tips will be visible.

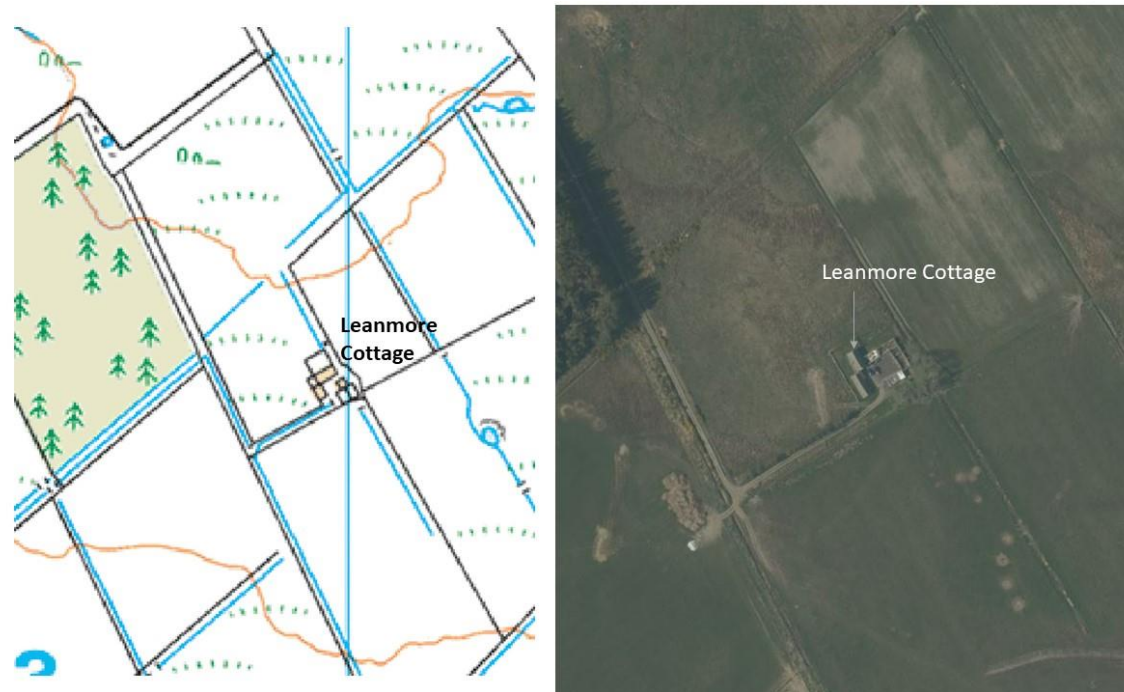
Step 3: Assessment of likely change to visual amenity of properties

Property 16a: Backlass Cottage Figure A6.7.17

Magnitude of Change:	The size and scale of the change would be considerable in views to the south from the front of the house. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is Low .
Effect:	Minor adverse effect and not significant due to the proposed turbines appearing in open views from the front of the property occupying a small extent of the overall view
Step 4: Forming the RVAA judgement	
RVAA Judgement	Although there would be a significant effect on views from the rear of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.23: Property 17: Leanmore Assessment

Property 17: Leanmore - Figure A6.7.19			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	320974, 953297	Primary outlook:	South west- north east
Distance to nearest Turbine:	1.0 km	Direction of view to turbines:	South, south east
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context:	<p>This property comprises a single storey cottage. It is a isolated property at the end of a long shared access track off the B870 (between Watten and Mybster). The property is situated at approximately 85m AOD, on the eastern flank of Backlass Hill.</p> <p>There are trees on the driveway approaching the cottage, and also on the southern perimeter of the garden ground.</p>
Description of Existing Views from the Property:	<p>The main view is from the front of the property looking south west across farmland with patches of conifer forestry.</p> <p>From this location several operational wind farms are visible; Halsary (2.7 km south west) Camster (6.2 km south south east), Blibster (6.2 km south east).</p> <p>During hours of darkness, artificial lighting sources are limited to vehicles travelling along the access road, neighbouring property, and overhead aircraft, and the operational windfarms already mentioned.</p>
Description of Likely Views of the Development from the Property:	<p>The wireline indicates that four turbines would be clearly visible from this location, but it is believed that 7 turbines could be visible because the wireline is a 65.5 cylindrical projection, whereas the human eye will observe closer to 180 degrees. There is an open unobstructed view from this location . The turbines will appear as a well-spaced group.</p> <p>At night time all the aviation lights (hub and tower) will be visible on all of the turbines.</p>

Step 3: Assessment of likely change to visual amenity of properties

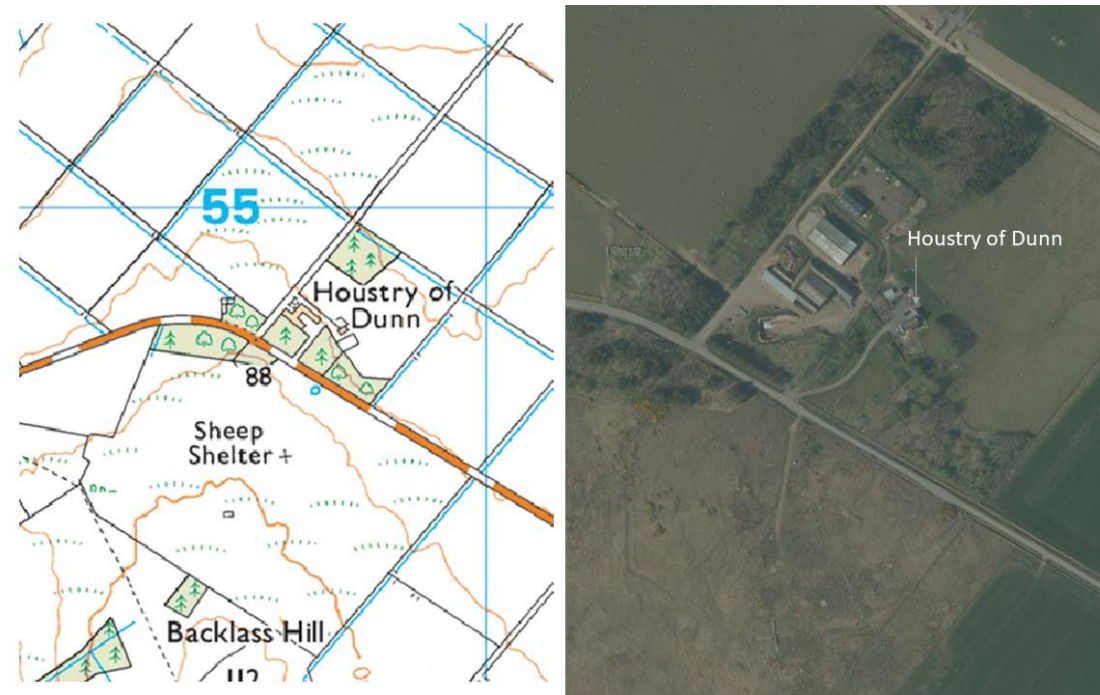
Property 17: Leanmore - Figure A6.7.19	
Magnitude of Change:	The size and scale of the change would be considerable in views to the south from the back of the house. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is Medium
Effect:	Major adverse effect and not significant due to the proposed turbines appearing in open views from the front of the property occupying a small extent of the overall view
Step 4: Forming the RVAA judgement	
RVAA Judgement	Although there would be a significant effect on views from the front of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.24: Property 18: Houstry of Dunn Assessment

Property 18: The Houstry of Dunn - Figure A6.7.20			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	320657, 954707	Primary outlook:	North west, south east
Distance to nearest Turbine:	2.5 km	Direction of view to turbines:	South
Potential No. of turbines visible:		Potential Number of aviation lights:	

Property 18: The Houstry of Dunn - Figure A6.7.20

Description of Likely Views of the Development from the Property:	Backlass hill will block all of the proposed development from view, except for the blade tips of turbines 1, 2 and 5.
Step 3: Assessment of likely change to visual amenity of properties	
Magnitude of Change:	No Change
Effect:	Negligible



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Description of Property, Location and Context: This property comprises a a1.5 storey house set back from the road, down a driveway with a wide belt of woodland planting to the south east of the property screening it from the road. It is situated down a driveway off the B870 (between Watten and Mybster). Situated at approximately 80m AOD. Orientated in a south east, north east direction, with a area of garden all around the property. there are several outbuildings to the north west of the property.

Description of Existing Views from the Property: The main view is down hill and north towards Watten Loch across farmland and to the opposite side of the valley. The views south, south east are screened by a dense area of woodland between the property and the road. To the south is the higher land of Backlass hill which blocks further views south.
One operational windfarm maybe partially visible between the woodland planting is Bliibster windfarm (6.9 km east).
During hours of darkness, artificial lighting sources are limited to vehicles travelling along the B870 road, neighbouring property, and overhead aircraft.

Table A6.26: Property 19: Backlass Hill Cottage Assessment

Property 19: Backlass Hill Cottage - Figure A6.7.21			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	320426, 954034	Primary outlook:	South west, south east
Distance to nearest Turbine:	2.8 km	Direction of view to turbines:	South
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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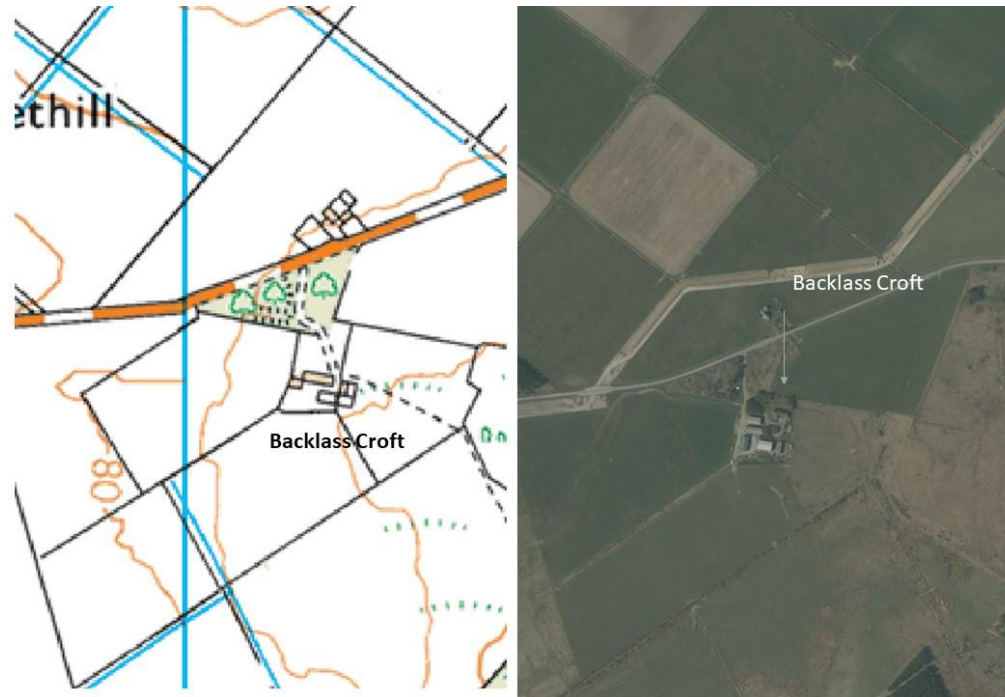
Description of Property, Location and Context:	<p>This property comprises a single storey L shaped property close to the summit of Backlass Hill, it is situated at approximately 105 m AOD.</p> <p>The house is accessed down a long shared access track off the B870 (between Watten and Mybster). There is garden ground on all sides of the property and a outbuilding to the north west,</p>
Description of Existing Views from the Property:	<p>The main view is to the south east and south west of this property. Views to the north are towards the gorse covered summit of Backlass Hill. Views west are filtered by the outbuilding and conifer forestry just beyond this. Views to the south west from this elevated location are far reaching across farmland and conifer forestry. Views to the south east are similarly open and far reaching across farmland, moors and forestry.</p> <p>Operational windfarm clusters that are visible from here include: Blibster (7.5k m south east), Camster (7.2 km south east), Halsary (3.0 km south west).</p> <p>During hours of darkness, artificial lighting sources are limited to vehicles travelling along the track to neighbouring property, and overhead aircraft and the operational windfarms already mentioned.</p>
Description of Likely Views of the Development from the Property:	<p>The wireline indicates that all seven turbines will be visible from this location. They will be seen as three small groups. The two nearest turbines are (T1, T5).</p> <p>All the aviation lights will be visible on all seven turbines.</p>

Step 3: Assessment of likely change to visual amenity of properties

Property 19: Backlass Hill Cottage - Figure A6.7.21	
Magnitude of Change:	The size and scale of the change would be considerable in views to the south from the back of the house. Overall, the Proposed Development would occupy a very small part of the view experienced from within the property and mainly from external areas to the front and access track. The change to the view would be long term and reversible. Magnitude of change is Low .
Effect:	Minor adverse effect and not significant due to the proposed turbines appearing in open views from the south facing elevation of the property occupying a small extent of the overall view
Step 4: Forming the RVAA judgement	
RVAA Judgement	Although there would be a significant effect on views from the south facing elevation of the property and garden, it is not considered that living standards of the property would be affected overall or render it an unattractive place to live due to a combination of the limited extent of the Proposed Development visible, and contribution of landform screening.

Table A6.27: Property 20: Backlass Croft Assessment

Property 20: Backlass Croft - Figure A6.7.22			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	319979, 954631	Primary outlook:	North South
Distance to nearest Turbine:	2.5 km	Direction of view to turbines:	South
Potential No. of turbines visible:	7	Potential Number of aviation lights:	



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Description of Property, Location and Context: This property comprises a single storey residential property accessed by a driveway off the B870 (between Watten and Mybster). The property is situated at approximately 90m AOD, on the northern flank of Backlass Hill. There is a area of lawn around the property, and several trees and outbuildings to the west and south.

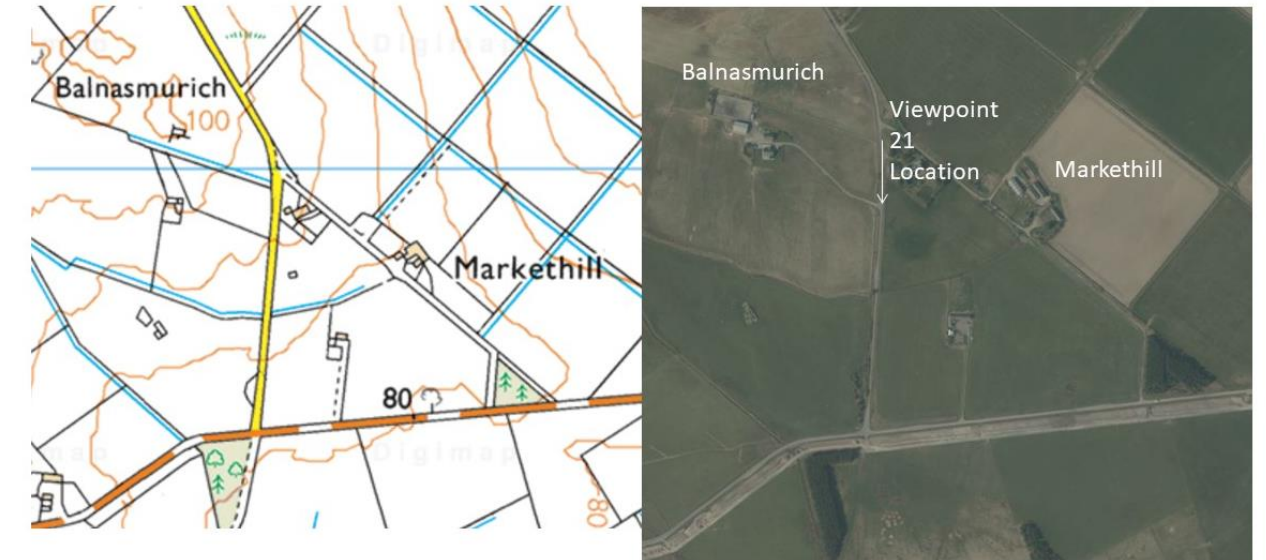
Description of Existing Views from the Property: The main view is from the front of the property looking north, however there are trees screening the north, west and outbuildings and more trees screen the south west and south. There is an open view to the east, across farmland and to the summit of Backlass Hill. No operational windfarms are visible from this location. During hours of darkness, artificial lighting sources are limited to vehicles travelling along the B870 road, neighbouring property, and overhead aircraft.

Description of Likely Views of the Development from the Property: The proposed development will be partially obscured by intervening forestry, only the blade tips of turbine 2 will be visible. The towers of the other turbines will be partially obscured too. Turbines 1,4,5,6,7 will be the closest and part of the tower and all of the blades will be visible.

Step 3: Assessment of likely change to visual amenity of properties	
Magnitude of Change:	No Change
Effect:	Negligible

Table A6.28: Property 21: Balnasmurich/ Markethill Assessment

Property 21: Balnasmurich/ Markethill - Figure A6.7.23			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	319414, 954873	Primary outlook:	South east- north west
Distance to nearest Turbine:	3.0 km	Direction of view to turbines:	South
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context: Balnasmurich is a 1.5 storey residential property located up a long driveway set back from the B870 road (between Watten and Mybster). Situated at approximately 70 m AOD. Orientated in a south east to north west direction, several outbuildings are located to the north and east of the property. To the south the landform descends gently, and there are some deciduous trees to the south east. Markethill is a single storey cottage close to a single track road, and has the same view south and a similar elevation as Balnasmurich.

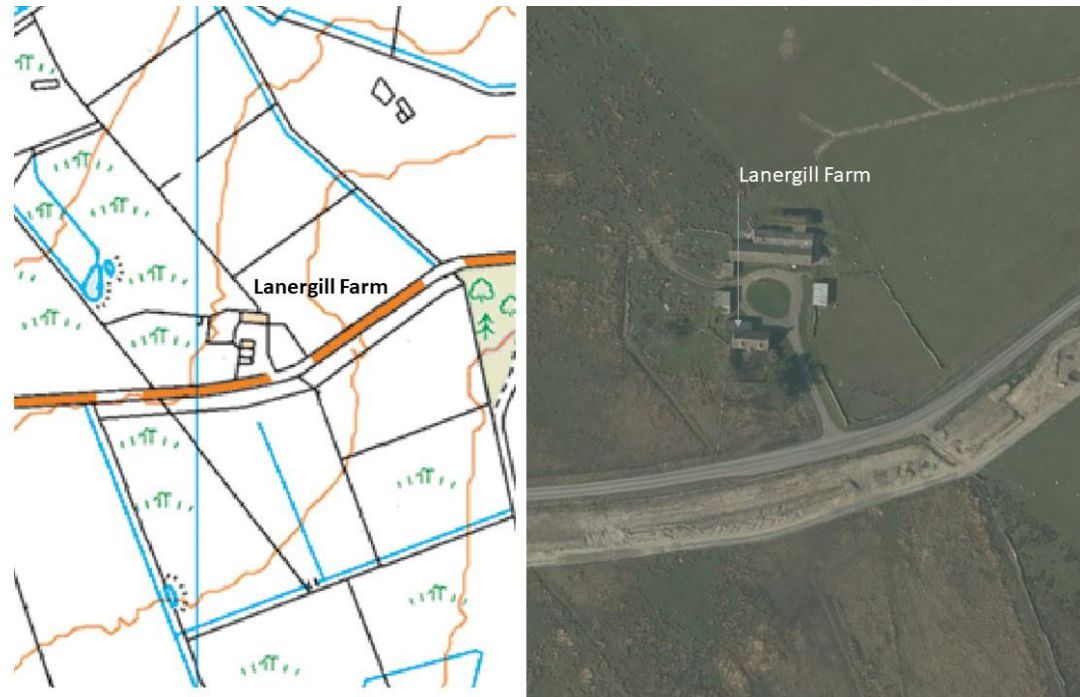
Description of Existing Views from the Property: The main view is from the front of the property looking south east across farmland, and a block of conifer forestry near the B870 road. Operational windfarms that are visible from here include: Halsary Windfarm cluster (3.5 km south west), and the Causeymire cluster (5.1 km south west). Intervening topography and lands form screen much of these windfarms, only blades are visible. During hours of darkness, artificial lighting sources are limited to vehicles travelling along the B870 road, neighbouring property, and overhead aircraft.

Description of Likely Views of the Development from the Property: All 7 Turbines will be visible from this location, and will appear as three groups of turbines. The towers maybe partially obscured by the intervening forestry, however the blade tips will be visible on all turbines.

Step 3: Assessment of likely change to visual amenity of properties	
Magnitude of Change:	No Change
Effect:	Negligible

Table A6.30: Property 22: Lanergill Farm Assessment

Property 22: Lanergill Farm - Figure A6.7.24			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	319084, 954440	Primary outlook:	South west, north east
Distance to nearest Turbine:	3.0 km	Direction of view to turbines:	South east
Potential No. of turbines visible:	7	Potential Number of aviation lights:	7



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Description of Property, Location and Context: This property comprises 1.5 storey residential property close to the B870 road (between Watten and Mybster). Orientated in a south west to north east direction, several outbuildings are located to the north and east of the property. To the north the landform rises gently from the rear of the property. Situated at approximately 85 m AOD.

Description of Existing Views from the Property: The main view is from the front of the property looking south west across the road to the farmland and conifer forestry beyond. There are several operational windfarm clusters visible from this location; Causeymire cluster (4.4 km south west), Halsary cluster (3.1 km south).

During hours of darkness, artificial lighting sources are limited to vehicles travelling along the B870 road, neighbouring property, and overhead aircraft and the operational windfarms mentioned.

Description of Likely Views of the Development from the Property: The turbines will appear as three spaced out groups. The middle group will consist of three turbines, but two are aligned (Turbines 3,5). Similarly Turbines 6 and 7 are also aligned. The full turbine towers on five turbines and the blades on all seven Turbines will be visible.

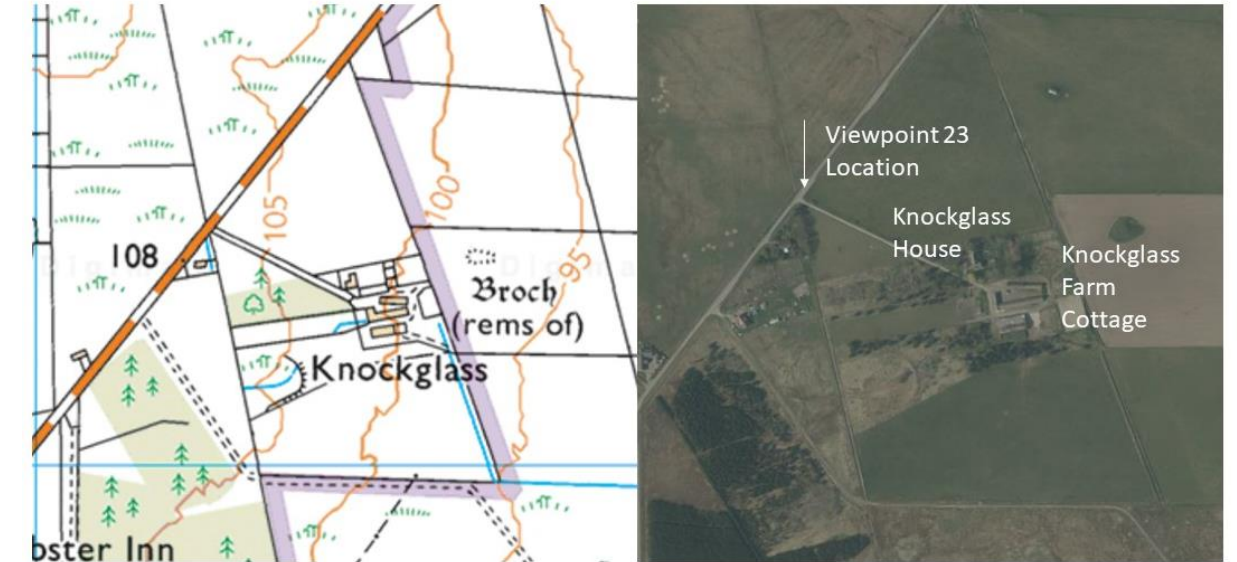
Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change: No Change

Effect: Negligible

Table A6.32: Property 23: Knockglass Assessment

Property 23: Knockglass (includes Knockglass House and Knockglass Farm Cottage) - Figure A6.7.25			
Step 2: Evaluation of the Baseline Visual Amenity			
OS Grid Ref	317261, 953339	Primary outlook:	South east North west
Distance to nearest Turbine:	3.0 km	Direction of view to turbines:	South east
Potential No. of turbines visible:		Potential Number of aviation lights:	



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Description of Property, Location and Context: Knockglass House comprises a 1.5 storey residential property, accessed by a driveway off the B870 (Between Watten and Mybster). The property is situated at approximately 100 m AOD. There is woodland planting to the west, north and east, and several outbuildings and another residence to the south, with more woodland beyond this.

Knockglass farm cottage comprises a single storey residential steading property, accessed by a driveway off the B870 (Between Watten and Mybster). The property is situated at approximately 100 m AOD. There is woodland planting to the west, north, and several outbuildings to the south.

Description of Existing Views from the Property: The views are enclosed by the woodland planting and outbuildings, there maybe some glimpsed views between trees, especially during winter time after leaf fall. From the driveway to the property the view is more open, and there maybe moments where the operational windfarms nearby are visible from here. These operational windfarms are the Halsary cluster (2.3 km south, and Causeymire (2.5 km south west).

During hours of darkness, artificial lighting sources are limited to vehicles travelling along the B870 road, neighbouring property, and overhead aircraft.

Description of Likely Views of the Development from the Property: All seven Turbines will be partially visible from this location, however the intervening forestry will obscure views of the turbine towers and nearly all of the blades. It is possible that the blade tips are just visible above the tree tops.

Step 3: Assessment of likely change to visual amenity of properties

Magnitude of Change: No Change

Property 23: Knockglass (includes Knockglass House and Knockglass Farm Cottage) - Figure A6.7.25

Effect: Negligible

Summary of Residential Visual Amenity

- A6.1.1 Thirty two properties arranged into 23 groups have been identified within 3 km from the Proposed Development. One of these is located within the Proposed Development Area (Property name: Shielton) and financially involved with the Proposed Development, the remaining properties are scattered along the B870 to the north, north west, and north east of the proposed wind farm, and one isolated property to the south east.
- A6.1.2 Significant visual effects of **Major** adverse have been predicted for five properties as follows (those marked with an * are financially involved):
- Property 1: Shielton* (Major);
 - Property 2: No 22 West Watten (Major);
 - Property 3: No 19 West Watten (Major)
 - Property 4: No 18 West Watten *(Major)
 - Property 17. Leanmore (Major).
- A6.1.3 This is due to the extent of the Proposed Development visibility, open views obtained and, in some cases, proximity to the Proposed Development.
- A6.1.4 Only the Shielton Property, 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. This is due to screening from intervening landform which reduces the vertical extent of the proposed turbines, the small number of turbines visible of the overall development and distance.

ANNEX A. ORNITHOLOGICAL LEGAL PROTECTION

In Scotland, all wild birds are protected under the Wildlife and Countryside Act 1981 (the 'Act'), as amended by the Nature Conservation (Scotland) Act 2004. This protection also extends to their eggs and nests, with it being an offence to intentionally or recklessly¹:

- Kill, injure or take any wild bird²;
- Take, damage, destroy or otherwise interfere with the nest of any wild bird while it is being built or is in use³;
- At any other time take, damage, destroy or otherwise interfere with any nest habitually used by any wild bird included in Schedule A1 (Protected Nests and Nest Sites for Birds: white-tailed eagle and golden eagle)⁴;
- Obstruct or prevent any wild bird from using its nest⁵; or
- Take or destroy an egg of any wild bird⁶.

It is also an offence to have in possession or control any live or dead wild bird or any part thereof; or any egg or part of an egg of any wild bird⁷.

Further special protection under this legislation is afforded to those species listed on Schedule 1 of the Act. For these species, it is an offence to:

- Intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or is in, on or near a nest containing eggs or young, or disturb the dependent young of such a bird⁸;
- Intentionally or recklessly disturb any wild birds included on Schedule 1 which leks, while it is doing so⁹ (capercaillie is the only bird this offence applies to in Scotland);
- Intentionally or recklessly harass any wild bird included in Schedule 1A¹⁰. Section 1, subsection 5B states, 'Subject to the provisions of this Part, any person who intentionally or recklessly harasses any wild bird included in Schedule 1A shall be guilty of an offence'. At this time, Schedule 1A includes golden eagle, hen harrier, red kite and white-tailed eagle. This updated legislation was introduced on 16 March 2013; or

¹ Exceptions to these offences exist under various circumstances (e.g. controlling pest species; taking birds during specific season; and killing sick or injured birds etc.).

² UK Government (1981) *Wildlife and Countryside Act 1981, Section 1(1)(a)* [Online] Available at: [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1981/61/section/1/1/a) [Accessed 27/07.2023]

³ UK Government (1981) *Wildlife and Countryside Act 1981, Section 1(1)(b)* [Online] Available at: [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1981/61/section/1/1/b) [Accessed 27/07.2023]

⁴ UK Government (1981) *Wildlife and Countryside Act 1981, Section 1(1)(ba)* [Online] Available at: [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1981/61/section/1/1/ba) [Accessed 27/07.2023]

⁵ UK Government (1981) *Wildlife and Countryside Act 1981, Section 1(1)(bb)* [Online] Available at: [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1981/61/section/1/1/bb) [Accessed 27/07.2023]

⁶ UK Government (1981) *Wildlife and Countryside Act 1981, Section 1(1)(c)* [Online] Available at: [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1981/61/section/1/1/c) [Accessed 27/07.2023]

- Intentionally or recklessly take, damage, destroy or otherwise interfere with any nest and/or nest site habitually used by any bird on Schedule A1 at any time. At this time, Schedule 1A includes golden eagle and white-tailed eagle¹¹;

It is also an offence to knowingly cause or permit to be done an act which is made unlawful by any of the above provisions.

Further protection is described under the EU Birds Directive which requires member states to maintain wild bird species in favourable conservation status¹² and promote the conservation of bird species listed within Annex 1 of the Birds Directive through the protection of their habitat. This is achieved via the designation of Special Protection Areas (SPAs).

Red List bird species are those deemed to be globally threatened and to be suffering population declines within the UK. Although not legally enforceable, the conservation of Red List bird species represents a material consideration, in planning terms.

⁷ UK Government (1981) *Wildlife and Countryside Act 1981, Section 1(2)* [Online] Available at: [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1981/61/section/1/2) [Accessed 27/07.2023]

⁸ UK Government (1981) *Wildlife and Countryside Act 1981, Section 1(5)* [Online] Available at: [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1981/61/section/1/5) [Accessed 27/07.2023]

⁹ UK Government (1981) *Wildlife and Countryside Act 1981, Section 1(5A)* [Online] Available at: [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1981/61/section/1/5a) [Accessed 27/07.2023]

¹⁰ UK Government (1981) *Wildlife and Countryside Act 1981, Section 1(5B)* [Online] Available at: [Wildlife and Countryside Act 1981 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/1981/61/section/1/5b) [Accessed 27/07.2023]

¹¹ This reflects the changes introduced by the Wildlife and Countryside Act 1981 (as amended by: Variation of Schedules A1 and 1A (Scotland) Order 2013).

¹² While the term 'favourable conservation status' is not used in the Birds Directive, EU court cases over recent years have progressively interpreted the concept as meaningful in a Birds Directive context (SNH, 2006).

ANNEX B. ORNITHOLOGICAL SURVEY METHODOLOGY

A range of ornithological surveys have been conducted at the proposed Watten Wind Farm (the Proposed Development). The methodologies used in these surveys are summarised in the sections below; more detailed descriptions are provided in the NatureScot guidance (SNH 2010ⁱ, 2013ⁱⁱ, 2014ⁱⁱⁱ and 2017^{iv}) on which these surveys are based.

Survey Areas

Surveys were undertaken during the 2013, 2014, 2019, 2020 and 2022 breeding and 2013/2014, 2014/2015, 2019/2020 and 2020/2021 non-breeding seasons. All surveys were buffered from the Proposed Development boundary provided by the client.

B.1 Flight Activity Surveys

The aims of the flight activity vantage point (VP) surveys are: (1) to record flight activity within the vicinity of the Proposed Development in order to identify areas of importance to birds; and (2) to quantify flight activity within 500 m of proposed turbine locations in order to estimate the likelihood of collision (SNH, 2017^{iv} P.14-19).

Timing

- A survey period of 36 hours is recommended as the minimum level of sampling intensity at each VP for each season (breeding, non-breeding, migratory) (SNH, 2017^{iv} P.17);
- Watches were spread as evenly throughout the year as possible to ensure that temporally representative data are collected (see **Annex C**). Specific consideration was given to the period around dawn and twilight for breeding waders and to changing raptor behaviour across seasons (SNH, 2017^{iv} P.17);
- Watches were suspended and resumed to take account of changes in visibility (e.g., fluctuations in cloud base). Watches were undertaken in conditions of good ground visibility when the cloud base was higher than the most elevated ground being observed; and
- Watches were conducted in a range of weather conditions and were spread throughout the day (see **Annex C** and **Annex D**).

Field Methods

- Viewshed analysis was conducted using Arc GIS to confirm suitable VP locations and their associated visible areas at 20m above ground level¹;
- Reconnaissance surveys were undertaken to refine VP locations;
- The VP locations and associated viewsheds are shown in **Figure 8.3**;
- Care was taken to maximize the area visible whilst minimising disturbance to birds;
- The VP locations were selected with the aim of achieving coverage of all the proposed turbine locations such that no turbine was more than 2 km from a VP. This objective was achieved for all the turbines;

- A maximum 180° view arc was scanned by surveyors. This rule did not however apply when tracking migratory waterfowl, raptors or divers across the Proposed Development;
- Each watch lasted a maximum of three hours but was suspended and then resumed to take account of changes in visibility (e.g., fluctuations in the cloud base).

For each target and secondary species, the following data were recorded (SNH, 2017^{iv} P.17-18):

- The flightlines by individuals or flocks of birds;
- The time the target bird was detected and the duration (seconds) spent flying over a defined survey area (the viewshed);
- The birds' flight heights were recorded at the point of detection and at 15 second intervals thereafter. Up to the end of March 2014, flight height was defined into three prescribed height bands (0-20 m, 21-125 m and >126 m), and from April 2014 onwards into five prescribed height bands (0-20 m, 21-40 m, 41-100 m, 101-150 m and >151 m). From this the proportion of time spent flying below, within (referred to as Potential Collision Height (PCH)) and above approximate rotor height could be estimated. The actual planned rotor height is 58-220 m above ground level. This difference is accounted for within the collision risk models on the assumption of even flight distribution within each height band;
- The route followed was plotted in the field onto 1:25,000 scale maps;
- Observations of target species took priority over recording secondary species if both species were present simultaneously;
- The number of birds recorded were the minimum number of individuals that could account for the activity observed; and
- Observers only recorded perched birds and birds on waterbodies once only on arrival at the VP. Thereafter only flying birds and newly noticed perched/swimming birds were included in the activity summaries.

B.2 Moorland Breeding Bird Survey

Upland breeding bird survey methodology was employed as detailed within SNH Guidance (SNH, 2017^{iv} P.11). In summary, surveys involved the following:

- Open upland (including hedgerows, scrub, isolated trees and copses) was surveyed using an intensive version of the Brown and Shepherd (1993^v) method for upland bird survey;
- The objectives were to map the distribution of breeding bird territories within 500 m of the Proposed Development and estimate the approximate size of breeding bird populations;
- After each survey visit one overview map was then produced showing all target species. The maps from all four survey visits from that year were then compared, enabling the estimation of numbers of breeding territories. This was done by grouping the observations into territories using the methodology described by Bibby *et al.* (2000^{vi}). Due to the cryptic nature of many breeding birds and the necessary assumptions

¹The viewsheds are based on a 5 m DTM to provide a representation of visibility from the observer locations; this is confirmed and refined through field site visits.

made when plotting territories, a minimum and maximum number of territories was identified for each target species;

- The survey covered all areas within 500 m of the Proposed Development; and
- All upland wader species were recorded during the breeding bird survey.

Timing

- As recommended in Calladine *et al.* (2009^{vii}), four survey visits were undertaken between April and July;
- Fieldwork was undertaken between sunrise and 1800hrs; and
- Fieldwork was not undertaken in conditions considered likely to affect bird detection rates, for example in winds greater than Beaufort Scale Force 4, persistent precipitation, poor visibility (less than 300 m), or in unusually hot weather.

Field Methods

- Walk-routes which optimised ground visibility were used;
- Surveyors paused at appropriate vantage and listening points;
- Isolated trees, copses and patches of scrub were approached and examined;
- Streams, ditches and hedgerows were walked;
- All other areas were approached to within 100 m; and
- Registrations were mapped at the first location that behaviour indicative of breeding was observed; and
- Standard British Trust for Ornithology (BTO) activity codes were used.

B.3 Winter Walkover

Winter walkovers were performed in the non-breeding seasons to map wintering populations of birds within 500 m of the Proposed Development.

- The area was surveyed three times during each non-breeding season;
- These surveys involved following a route that optimised ground coverage, such that observers walked within 250 m of every point; and
- Observers periodically stopped at appropriate viewing and listening points along the route and longer vantage point watches were included within the walkover to allow potentially important areas to be monitored in greater detail.

B.4 Scarce Breeding Bird Survey

The aim of the scarce breeding bird surveys was to determine the distribution of occupied nests/territories for target raptor, owl and diver species within 2 km of the Proposed Development and record breeding success. Secondary species such as buzzard, sparrowhawk and kestrel were also noted but location of their nests was not the key focus of the surveys.

Surveys were undertaken by experienced and licensed² field ornithologists. Extreme care was taken to avoid unnecessary disturbance to breeding birds.

Guidance from NatureScot (SNH, 2017^{iv} P.11-14), 'Bird Monitoring Methods' (Gilbert *et al.* 1998^{viii}) and 'Raptors: a field guide to survey and monitoring' (Hardey *et al.* 2013^{ix}) were all consulted to inform survey methodology and are referenced where appropriate in the species methodologies below.

Barn Owl

- The surveys followed methodology outlined in Gilbert *et al.* (1998), as mentioned in NatureScot guidance (SNH, 2017^{iv} P12-13);
- Surveys were undertaken within 1 km of the Proposed Development; and
- Surveyors checked for signs of occupation (moulted feathers, pellets) in all suitable buildings (where access was permitted/possible) within this 1 km buffer.

Black-Throated Diver

Methodology outlined in Gilbert *et al.* (1998), as mentioned in NatureScot guidance (SNH, 2017^{iv} P.12), was used as guidance. Extreme care was taken not to disturb potential nests especially around the time of year when females were likely to be laying or incubating.

- All suitable habitats within 1 km of the Proposed Development Area were searched, including areas of water, lochs and/or any shorelines where present;
- Searches carried out between April and July were focussed on locating summer territories and sitting, brooding or prospecting/nest-building birds as well as numbers of non-breeding adults;
- By observing from a distance, disturbance to nesting or incubating birds was kept to a minimum;
- Where pairs without eggs or young were present, a subsequent visit was made to confirm nest occupancy;
- Where breeding was confirmed, no subsequent visits were made (Gilbert *et al.* 1998); and
- Where present, numbers of non-breeding divers were also assessed (SNH, 2017^{iv} P.34).

Golden Eagle

Methodology outlined in Hardey *et al.* (2013) was used as guidance. Extreme care was taken not to disturb potential nests, especially where nesting was confirmed or during periods of extremely wet, hot or cold conditions (Hardey *et al.* 2013).

- All habitats within 2 km of the Proposed Development Area with the potential to accommodate golden eagle were searched including; Caledonian pine woodland, montane areas, heather moorland, open and unimproved habitat;
- Searches carried out between January and March focussed on watching for territorial displays and nest building activities. Occupancy of the home range was confirmed by seeing two adult birds together, or by seeing one bird incubating in the later months (Hardey *et al.* 2013);

² All surveyors hold NatureScot Schedule 1 Licences.

- When searches of a nesting site were carried out, they were done so from a distance, so as to not cause disturbance to any displaying, nesting or incubating birds; and
- Where breeding was confirmed, scans of the nests were carried out in June, to check for the presence of young. Further scans were carried out in late July to search for fledged young.

Goshawk

Methodology outlined in Hardey *et al.* (2013) was used as guidance for the surveying of areas for potential goshawk breeding. Extreme care was taken not to disturb potential nests especially around the time of year when females were likely to be laying or incubating.

- Areas of suitable woodland were observed for the presence of nests. Searches for goshawk nests were focused on mature forestry blocks, although their presence was not ruled out of other wooded areas;
- Searches carried out between March and April focussed on observing territorial and nest building behaviours;
- Where nests were known to be present, scans were carried out between mid-March and May to confirm breeding. Scans were kept brief – carried out for between 5-10 minutes and from a distance; and
- When breeding was confirmed, searches for further nests were deferred until such a time as the young had hatched. Searches were then undertaken between late May and late June for evidence of provisioning young and then between late July and early August to watch for fledgling activity, this included listening for the begging calls of newly fledged young.

Hen Harrier

Methodology outlined in Hardey *et al.* (2013) was used as guidance for the surveying of areas for potential hen harrier breeding. Extreme care was taken not to disturb potential nests especially around the time of year when females were likely to be laying or in cold/wet weather when females were likely to be incubating or brooding. Areas of suitable habitat³ were visited during four time periods across the breeding season to:

- Check for territory occupancy (between March and mid-April) – this consisted of watching over suitable habitat from a good vantage point for displaying males (and females) and checking all areas of suitable habitat to within 250 m (watching out for signs of kills);
- Locate incubating females (between mid-April and late May) by listening for female begging calls and watching for food passes between the male and female – surveyors watched for at least four hours as Hardey *et al.* (2013) notes that when the female is incubating it can be up to six hours between feeding visits from the male, but on average it is less than every four hours. Surveys were undertaken between 06:00 to 12:00 or 16:00 to 20:00;
- Check for young or breeding evidence (between late May and late June) again by listening for female begging calls and watching for food passes between male and female when the female is brooding and watching for the male and female provisioning the nest with food once brooding has ended– surveyors should watch for at least two hours as Hardey *et al.* (2013) notes that an adult bird will visit the nest every

1-2 hours. Surveyors should also watch for display behaviour which could indicate a failed breeding attempt; and

- Check for fledged young (between late June and late August).

Surveys were also undertaken during the non-breeding seasons to monitor for possible roosting activity within 500 m of the Proposed Development. Surveys followed the methodology outlined in Hardey *et al.* (2013) and Gilbert *et al.* (1998) and consisted of watching over suitable areas from late afternoon until dusk for any hen harrier appearing to land in vegetation and not take flight again.

Merlin

Methodology outlined in Hardey *et al.* (2013) was used as guidance for the surveying of areas for potential merlin breeding.

- Areas of suitable nesting habitat (including forest edge where trees are >5 m high) were closely observed between 20th March and 30th April;
- Boulders, fence lines, isolated posts, stone dykes, grouse butts, hummocks, stream banks, crags, trees and recently burnt areas of heather were checked for signs of occupation (e.g., plucked prey, moulted feathers, pellets and faeces);
- If merlin were observed, or signs found, areas were visited at least twice to verify occupation of the territory; and
- Potential nest areas were watched for 4-6 hours if necessary.

Osprey

Methodology outlined in Hardey *et al.* (2013) and Gilbert *et al.* (1998) was used as guidance for the surveying of areas for potential osprey breeding. Care was taken when carrying out the searches so as not to disturb any displaying or nesting birds, with nests checked from a distance.

- All wooded areas within the survey area were searched for the possible presence of nests, especially those located close to freshwater lochs and rivers that could provide feeding sites. Artificial platforms were also checked;
- If breeding was suspected within the survey area, the location was visited between April and May until nesting was confirmed;
- In line with the methods suggested by Gilbert *et al.* (1998) and Hardey *et al.* (2013), proof of occupancy was determined by:
 - Two ospreys seen on the same eyrie on more than one occasion (with a week separating observations), incubation, or feeding of chicks.
- Further scans were undertaken between late May and early July to try and observe any young in the nests.

³ Unsuitable habitat areas include: land above 600 m; improved pasture and arable land; extensive areas of degraded land with no heather cover and low vegetation; the vicinity of cliffs, rocky outcrops, boulder fields and scree; areas within 100 m of hill farms and occupied dwellings.

Peregrine Falcon

- Potential nest sites were visited and checked for evidence of occupation between March and April;
- Sites checked included crags and steep banks identified from OS maps and searches of the survey area;
- Surveyors checked for signs of occupation (e.g., faecal splash, fresh plucked prey);
- If occupied sites were found they were re-visited to verify incubation; and
- Searches were made for eyries. Where this was not possible sites were watched from a suitable vantage point for 3-4 hours or until a nest was located.

Red-Throated Diver

Methodology outlined in Gilbert *et al.* (1998), as mentioned in NatureScot guidance (SNH, 2017^{iv} P.12), was used as guidance for the surveying of areas for potential red-throated diver breeding. Extreme care was taken not to disturb potential nests especially around the time of year when females were likely to be laying or incubating and by observing from a distance, disturbance to nesting or incubating birds was kept to a minimum.

- All suitable habitats within 1 km of the Proposed Development Area were searched, including all areas of standing water (small pools and lochans in open moorland and forested areas) and shorelines where present;
- Searches carried out between late May and July focussed on locating breeding pairs, incubating adult birds and non-breeding adults; and
- Surveyors recorded the number of breeding pairs (including incubating birds seen or young, eggshell fragments or dead chicks) and the maximum number of non-breeding adults.

Red Kite

Care was taken not to disturb any birds, especially between mid-March and mid-April when disturbance to displaying red kites can cause them to move to another area (Hardey *et al.* 2013).

- Wooded areas were scanned from outside for the presence of nests, with signs occupation searched for between February and March;
- Potential territories were watched for 1-2 hours between March and April to observe any breeding or nest-building behaviour; and
- Where breeding was confirmed, nests were scanned to determine the breeding success between late April and late June/early July.

Short-Eared Owl

- At least two visits between early April and the end of May were carried out;

- Suitable habitat was visited and checked for evidence of hunting males, territorial activity and other signs of presence; and
- If breeding was confirmed, a further visit was made in June to watch birds, locate nest-sites and confirm breeding behaviour wherever possible.

White-Tailed Eagle

Methodology outlined in Hardey *et al.* (2013), as mentioned in NatureScot guidance (SNH, 2017^{iv} P.12) was used as guidance for the surveying of areas for potential white-tailed eagle breeding. Active nests were observed from a distance so as to minimise disturbance.

- All suitable habitats (including open coastal or fresh water, large and small crags and suitable trees) within a 2 km radius were checked for signs of nest sites, breeding territories or communal roosts;
- Surveys within nesting ranges were carried out between November and mid-February, focussing on locating refurbished nest sites;
- Surveys between mid-March and August focussed on locating active nests and young; and
- All suitable crags and trees within nesting ranges were checked for signs of roosts. These include droppings, down, feathers and pellets.

ⁱ Scottish Natural Heritage (December 2010) Survey methods for use in assessing the impacts of onshore windfarms on bird communities.

ⁱⁱ Scottish Natural Heritage (August 2013) Recommended bird survey methods to inform impact assessment of onshore windfarms.

ⁱⁱⁱ Scottish Natural Heritage (May 2014) Recommended bird survey methods to inform impact assessment of onshore windfarms.

^{iv} Scottish Natural Heritage (March 2017) Recommended bird survey methods to inform impact assessment of onshore windfarms.

^v Brown, A. F. and Shepherd, K. B. (1993) A method for censusing upland breeding waders. *Bird Study*, 40: 189-195.

^{vi} Bibby, C. J., Neil D. Burgess, David A. Hill and Simon H. Mustoe (2000) *Bird Census Techniques*, 2nd Edition, London, Academic Press.

^{vii} Calladine, J., Garner, G., Wernham, C., & Thiel, A. (2009) The influence of survey frequency on population estimates of moorland breeding birds. *Bird Study*, 56: 3, 381-388.

^{viii} Gilbert, G., Gibbons, D. W. and Evans, J. (1998) *Bird Monitoring Methods*. RSPB, Sandy.

^{ix} Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013) *Raptors: a field guide for surveys and monitoring* (3rd edition). The Stationery Office, Edinburgh.

ANNEX C. ORNITHOLOGICAL SURVEY EFFORT & GENERAL INFORMATION

Table C-1 shows the system used for recording weather conditions on all the surveys (sections C1 to C6 below).

Table C-1 Key to meteorological conditions recorded during all surveys

Wind speed		Rain		Cloud cover		Cloud height	
Calm	0	Moderate gale	7	None	0	In eighths	<150m
Light air	1	Fresh gale	8	Drizzle/Mist	1	e.g. 3/8	150-500m
Light breeze	2	Strong gale	9	Light showers	2		>500m
Gentle breeze	3	Whole gale	10	Heavy showers	3		
Moderate breeze	4	Storm	11	Heavy rain	4		
Fresh breeze	5	Hurricane	12	Snow		Frost	
Strong breeze	6			None	0	None	0
				On site	1	Ground	1
				High ground	2	All day	2
				Visibility			
						Poor (<1km)	0
						Moderate (1-2km)	1
						Good (>2km)	2

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C.1 Flight Activity Surveys

Flight activity surveys were undertaken during the 2013, 2014, 2019 and 2020 breeding seasons and 2013/2014, 2014/2015, 2019/2020 and 2020/2021 non-breeding seasons. Details of the flight activity surveys undertaken across each Vantage Point (VP) location are supplied in **Table C-2** (survey hours per VP per season are summarised in **Technical Appendix A8.1**) and the associated weather data recorded is detailed in **Table C-3**. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-2 Summary of flight activity surveys undertaken at The Proposed Development (sorted chronologically)

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ¹ surveyed
22/03/2013	2013 breeding season	JS	1	1415	1715	3
24/03/2013	2013 breeding season	RS	1	1330	1630	3
26/03/2013	2013 breeding season	JS	2	1045	1345	3
26/03/2013	2013 breeding season	JS	2	1445	1745	3
10/04/2013	2013 breeding season	JS	1	1400	1700	3
16/04/2013	2013 breeding season	JS	2	0500	0800	3
19/04/2013	2013 breeding season	RS	1	1830	2130	3
21/04/2013	2013 breeding season	RS	2	1030	1330	3
23/04/2013	2013 breeding season	RS	1	1300	1600	3
25/04/2013	2013 breeding season	RS	2	1845	2145	3
29/04/2013	2013 breeding season	RS	1	0430	0730	3
30/04/2013	2013 breeding season	RS	2	1400	1700	3
01/05/2013	2013 breeding season	RS	1	1900	2200	3
04/05/2013	2013 breeding season	RS	1	0800	1100	3
05/05/2013	2013 breeding season	RS	2	0415	0715	3
05/05/2013	2013 breeding season	RS	2	0800	1100	3
07/05/2013	2013 breeding season	RS	1	0400	0700	3
08/05/2013	2013 breeding season	RS	2	0400	0700	3
08/05/2013	2013 breeding season	RS	1	1915	2215	3
09/05/2013	2013 breeding season	RS	2	1920	2220	3

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ¹ surveyed
10/05/2013	2013 breeding season	RS	1	1500	1800	3
11/05/2013	2013 breeding season	RS	2	1500	1800	3
13/05/2013	2013 breeding season	RS	1	0350	0650	3
15/05/2013	2013 breeding season	RS	2	1930	2230	3
10/06/2013	2013 breeding season	RS	1	0315	0615	3
18/06/2013	2013 breeding season	RS	2	1300	1600	3
25/06/2013	2013 breeding season	RS	1	1800	2100	3
27/06/2013	2013 breeding season	RS	2	0700	1000	3
03/07/2013	2013 breeding season	RS	1	1900	2200	3
09/07/2013	2013 breeding season	RW	2	1615	1915	3
09/07/2013	2013 breeding season	RW	1	1935	2235	3
10/07/2013	2013 breeding season	RW	2	0340	0640	3
10/07/2013	2013 breeding season	RW	1	0700	1000	3
17/07/2013	2013 breeding season	RS	2	1830	2130	3
19/07/2013	2013 breeding season	RS	1	1200	1500	3
19/07/2013	2013 breeding season	PG	2	1920	2220	3
20/07/2013	2013 breeding season	PG	1	0430	0730	2.5
20/07/2013	2013 breeding season	PG	1	0830	1130	3
20/07/2013	2013 breeding season	PG	2	1230	1530	3
29/07/2013	2013 breeding season	RS	2	0500	0800	3
01/08/2013	2013 breeding season	RS	1	0530	0830	3
04/08/2013	2013 breeding season	RS	2	1330	1630	3
09/08/2013	2013 breeding season	RS	1	1430	1730	3
12/08/2013	2013 breeding season	RS	2	0700	1000	3
16/08/2013	2013 breeding season	PG	1	1630	1930	3
17/08/2013	2013 breeding season	PG	2	0640	0940	3
17/08/2013	2013 breeding season	PG	2	1040	1340	3
17/08/2013	2013 breeding season	PG	1	1440	1740	3
23/09/2013	2013/2014 non-breeding season	JS	2	1700	2000	3
24/09/2013	2013/2014 non-breeding season	JS	1	0600	0900	1
26/09/2013	2013/2014 non-breeding season	JS	1	1700	2000	3
29/09/2013	2013/2014 non-breeding season	JS	2	0600	0900	3
04/10/2013	2013/2014 non-breeding season	JS	1	1530	1830	3
07/10/2013	2013/2014 non-breeding season	JS	2	1300	1600	3
11/10/2013	2013/2014 non-breeding season	RS	1	1330	1630	3
12/10/2013	2013/2014 non-breeding season	RS	2	1615	1915	3
16/10/2013	2013/2014 non-breeding season	RS	2	0700	1000	2
17/10/2013	2013/2014 non-breeding season	RS	1	1600	1900	3
18/10/2013	2013/2014 non-breeding season	RS	2	1300	1600	3
19/10/2013	2013/2014 non-breeding season	JS	1	0700	1000	2
05/11/2013	2013/2014 non-breeding season	JS	2	0645	0945	3
06/11/2013	2013/2014 non-breeding season	JS	1	0700	1000	3
12/11/2013	2013/2014 non-breeding season	RS	1	0900	1200	3
13/11/2013	2013/2014 non-breeding season	RS	1	1400	1700	3
18/11/2013	2013/2014 non-breeding season	JS	2	1350	1650	3
19/11/2013	2013/2014 non-breeding season	JS	1	0830	1130	3
21/11/2013	2013/2014 non-breeding season	RS	1	0715	1015	3
23/11/2013	2013/2014 non-breeding season	RS	2	1330	1630	3
25/11/2013	2013/2014 non-breeding season	RS	2	1015	1315	3
26/11/2013	2013/2014 non-breeding season	JS	1	1330	1630	3

¹ Note: only valid hours (i.e. where visibility was at least 1 km) are presented in this column.

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ¹ surveyed
30/11/2013	2013/2014 non-breeding season	JS	2	0740	1040	3
30/11/2013	2013/2014 non-breeding season	JS	2	1140	1440	3
14/12/2013	2013/2014 non-breeding season	JS	2	0800	1100	3
16/12/2013	2013/2014 non-breeding season	JS	2	1300	1600	3
17/12/2013	2013/2014 non-breeding season	RS	1	1315	1615	3
31/12/2013	2013/2014 non-breeding season	RS	1	0800	1100	3
29/01/2014	2013/2014 non-breeding season	RS	1	1000	1300	3
29/01/2014	2013/2014 non-breeding season	RS	2	1415	1715	3
30/01/2014	2013/2014 non-breeding season	RS	1	0730	1030	3
30/01/2014	2013/2014 non-breeding season	RS	2	1130	1430	3
01/02/2014	2013/2014 non-breeding season	DL	1	0920	1220	3
01/02/2014	2013/2014 non-breeding season	DL	2	1300	1600	3
14/02/2014	2013/2014 non-breeding season	RS	2	0700	1000	3
14/02/2014	2013/2014 non-breeding season	RS	1	1100	1400	3
28/02/2014	2013/2014 non-breeding season	RS	2	1100	1400	3
28/02/2014	2013/2014 non-breeding season	RS	1	1530	1830	3
06/03/2014	2013/2014 non-breeding season	DL	1	0815	1015	2
06/03/2014	2013/2014 non-breeding season	DL	2	1100	1300	2
06/03/2014	2013/2014 non-breeding season	DL	1	1345	1515	1.5
04/04/2014	2014 breeding season	RS	1	1400	1700	3
05/04/2014	2014 breeding season	JS	1	0530	0830	2.5
05/04/2014	2014 breeding season	JS	2	0945	1245	3
11/04/2014	2014 breeding season	RS	2	1815	2115	3
16/04/2014	2014 breeding season	RS	2	1430	1730	3
16/04/2014	2014 breeding season	RS	1	1830	2130	3
18/04/2014	2014 breeding season	RS	2	0450	0750	3
18/04/2014	2014 breeding season	RS	1	0900	1200	3
22/04/2014	2014 breeding season	RS	1	0445	0745	1.5
27/04/2014	2014 breeding season	RS	2	1500	1800	3
28/04/2014	2014 breeding season	RS	2	0430	0730	2
28/04/2014	2014 breeding season	RS	1	0830	1130	3
06/05/2014	2014 breeding season	JS	1	1525	1825	3
06/05/2014	2014 breeding season	JS	2	1925	2225	2.5
07/05/2014	2014 breeding season	RS	2	1500	1800	3
07/05/2014	2014 breeding season	RS	1	1915	2215	3
08/05/2014	2014 breeding season	JS	2	0400	0700	2.5
08/05/2014	2014 breeding season	JS	1	0800	1100	3
10/05/2014	2014 breeding season	RS	2	1915	2215	2.5
11/05/2014	2014 breeding season	RS	1	0355	0655	3
11/05/2014	2014 breeding season	RS	2	0800	1100	3
13/05/2014	2014 breeding season	RS	1	0350	0650	3
14/05/2014	2014 breeding season	JS	2	0400	0700	2.5
14/05/2014	2014 breeding season	RS	1	1930	2230	3
09/06/2014	2014 breeding season	RS	1	0900	1200	3
09/06/2014	2014 breeding season	RS	2	1300	1600	3
18/06/2014	2014 breeding season	RS	1	1500	1800	3
18/06/2014	2014 breeding season	RS	2	1900	2200	3
20/07/2014	2014 breeding season	JS	2	1600	1900	3
20/07/2014	2014 breeding season	JS	1	2000	2300	3
29/07/2014	2014 breeding season	RS	1	0600	0900	3
29/07/2014	2014 breeding season	RS	2	1000	1300	3
16/08/2014	2014 breeding season	RS	2	1000	1300	3

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ¹ surveyed
16/08/2014	2014 breeding season	RS	1	1400	1700	3
18/08/2014	2014 breeding season	JS	2	1400	1700	3
18/08/2014	2014 breeding season	JS	1	1800	2100	3
23/08/2014	2014 breeding season	RS	2	0600	0900	3
23/08/2014	2014 breeding season	RS	1	1000	1200	2
17/09/2014	2014/2015 non-breeding season	DL	1	1020	1320	3
17/09/2014	2014/2015 non-breeding season	DL	1	1350	1650	3
18/09/2014	2014/2015 non-breeding season	DL	2	0925	1225	3
18/09/2014	2014/2015 non-breeding season	DL	2	0925	1225	3
10/10/2014	2014/2015 non-breeding season	DL	1	0715	1015	3
10/10/2014	2014/2015 non-breeding season	DL	1	1045	1345	3
14/10/2014	2014/2015 non-breeding season	DL	2	1210	1510	3
14/10/2014	2014/2015 non-breeding season	DL	2	1540	1840	3
26/10/2014	2014/2015 non-breeding season	DL	1	0940	1240	3
26/10/2014	2014/2015 non-breeding season	DL	1	1320	1620	3
27/10/2014	2014/2015 non-breeding season	DL	2	0635	0935	3
27/10/2014	2014/2015 non-breeding season	DL	2	1005	1305	3
05/11/2014	2014/2015 non-breeding season	DL	1	0710	1010	3
05/11/2014	2014/2015 non-breeding season	DL	1	1040	1340	3
06/11/2014	2014/2015 non-breeding season	DL	2	1030	1330	3
06/11/2014	2014/2015 non-breeding season	DL	2	1400	1700	3
24/11/2014	2014/2015 non-breeding season	DL	2	0925	1225	3
24/11/2014	2014/2015 non-breeding season	DL	1	1320	1620	3
27/11/2014	2014/2015 non-breeding season	DL	2	0740	1040	3
27/11/2014	2014/2015 non-breeding season	DL	1	1145	1445	3
04/12/2014	2014/2015 non-breeding season	DL	1	0750	1050	3
04/12/2014	2014/2015 non-breeding season	DL	1	1120	1420	3
05/12/2014	2014/2015 non-breeding season	DL	2	0950	1250	3
05/12/2014	2014/2015 non-breeding season	DL	2	1320	1620	3
27/12/2014	2014/2015 non-breeding season	DL	2	0815	0115	3
27/12/2014	2014/2015 non-breeding season	DL	1	1325	1625	3
04/01/2015	2014/2015 non-breeding season	DL	1	0925	1225	3
04/01/2015	2014/2015 non-breeding season	DL	2	1315	1615	3
05/01/2015	2014/2015 non-breeding season	DL	1	1315	1615	3
25/01/2015	2014/2015 non-breeding season	DL	2	1035	1335	3
07/02/2015	2014/2015 non-breeding season	DL	2	1010	1310	3
08/02/2015	2014/2015 non-breeding season	DL	1	1130	1430	3
22/02/2015	2014/2015 non-breeding season	DL	2	1055	1355	3
22/02/2015	2014/2015 non-breeding season	DL	1	1445	1745	3
06/03/2015	2014/2015 non-breeding season	DL	2	1000	1300	3
07/03/2015	2014/2015 non-breeding season	DL	1	0900	1200	3
07/03/2015	2014/2015 non-breeding season	DL	1	1230	1530	3
13/03/2015	2014/2015 non-breeding season	DL	2	1205	1505	3
18/04/2019	2019 breeding season	PS	2	1130	1430	3
18/04/2019	2019 breeding season	PS	2	1500	1800	3
24/04/2019	2019 breeding season	JD	2	1130	1430	3
24/04/2019	2019 breeding season	JD	2	1500	1800	3
02/05/2019	2019 breeding season	JD	2	0830	1130	3
02/05/2019	2019 breeding season	JD	2	1200	1500	3
20/05/2019	2019 breeding season	JD	2	1530	1830	3
20/05/2019	2019 breeding season	JD	2	1900	2200	3
05/06/2019	2019 breeding season	JD	2	1900	2200	3

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ¹ surveyed
20/06/2019	2019 breeding season	JD	2	0530	0830	3
12/07/2019	2019 breeding season	JD	2	0700	1000	3
17/07/2019	2019 breeding season	PS	2	1300	1600	3
23/08/2019	2019 breeding season	PS	2	0820	1120	3
27/08/2019	2019 breeding season	PS	2	1610	1910	3
10/09/2019	2019/2020 non-breeding season	PS	2	1140	1440	3
10/09/2019	2019/2020 non-breeding season	PS	2	1510	1810	3
25/09/2019	2019/2020 non-breeding season	PS	2	0800	1100	3
25/09/2019	2019/2020 non-breeding season	PS	2	1130	1430	3
02/10/2019	2019/2020 non-breeding season	PS	2	1140	1440	3
02/10/2019	2019/2020 non-breeding season	PS	2	1510	1810	3
10/10/2019	2019/2020 non-breeding season	NR	2	0950	1250	3
10/10/2019	2019/2020 non-breeding season	NR	2	1320	1620	3
06/11/2019	2019/2020 non-breeding season	NR	2	0810	1110	3
06/11/2019	2019/2020 non-breeding season	NR	2	1140	1440	3
19/11/2019	2019/2020 non-breeding season	PS	2	0845	1145	3
19/11/2019	2019/2020 non-breeding season	PS	2	1215	1515	3
06/12/2019	2019/2020 non-breeding season	NR	2	0855	1155	3
19/12/2019	2019/2020 non-breeding season	PS	2	0935	1235	3
16/01/2020	2019/2020 non-breeding season	PS	2	1030	1330	3
22/01/2020	2019/2020 non-breeding season	PS	2	1030	1330	3
02/02/2020	2019/2020 non-breeding season	PS	2	1020	1320	3
22/02/2020	2019/2020 non-breeding season	PS	2	1130	1430	3
05/03/2020	2019/2020 non-breeding season	JD	2	0830	1130	3
05/03/2020	2019/2020 non-breeding season	JD	2	1200	1500	3
07/03/2020	2019/2020 non-breeding season	JD	2	1400	1700	3
08/03/2020	2019/2020 non-breeding season	JD	2	1200	1500	3
16/03/2020	2020 breeding season	NR	2	1025	1325	3
16/03/2020	2020 breeding season	NR	2	1355	1655	3
07/04/2020	2020 breeding season	NR	2	1020	1320	3
07/04/2020	2020 breeding season	NR	2	1350	1650	3
08/04/2020	2020 breeding season	NR	2	1025	1325	3
08/04/2020	2020 breeding season	NR	2	1355	1655	3
05/05/2020	2020 breeding season	NR	2	1510	1810	3
12/05/2020	2020 breeding season	NR	2	0810	1110	3
18/05/2020	2020 breeding season	NR	2	1145	1445	3
20/05/2020	2020 breeding season	NR	2	1550	1850	3
03/06/2020	2020 breeding season	NR	2	1835	2135	3
22/06/2020	2020 breeding season	NR	2	1020	1320	3
02/07/2020	2020 breeding season	NR	2	1645	1945	3
15/07/2020	2020 breeding season	KC	2	0715	1015	3
10/08/2020	2020 breeding season	JD	2	1100	1400	3
10/08/2020	2020 breeding season	JD	2	1430	1730	3
08/09/2020	2020/2021 non-breeding season	NR	2	0950	1250	3
08/09/2020	2020/2021 non-breeding season	NR	2	1320	1620	3
23/09/2020	2020/2021 non-breeding season	NR	2	1415	1715	3
24/09/2020	2020/2021 non-breeding season	NR	2	0705	1005	3
05/10/2020	2020/2021 non-breeding season	NR	2	1105	1405	3
05/10/2020	2020/2021 non-breeding season	NR	2	1435	1735	3
11/10/2020	2020/2021 non-breeding season	NR	2	0855	1155	3
11/10/2020	2020/2021 non-breeding season	NR	2	1225	1525	3
09/11/2020	2020/2021 non-breeding season	NR	2	1125	1425	3

Date	Season	Observer	VP	Survey start time	Survey finish time	No. hours ¹ surveyed
10/11/2020	2020/2021 non-breeding season	NR	2	0720	1020	3
10/11/2020	2020/2021 non-breeding season	NR	2	1050	1350	3
11/11/2020	2020/2021 non-breeding season	NR	2	0850	1150	3
15/12/2020	2020/2021 non-breeding season	NR	2	1325	1555	2.5
17/12/2020	2020/2021 non-breeding season	NR	2	0820	1050	2.5
12/01/2021	2020/2021 non-breeding season	NR	2	1335	1635	3
18/01/2021	2020/2021 non-breeding season	NR	2	1155	1355	2
11/02/2021	2020/2021 non-breeding season	NR	2	0730	1000	2.5
15/02/2021	2020/2021 non-breeding season	PS	2	1510	1740	2.5
03/03/2021	2020/2021 non-breeding season	PS	2	1525	1825	3
04/03/2021	2020/2021 non-breeding season	PS	2	0820	1120	3
04/03/2021	2020/2021 non-breeding season	PS	2	1150	1450	3

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Table C-3 Meteorological conditions during flight activity surveys at the Proposed Development (sorted chronologically)

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
22/03/2013	JS	1	1415	1715	1	5	SE	2	8	1	2	0	1
22/03/2013	JS	1	1415	1715	2	5	SE	1	8	2	2	0	1
22/03/2013	JS	1	1415	1715	3	6	SE	0	8	2	2	0	1
24/03/2013	RS	1	1330	1630	1	4	E	0	8	2	2	0	1
24/03/2013	RS	1	1330	1630	2	4	E	0	8	2	2	0	1
24/03/2013	RS	1	1330	1630	3	5	E	0	7	2	2	0	1
26/03/2013	JS	2	1045	1345	1	3	SE	0	6	2	2	0	2
26/03/2013	JS	2	1045	1345	2	3	SE	0	7	2	2	0	2
26/03/2013	JS	2	1045	1345	3	3	SE	2	8	2	2	0	2
26/03/2013	JS	2	1445	1745	1	2	SE	0	7	2	2	0	2
26/03/2013	JS	2	1445	1745	2	2	SE	0	5	2	2	0	2
26/03/2013	JS	2	1445	1745	3	1	SE	0	3	2	2	0	2
10/04/2013	JS	1	1400	1700	1	3	SE	0	7	2	2	0	0
10/04/2013	JS	1	1400	1700	2	3	SE	0	7	2	2	0	0
10/04/2013	JS	1	1400	1700	3	4	SE	2	8	2	2	0	0
16/04/2013	JS	2	0500	0800	1	3	E	2	8	2	1	0	0
16/04/2013	JS	2	0500	0800	2	4	E	0	3	2	2	0	0
16/04/2013	JS	2	0500	0800	3	5	E	0	7	2	2	0	0
19/04/2013	RS	1	1830	2130	1	2	W	0	2	2	2	0	0
19/04/2013	RS	1	1830	2130	2	1	W	0	2	2	2	0	0
19/04/2013	RS	1	1830	2130	3	0	-	0	2	2	1	0	0
21/04/2013	RS	2	1030	1330	1	3	SW	0	8	2	2	0	0
21/04/2013	RS	2	1030	1330	2	3	W	0	5	2	2	0	0
21/04/2013	RS	2	1030	1330	3	4	W	0	5	2	2	0	0
23/04/2013	RS	1	1300	1600	1	5	W	3	2	2	2	0	0
23/04/2013	RS	1	1300	1600	2	5	W	3	4	2	2	0	0
23/04/2013	RS	1	1300	1600	3	5	W	3	5	2	2	0	0
25/04/2013	RS	2	1845	2145	1	3	W	2	5	2	2	0	0
25/04/2013	RS	2	1845	2145	2	1	W	0	7	2	2	0	0
25/04/2013	RS	2	1845	2145	3	2	W	0	7	2	1	0	0
29/04/2013	RS	1	0430	0730	1	4	W	3	8	2	1	0	0
29/04/2013	RS	1	0430	0730	2	4	W	3	8	2	2	0	0
29/04/2013	RS	1	0430	0730	3	4	W	3	8	2	2	0	0
30/04/2013	RS	2	1400	1700	1	3	S	2	7	2	2	0	0
30/04/2013	RS	2	1400	1700	2	3	SW	2	7	2	2	0	1
30/04/2013	RS	2	1400	1700	3	4	SW	2	6	2	2	0	1
01/05/2013	RS	1	1900	2200	1	2	W	0	2	2	2	0	0
01/05/2013	RS	1	1900	2200	2	1	W	0	2	2	2	0	0
01/05/2013	RS	1	1900	2200	3	0	-	0	1	2	1	0	0
04/05/2013	RS	1	0800	1100	1	2	S	0	8	2	2	0	0
04/05/2013	RS	1	0800	1100	2	3	S	0	8	2	2	0	0
04/05/2013	RS	1	0800	1100	3	4	S	4	8	2	1	0	0
05/05/2013	RS	2	0415	0715	1	2	SSW	0	8	2	2	0	0
05/05/2013	RS	2	0415	0715	2	3	SSW	0	8	2	2	0	0
05/05/2013	RS	2	0415	0715	3	2	SSW	0	8	2	2	0	0
05/05/2013	RS	2	0800	1100	1	3	SW	0	8	2	2	0	0
05/05/2013	RS	2	0800	1100	2	3	SW	0	8	2	2	0	0
05/05/2013	RS	2	0800	1100	3	3	SSW	0	8	2	2	0	0
07/05/2013	RS	1	0400	0700	1	0	-	0	8	2	2	0	0
07/05/2013	RS	1	0400	0700	2	0	-	0	8	2	2	0	0
07/05/2013	RS	1	0400	0700	3	1	S	0	8	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
08/05/2013	RS	2	0400	0700	1	3	SE	0	7	2	1	0	0
08/05/2013	RS	2	0400	0700	2	3	SE	2	5	2	2	0	0
08/05/2013	RS	2	0400	0700	3	3	SE	0	5	2	2	0	0
08/05/2013	RS	1	1915	2215	1	4	S	0	8	2	2	0	0
08/05/2013	RS	1	1915	2215	2	4	S	0	8	2	2	0	0
08/05/2013	RS	1	1915	2215	3	5	S	1	8	2	2	0	0
09/05/2013	JS	2	1920	2220	1	3	SE	0	1	2	2	0	0
09/05/2013	JS	2	1920	2220	2	3	SE	0	1	2	2	0	0
09/05/2013	JS	2	1920	2220	3	2	SE	0	1	2	1	0	0
10/05/2013	RS	1	1500	1800	1	2	S	0	5	2	2	0	0
10/05/2013	RS	1	1500	1800	2	3	S	0	4	2	2	0	0
10/05/2013	RS	1	1500	1800	3	3	S	0	4	2	2	0	0
11/05/2013	RS	2	1500	1800	1	3	W	0	8	2	2	0	0
11/05/2013	RS	2	1500	1800	2	4	W	0	8	2	2	0	0
11/05/2013	RS	2	1500	1800	3	4	W	0	8	2	2	0	0
13/05/2013	RS	1	0350	0650	1	2	SW	0	6	2	2	0	0
13/05/2013	RS	1	0350	0650	2	3	SW	0	4	2	2	0	0
13/05/2013	RS	1	0350	0650	3	3	SW	0	3	2	2	0	0
15/05/2013	RS	2	1930	2230	1	3	W	2	8	2	2	0	0
15/05/2013	RS	2	1930	2230	2	3	W	3	8	2	2	0	0
15/05/2013	RS	2	1930	2230	3	2	W	3	8	2	2	0	0
10/06/2013	RS	1	0315	0615	1	3	SSW	0	7	2	2	0	0
10/06/2013	RS	1	0315	0615	2	2	SSW	0	2	2	2	0	0
10/06/2013	RS	1	0315	0615	3	2	SSW	0	1	2	2	0	0
18/06/2013	RS	2	1300	1600	1	3	SE	0	8	2	2	0	0
18/06/2013	RS	2	1300	1600	2	4	SE	0	7	2	2	0	0
18/06/2013	RS	2	1300	1600	3	4	SE	0	6	2	2	0	0
25/06/2013	RS	1	1800	2100	1	2	SW	0	6	2	2	0	0
25/06/2013	RS	1	1800	2100	2	2	SW	0	7	2	2	0	0
25/06/2013	RS	1	1800	2100	3	1	SW	0	8	2	2	0	0
27/06/2013	RS	2	0700	1000	1	0	-	0	9	2	2	0	0
27/06/2013	RS	2	0700	1000	2	0	-	0	6	2	2	0	0
27/06/2013	RS	2	0700	1000	3	1	NW	0	8	2	2	0	0
03/07/2013	RS	1	1900	2200	1	1	NW	0	8	2	2	0	0
03/07/2013	RS	1	1900	2200	2	0	-	0	8	2	2	0	0
03/07/2013	RS	1	1900	2200	3	2	SW	0	8	2	2	0	0
09/07/2013	RW	2	1615	1915	1	4	NW	1	8	1	1	0	0
09/07/2013	RW	2	1615	1915	2	4	NW	1	8	1	2	0	0
09/07/2013	RW	2	1615	1915	3	3	NW	1	8	1	2	0	0
09/07/2013	RW	1	1935	2235	1	2	NW	1	8	1	1	0	0
09/07/2013	RW	1	1935	2235	2	1	NW	0	8	1	2	0	0
09/07/2013	RW	1	1935	2235	3	1	NW	0	8	1	2	0	0
10/07/2013	RW	2	0340	0640	1	0	-	1	8	1	1	0	0
10/07/2013	RW	2	0340	0640	2	0	-	1	8	1	2	0	0
10/07/2013	RW	2	0340	0640	3	0	-	0	8	1	2	0	0
10/07/2013	RW	1	0700	1000	1	0	-	1	8	1	2	0	0
10/07/2013	RW	1	0700	1000	2	0	-	1	8	1	2	0	0
10/07/2013	RW	1	0700	1000	3	0	-	1	8	1	2	0	0
17/07/2013	RS	2	1830	2130	1	2	WNW	0	6	2	2	0	0
17/07/2013	RS	2	1830	2130	2	2	WNW	0	6	2	2	0	0
17/07/2013	RS	2	1830	2130	3	1	W	0	4	2	2	0	0
19/07/2013	RS	1	1200	1500	1	2	NW	0	8	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
19/07/2013	RS	1	1200	1500	2	2	NW	0	8	2	2	0	0
19/07/2013	RS	1	1200	1500	3	3	NW	0	5	2	2	0	0
19/07/2013	PG	2	1920	2220	1	1	NW	0	0	2	2	0	0
19/07/2013	PG	2	1920	2220	2	0	-	0	0	2	2	0	0
19/07/2013	PG	2	1920	2220	3	0	-	0	0	2	2	0	0
20/07/2013	PG	1	0430	0730	1	0	-	0	7	0	1	0	0
20/07/2013	PG	1	0430	0730	2	1	NW	0	2	0	2	0	0
20/07/2013	PG	1	0430	0730	3	1	SW	0	1	0	2	0	0
20/07/2013	PG	1	0830	1130	1	2	SW	0	3	2	2	0	0
20/07/2013	PG	1	0830	1130	2	2	S	0	0	2	2	0	0
20/07/2013	PG	1	0830	1130	3	2	S	0	1	2	2	0	0
20/07/2013	PG	2	1230	1530	1	3	SSE	0	0	2	2	0	0
20/07/2013	PG	2	1230	1530	2	3	SSE	0	0	2	2	0	0
20/07/2013	PG	2	1230	1530	3	3	SSE	0	0	2	2	0	0
29/07/2013	RS	2	0500	0800	1	1	S	0	3	2	2	0	0
29/07/2013	RS	2	0500	0800	2	1	S	0	2	2	2	0	0
29/07/2013	RS	2	0500	0800	3	1	S	0	2	2	2	0	0
01/08/2013	RS	1	0530	0830	1	1	ESE	4	8	2	2	0	0
01/08/2013	RS	1	0530	0830	2	1	ESE	4	8	2	2	0	0
01/08/2013	RS	1	0530	0830	3	2	ESE	3	8	2	2	0	0
04/08/2013	RS	2	1330	1630	1	3	SSW	0	6	2	2	0	0
04/08/2013	RS	2	1330	1630	2	3	SSW	0	6	2	2	0	0
04/08/2013	RS	2	1330	1630	3	3	SSW	0	7	2	2	0	0
09/08/2013	RS	1	1430	1730	1	2	WNW	3	8	2	2	0	0
09/08/2013	RS	1	1430	1730	2	3	W	3	8	2	2	0	0
09/08/2013	RS	1	1430	1730	3	3	W	3	8	2	2	0	0
12/08/2013	RS	2	0700	1000	1	1	W	2	8	2	2	0	0
12/08/2013	RS	2	0700	1000	2	3	NW	0	7	2	2	0	0
12/08/2013	RS	2	0700	1000	3	3	NW	0	5	2	2	0	0
16/08/2013	PG	1	1630	1930	1	1	S	2	7	2	2	0	0
16/08/2013	PG	1	1630	1930	2	1	NW	2	8	2	2	0	0
16/08/2013	PG	1	1630	1930	3	1	NW	0	7	2	2	0	0
17/08/2013	PG	2	0640	0940	1	2	SE	0	8	2	2	0	0
17/08/2013	PG	2	0640	0940	2	3	S	0	8	2	2	0	0
17/08/2013	PG	2	0640	0940	3	3	S	2	8	2	2	0	0
17/08/2013	PG	2	1040	1340	1	3	S	2	8	2	2	0	0
17/08/2013	PG	2	1040	1340	2	3	S	3	8	1	1	0	0
17/08/2013	PG	2	1040	1340	3	4	SSW	0	6	2	2	0	0
17/08/2013	PG	1	1440	1740	1	3	S	0	3	2	2	0	0
17/08/2013	PG	1	1440	1740	2	3	SSW	0	5	2	2	0	0
18/08/2013	PG	1	1440	1740	3	3	SW	0	6	2	2	0	0
23/09/2013	JS	2	1700	2000	1	1	NE	0	7	2	2	0	0
23/09/2013	JS	2	1700	2000	2	1	NE	0	8	2	2	0	0
23/09/2013	JS	2	1700	2000	3	1	NE	0	8	2	1	0	0
24/09/2013	JS	1	0600	0900	1	2	E	1	8	0	0	0	0
24/09/2013	JS	1	0600	0900	2	3	E	4	8	0	0	0	0
24/09/2013	JS	1	0600	0900	3	3	E	1	8	0	1	0	0
26/09/2013	JS	1	1700	2000	1	2	E	0	2	2	2	0	0
26/09/2013	JS	1	1700	2000	2	1	E	0	6	2	2	0	0
26/09/2013	JS	1	1700	2000	3	0	-	0	5	2	1	0	0
29/09/2013	JS	2	0600	0900	1	3	SSE	0	8	2	1	0	0
29/09/2013	JS	2	0600	0900	2	3	SSE	0	8	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
29/09/2013	JS	2	0600	0900	3	3	SSE	0	8	2	2	0	0
04/10/2013	JS	1	1530	1830	1	1	W	0	7	2	2	0	0
04/10/2013	JS	1	1530	1830	2	2	W	0	8	2	2	0	0
04/10/2013	JS	1	1530	1830	3	2	W	2	8	2	2	0	0
07/10/2013	JS	2	1300	1600	1	1	SW	2	8	2	2	0	0
07/10/2013	JS	2	1300	1600	2	1	SW	2	8	2	2	0	0
07/10/2013	JS	2	1300	1600	3	2	SW	2	8	2	2	0	0
11/10/2013	RS	1	1330	1630	1	2	ENE	0	6	2	2	0	0
11/10/2013	RS	1	1330	1630	2	1	ENE	0	7	2	2	0	0
11/10/2013	RS	1	1330	1630	3	1	ENE	0	7	2	2	0	0
12/10/2013	RS	2	1615	1915	1	2	SE	0	4	2	2	0	0
12/10/2013	RS	2	1615	1915	2	1	SE	0	5	2	2	0	0
12/10/2013	RS	2	1615	1915	3	1	SE	0	3	2	2	0	0
16/10/2013	RS	2	0700	1000	1	0	-	0	8	1	0	0	0
16/10/2013	RS	2	0700	1000	2	0	-	0	6	2	2	0	0
16/10/2013	RS	2	0700	1000	3	2	SE	0	2	2	2	0	0
17/10/2013	RS	1	1600	1900	1	2	E	1	8	1	1	0	0
17/10/2013	RS	1	1600	1900	2	1	E	1	8	1	1	0	0
17/10/2013	RS	1	1600	1900	3	0	-	1	8	2	1	0	0
18/10/2013	RS	2	1300	1600	1	3	SE	0	6	2	2	0	0
18/10/2013	RS	2	1300	1600	2	3	SE	0	6	2	2	0	0
18/10/2013	RS	2	1300	1600	3	3	SE	0	7	2	2	0	0
19/10/2013	JS	1	0700	1000	1	4	E	4	8	1	0	0	0
19/10/2013	JS	1	0700	1000	2	3	E	4	8	1	1	0	0
19/10/2013	JS	1	0700	1000	3	3	E	4	8	1	1	0	0
05/11/2013	JS	2	0645	0945	1	0	-	0	2	2	1	1	0
05/11/2013	JS	2	0645	0945	2	0	-	0	5	2	2	1	0
05/11/2013	JS	2	0645	0945	3	0	-	2	7	2	2	1	0
06/11/2013	JS	1	0700	1000	1	1	S	0	3	2	1	1	0
06/11/2013	JS	1	0700	1000	2	1	S	0	5	2	2	1	0
06/11/2013	JS	1	0700	1000	3	2	S	0	3	2	2	1	0
12/11/2013	RS	1	0900	1200	1	3	SW	0	5	2	2	0	0
12/11/2013	RS	1	0900	1200	2	3	SW	0	3	2	2	0	0
12/11/2013	RS	1	0900	1200	3	4	SW	0	3	2	2	0	0
13/11/2013	RS	1	1400	1700	1	4	SSW	0	8	2	2	0	0
13/11/2013	RS	1	1400	1700	2	5	SSW	0	8	2	2	0	0
13/11/2013	RS	1	1400	1700	3	5	SSW	0	8	2	1	0	0
18/11/2013	RS	2	1350	1650	1	3	W	1	5	2	2	0	0
18/11/2013	RS	2	1350	1650	2	3	W	0	4	2	2	0	0
18/11/2013	RS	2	1350	1650	3	2	W	0	5	2	1	0	0
19/11/2013	JS	1	0830	1130	1	0	-	0	4	2	2	0	1
19/11/2013	JS	1	0830	1130	2	2	SW	2	6	2	1	0	1
19/11/2013	JS	1	0830	1130	3	1	SW	0	4	2	2	0	1
21/11/2013	RS	1	0715	1015	1	3	WSW	0	6	2	1	0	0
21/11/2013	RS	1	0715	1015	2	2	WSW	0	6	2	2	0	0
21/11/2013	RS	1	0715	1015	3	2	WSW	0	5	2	2	0	0
23/11/2013	RS	2	1330	1630	1	1	W	2	7	2	2	0	0
23/11/2013	RS	2	1330	1630	2	1	W	2	8	1	1	0	0
23/11/2013	RS	2	1330	1630	3	2	W	2	7	2	1	0	0
25/11/2013	RS	2	1015	1315	1	0	-	0	8	2	2	1	0
25/11/2013	RS	2	1015	1315	2	1	SW	0	8	2	2	1	0
25/11/2013	RS	2	1015	1315	3	1	SW	0	8	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
26/11/2013	JS	1	1330	1630	1	2	SW	0	7	2	2	0	0
26/11/2013	JS	1	1330	1630	2	3	SW	0	7	2	2	0	0
26/11/2013	JS	1	1330	1630	3	3	SW	0	7	2	1	0	0
30/11/2013	JS	2	0740	1040	1	2	W	2	8	2	1	0	0
30/11/2013	JS	2	0740	1040	2	2	W	0	8	2	2	0	0
30/11/2013	JS	2	0740	1040	3	3	W	0	8	2	2	0	0
30/11/2013	JS	2	1140	1440	1	3	W	0	7	2	2	0	0
30/11/2013	JS	2	1140	1440	2	4	W	0	7	2	2	0	0
30/11/2013	JS	2	1140	1440	3	4	W	0	7	2	2	0	0
14/12/2013	JS	2	0800	1100	1	3	SE	0	6	2	1	0	2
14/12/2013	JS	2	0800	1100	2	4	SE	0	6	2	2	0	2
14/12/2013	JS	2	0800	1100	3	4	SE	0	6	2	2	0	2
16/12/2013	JS	2	1300	1600	1	4	SW	0	5	2	2	0	2
16/12/2013	JS	2	1300	1600	2	3	SW	0	4	2	2	0	2
16/12/2013	JS	2	1300	1600	3	3	SW	2	5	2	1	0	2
17/12/2013	RS	1	1315	1615	1	3	SW	0	7	2	2	0	0
17/12/2013	RS	1	1315	1615	2	4	SW	0	8	2	2	0	0
17/12/2013	RS	1	1315	1615	3	4	WSW	0	8	2	1	0	0
31/12/2013	RS	1	0800	1100	1	3	SSE	0	8	2	1	0	0
31/12/2013	RS	1	0800	1100	2	4	SSE	0	8	2	2	0	0
31/12/2013	RS	1	0800	1100	3	3	SSE	0	8	2	2	0	0
29/01/2014	RS	1	1000	1300	1	3	SE	0	8	2	2	0	0
29/01/2014	RS	1	1000	1300	2	4	SE	0	8	2	2	0	0
29/01/2014	RS	1	1000	1300	3	4	SE	0	8	2	2	0	0
29/01/2014	RS	2	1415	1715	1	4	SE	0	8	2	2	0	0
29/01/2014	RS	2	1415	1715	2	4	SE	0	8	2	2	0	0
29/01/2014	RS	2	1415	1715	3	4	SE	0	8	2	1	0	0
30/01/2014	RS	1	0730	1030	1	3	SSE	0	8	2	1	0	0
30/01/2014	RS	1	0730	1030	2	2	SE	0	8	2	2	0	0
30/01/2014	RS	1	0730	1030	3	2	SE	0	8	2	2	0	0
30/01/2014	RS	2	1130	1430	1	3	SE	0	8	2	2	0	0
30/01/2014	RS	2	1130	1430	2	2	SE	2	8	2	2	0	0
30/01/2014	RS	2	1130	1430	3	3	SE	2	8	2	2	0	0
01/02/2014	DL	1	0920	1220	1	2	E	2	7	2	2	0	0
01/02/2014	DL	1	0920	1220	2	2	E	2	7	2	2	0	0
01/02/2014	DL	1	0920	1220	3	3	E	2	8	2	2	0	0
01/02/2014	DL	2	1300	1600	1	1	E	2	8	2	2	0	0
01/02/2014	DL	2	1300	1600	2	1	E	0	7	2	2	0	0
01/02/2014	DL	2	1300	1600	3	1	E	0	7	2	2	0	0
14/02/2014	RS	2	0700	1000	1	0	-	0	2	2	1	0	0
14/02/2014	RS	2	0700	1000	2	1	SE	0	3	2	2	0	0
14/02/2014	RS	2	0700	1000	3	0	SE	0	3	2	2	0	0
14/02/2014	RS	1	1100	1400	1	0	-	0	4	2	2	0	0
14/02/2014	RS	1	1100	1400	2	0	-	0	5	2	2	0	0
14/02/2014	RS	1	1100	1400	3	1	SSW	0	5	2	2	0	0
28/02/2014	RS	2	1100	1400	1	3	S	0	8	2	2	0	0
28/02/2014	RS	2	1100	1400	2	3	S	2	8	2	2	0	0
28/02/2014	RS	2	1100	1400	3	3	SSW	0	7	2	2	0	0
28/02/2014	RS	1	1530	1830	1	3	SSW	0	7	2	2	0	0
28/02/2014	RS	1	1530	1830	2	3	SW	0	6	2	2	0	0
28/02/2014	RS	1	1530	1830	3	3	SW	0	7	2	2	0	0
06/03/2014	DL	1	0815	1015	1	4	W	2	7	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
06/03/2014	DL	1	0815	1015	2	4	W	0	5	2	2	0	0
06/03/2014	DL	2	1100	1300	1	4	W	2	7	2	2	0	0
06/03/2014	DL	2	1100	1300	2	4	W	2	7	2	2	0	0
06/03/2014	DL	1	1345	1515	1	5	W	0	5	2	2	0	0
06/03/2014	DL	1	1345	1515	2	4	W	0	5	2	2	0	0
04/04/2014	RS	1	1400	1700	1	4	S	0	8	1	1	0	0
04/04/2014	RS	1	1400	1700	2	4	S	0	8	1	1	0	0
04/04/2014	RS	1	1400	1700	3	3	S	4	8	1	1	0	0
05/04/2014	JS	1	0530	0830	1	0	-	1	3	2	1	0	0
05/04/2014	JS	1	0530	0830	2	0	-	1	6	2	2	0	0
05/04/2014	JS	1	0530	0830	3	0	-	0	1	2	2	0	0
05/04/2014	JS	2	0945	1245	1	1	SE	0	2	2	2	0	0
05/04/2014	JS	2	0945	1245	2	1	SE	0	3	2	2	0	0
05/04/2014	JS	2	0945	1245	3	2	SE	0	4	2	2	0	0
11/04/2014	RS	2	1815	2115	1	1	SSW	3	8	2	2	0	0
11/04/2014	RS	2	1815	2115	2	2	SSW	3	8	2	2	0	0
11/04/2014	RS	2	1815	2115	3	2	SSW	0	8	2	2	0	0
16/04/2014	RS	2	1430	1730	1	3	S	0	8	2	2	0	0
16/04/2014	RS	2	1430	1730	2	3	SSW	0	8	2	2	0	0
16/04/2014	RS	2	1430	1730	3	2	SSW	0	8	2	2	0	0
16/04/2014	RS	1	1830	2130	1	3	SSW	0	8	2	2	0	0
16/04/2014	RS	1	1830	2130	2	3	SSW	0	8	2	2	0	0
16/04/2014	RS	1	1830	2130	3	2	S	0	8	2	2	0	0
18/04/2014	RS	2	0450	0750	1	0	-	0	3	2	2	1	0
18/04/2014	RS	2	0450	0750	2	0	-	0	4	2	2	1	0
18/04/2014	RS	2	0450	0750	3	0	-	0	7	2	2	1	0
18/04/2014	RS	1	0900	1200	1	0	-	0	5	2	2	0	0
18/04/2014	RS	1	0900	1200	2	0	-	0	1	2	2	0	0
18/04/2014	RS	1	0900	1200	3	1	SW	0	1	2	2	0	0
22/04/2014	RS	1	0445	0745	1	0	-	1	8	1	0	1	0
22/04/2014	RS	1	0445	0745	2	2	E	1	8	2	1	1	0
22/04/2014	RS	1	0445	0745	3	3	E	0	8	2	2	1	0
27/04/2014	RS	2	1500	1800	1	2	E	0	8	1	2	0	0
27/04/2014	RS	2	1500	1800	2	2	E	1	8	1	2	0	0
27/04/2014	RS	2	1500	1800	3	2	NE	1	8	1	2	0	0
28/04/2014	RS	2	0430	0730	1	0	-	1	8	1	0	0	0
28/04/2014	RS	2	0430	0730	2	0	-	1	5	2	1	0	0
28/04/2014	RS	2	0430	0730	3	0	-	0	5	2	2	0	0
28/04/2014	RS	1	0830	1130	1	0	-	0	2	2	2	0	0
28/04/2014	RS	1	0830	1130	2	0	-	0	1	2	2	0	0
28/04/2014	RS	1	0830	1130	3	1	SE	0	1	2	2	0	0
06/05/2014	JS	1	1525	1825	1	1	WNW	2	4	2	2	0	0
06/05/2014	JS	1	1525	1825	2	1	E	3	6	2	2	0	0
06/05/2014	JS	1	1525	1825	3	1	E	4	8	1	1	0	0
06/05/2014	JS	2	1925	2225	1	1	E	0	7	2	2	0	0
06/05/2014	JS	2	1925	2225	2	2	E	0	8	2	2	0	0
06/05/2014	JS	2	1925	2225	3	1	E	0	8	2	1	0	0
07/05/2014	RS	2	1500	1800	1	2	SE	0	5	2	2	0	0
07/05/2014	RS	2	1500	1800	2	1	SE	0	5	2	2	0	0
07/05/2014	RS	2	1500	1800	3	1	SSE	0	5	2	2	0	0
07/05/2014	RS	1	1915	2215	1	0	-	0	5	2	2	0	0
07/05/2014	RS	1	1915	2215	2	0	-	0	2	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
07/05/2014	RS	1	1915	2215	3	0	-	0	1	2	1	0	0
08/05/2014	JS	2	0400	0700	1	0	-	0	8	2	1	0	0
08/05/2014	JS	2	0400	0700	2	1	NW	0	8	2	2	0	0
08/05/2014	JS	2	0400	0700	3	1	NW	0	8	2	2	0	0
08/05/2014	JS	1	0800	1100	1	1	NW	0	8	2	2	0	0
08/05/2014	JS	1	0800	1100	2	1	NW	0	8	2	2	0	0
08/05/2014	JS	1	0800	1100	3	1	NW	0	8	2	2	0	0
10/05/2014	RS	2	1915	2215	1	1	E	2	8	2	2	0	0
10/05/2014	RS	2	1915	2215	2	2	E	1	8	1	1	0	0
10/05/2014	RS	2	1915	2215	3	2	E	3	8	1	1	0	0
11/05/2014	RS	1	0355	0655	1	1	NE	0	8	2	1	0	0
11/05/2014	RS	1	0355	0655	2	0	-	0	8	2	2	0	0
11/05/2014	RS	1	0355	0655	3	1	E	0	8	2	2	0	0
11/05/2014	RS	2	0800	1100	1	2	NE	2	8	2	2	0	0
11/05/2014	RS	2	0800	1100	2	3	NNE	2	8	2	2	0	0
11/05/2014	RS	2	0800	1100	3	3	NE	0	7	2	2	0	0
13/05/2014	RS	1	0350	0650	1	0	-	0	5	2	1	0	0
13/05/2014	RS	1	0350	0650	2	0	-	2	7	2	2	0	0
13/05/2014	RS	1	0350	0650	3	0	-	2	7	2	2	0	0
14/05/2014	JS	2	0400	0700	1	0	-	0	1	2	1	1	0
14/05/2014	JS	2	0400	0700	2	0	-	0	1	2	2	1	0
14/05/2014	JS	2	0400	0700	3	0	-	0	1	2	2	0	0
14/05/2014	RS	1	1930	2230	1	3	S	0	8	2	2	0	0
14/05/2014	RS	1	1930	2230	2	2	S	0	4	2	2	0	0
14/05/2014	RS	1	1930	2230	3	0	-	0	7	2	1	0	0
09/06/2014	RS	1	0900	1200	1	2	S	0	3	2	2	0	0
09/06/2014	RS	1	0900	1200	2	4	S	0	2	2	2	0	0
09/06/2014	RS	1	0900	1200	3	4	S	0	4	2	2	0	0
09/06/2014	RS	2	1300	1600	1	4	SSE	0	2	2	2	0	0
09/06/2014	RS	2	1300	1600	2	2	SSE	0	2	2	2	0	0
09/06/2014	RS	2	1300	1600	3	2	SE	0	2	2	2	0	0
18/06/2014	RS	1	1500	1800	1	3	NW	0	6	2	2	0	0
18/06/2014	RS	1	1500	1800	2	3	NW	0	7	2	2	0	0
18/06/2014	RS	1	1500	1800	3	4	NW	2	8	2	2	0	0
18/06/2014	RS	2	1900	2200	1	4	NW	0	8	2	2	0	0
18/06/2014	RS	2	1900	2200	2	4	NW	0	8	2	2	0	0
18/06/2014	RS	2	1900	2200	3	5	NW	0	8	2	2	0	0
20/07/2014	JS	2	1600	1900	1	2	NW	0	8	1	2	0	0
20/07/2014	JS	2	1600	1900	2	1	NW	1	8	1	2	0	0
20/07/2014	JS	2	1600	1900	3	1	NW	1	8	1	1	0	0
20/07/2014	JS	1	2000	2300	1	1	NW	0	8	1	2	0	0
20/07/2014	JS	1	2000	2300	2	0	NW	1	8	1	2	0	0
20/07/2014	JS	1	2000	2300	3	0	NW	1	8	1	1	0	0
29/07/2014	RS	1	0600	0900	1	1	SW	2	8	2	2	0	0
29/07/2014	RS	1	0600	0900	2	2	WSW	2	5	2	2	0	0
29/07/2014	RS	1	0600	0900	3	3	W	2	8	2	2	0	0
29/07/2014	RS	2	1000	1300	1	3	W	0	8	2	2	0	0
29/07/2014	RS	2	1000	1300	2	2	W	0	7	2	2	0	0
29/07/2014	RS	2	1000	1300	3	1	W	0	8	2	2	0	0
16/08/2014	RS	2	1000	1300	1	4	WSW	0	8	2	2	0	0
16/08/2014	RS	2	1000	1300	2	5	W	2	8	2	1	0	0
16/08/2014	RS	2	1000	1300	3	5	W	0	8	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
16/08/2014	RS	1	1400	1700	1	4	W	2	8	2	2	0	0
16/08/2014	RS	1	1400	1700	2	3	W	3	8	1	1	0	0
16/08/2014	RS	1	1400	1700	3	3	WNW	0	8	2	2	0	0
18/08/2014	JS	2	1400	1700	1	3	NW	3	7	2	2	0	0
18/08/2014	JS	2	1400	1700	2	4	NW	3	7	2	2	0	0
18/08/2014	JS	2	1400	1700	3	3	NW	3	7	2	2	0	0
18/08/2014	JS	1	1800	2100	1	3	NW	3	7	2	2	0	0
18/08/2014	JS	1	1800	2100	2	3	NW	3	7	2	2	0	0
18/08/2014	JS	1	1800	2100	3	3	NW	3	7	2	2	0	0
23/08/2014	RS	2	0600	0900	1	2	NNW	3	8	2	2	0	0
23/08/2014	RS	2	0600	0900	2	1	NNW	3	8	2	2	0	0
23/08/2014	RS	2	0600	0900	3	1	NNW	3	7	2	2	0	0
23/08/2014	RS	1	1000	1200	1	2	NW	0	8	2	2	0	0
23/08/2014	RS	1	1000	1200	2	3	NW	2	8	2	2	0	0
17/09/2014	DL	1	1020	1320	1	2	N	0	6	2	2	0	0
17/09/2014	DL	1	1020	1320	2	3	NE	0	6	2	2	0	0
17/09/2014	DL	1	1020	1320	3	3	NE	0	7	2	2	0	0
17/09/2014	DL	1	1350	1650	1	2	NE	0	6	2	2	0	0
17/09/2014	DL	1	1350	1650	2	3	E	0	5	2	2	0	0
17/09/2014	DL	1	1350	1650	3	1	E	0	4	2	2	0	0
18/09/2014	DL	2	0925	1225	1	2	E	0	8	2	2	0	0
18/09/2014	DL	2	0925	1225	2	1	E	0	5	2	2	0	0
18/09/2014	DL	2	0925	1225	3	2	SE	0	5	2	2	0	0
18/09/2014	DL	2	1255	1555	1	2	SE	0	7	2	2	0	0
18/09/2014	DL	2	1255	1555	2	2	SE	0	4	2	2	0	0
18/09/2014	DL	2	1255	1555	3	2	E	0	5	2	2	0	0
10/10/2014	DL	1	0715	1015	1	3	E	0	6	2	2	0	0
10/10/2014	DL	1	0715	1015	2	2	E	0	6	2	2	0	0
10/10/2014	DL	1	0715	1015	3	1	SE	0	5	2	2	0	0
10/10/2014	DL	1	1045	1345	1	1	SE	0	6	2	2	0	0
10/10/2014	DL	1	1045	1345	2	2	SE	0	6	2	2	0	0
10/10/2014	DL	1	1045	1345	3	1	SE	0	5	2	2	0	0
14/10/2014	DL	2	1210	1510	1	1	N	0	5	2	2	0	0
14/10/2014	DL	2	1210	1510	2	1	N	0	4	2	2	0	0
14/10/2014	DL	2	1210	1510	3	1	N	0	4	2	2	0	0
14/10/2014	DL	2	1540	1840	1	1	N	0	4	2	2	0	0
14/10/2014	DL	2	1540	1840	2	1	N	0	3	2	2	0	0
14/10/2014	DL	2	1540	1840	3	1	N	0	5	2	2	0	0
26/10/2014	DL	1	0940	1240	1	2	S	0	6	2	2	0	0
26/10/2014	DL	1	0940	1240	2	2	S	2	6	2	2	0	0
26/10/2014	DL	1	0940	1240	3	3	S	2	6	2	2	0	0
26/10/2014	DL	1	1320	1620	1	3	S	0	5	2	2	0	0
26/10/2014	DL	1	1320	1620	2	3	S	0	6	2	2	0	0
26/10/2014	DL	1	1320	1620	3	3	S	0	6	2	2	0	0
27/10/2014	DL	2	0635	0935	1	3	SE	0	7	2	2	0	0
27/10/2014	DL	2	0635	0935	2	4	SE	1	8	2	2	0	0
27/10/2014	DL	2	0635	0935	3	4	SE	2	8	2	2	0	0
27/10/2014	DL	2	1005	1305	1	3	SE	2	8	2	2	0	0
27/10/2014	DL	2	1005	1305	2	3	SE	0	7	2	2	0	0
27/10/2014	DL	2	1005	1305	3	4	SE	0	7	2	2	0	0
05/11/2014	DL	1	0710	1010	1	2	SE	0	7	2	2	0	0
05/11/2014	DL	1	0710	1010	2	3	SE	0	7	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
05/11/2014	DL	1	0710	1010	3	2	SE	0	8	2	2	0	0
05/11/2014	DL	1	1040	1340	1	2	SE	0	8	2	2	0	0
05/11/2014	DL	1	1040	1340	2	2	SE	0	8	2	2	0	0
05/11/2014	DL	1	1040	1340	3	3	SE	0	8	1	2	0	0
06/11/2014	DL	2	1030	1330	1	3	SE	2	8	1	1	0	0
06/11/2014	DL	2	1030	1330	2	3	SE	2	8	1	1	0	0
06/11/2014	DL	2	1030	1330	3	4	SE	1	8	1	1	0	0
06/11/2014	DL	2	1400	1700	1	3	SE	1	8	2	2	0	0
06/11/2014	DL	2	1400	1700	2	4	SE	0	8	2	2	0	0
06/11/2014	DL	2	1400	1700	3	2	SE	0	8	2	2	0	0
24/11/2014	DL	2	0925	1225	1	0	-	0	7	2	2	0	0
24/11/2014	DL	2	0925	1225	2	1	S	0	8	2	2	0	0
24/11/2014	DL	2	0925	1225	3	1	S	0	8	2	2	0	0
24/11/2014	DL	1	1320	1620	1	0	S	0	8	2	2	0	0
24/11/2014	DL	1	1320	1620	2	0	S	0	8	2	2	0	0
24/11/2014	DL	1	1320	1620	3	1	S	0	8	2	2	0	0
27/11/2014	DL	2	0740	1040	1	2	SE	0	6	2	2	0	0
27/11/2014	DL	2	0740	1040	2	2	SE	0	8	2	2	0	0
27/11/2014	DL	2	0740	1040	3	2	SE	0	8	2	2	0	0
27/11/2014	DL	1	1145	1445	1	2	SE	0	8	2	2	0	0
27/11/2014	DL	1	1145	1445	2	2	SE	0	8	2	2	0	0
27/11/2014	DL	1	1145	1445	3	2	SE	0	8	2	2	0	0
04/12/2014	DL	1	0750	1050	1	2	W	0	4	2	2	0	0
04/12/2014	DL	1	0750	1050	2	3	W	0	4	2	2	0	0
04/12/2014	DL	1	0750	1050	3	3	W	0	6	2	2	0	0
04/12/2014	DL	1	1120	1420	1	2	W	2	7	2	2	0	0
04/12/2014	DL	1	1120	1420	2	1	W	2	6	2	2	0	0
04/12/2014	DL	1	1120	1420	3	1	SW	0	6	2	2	0	0
05/12/2014	DL	2	0950	1250	1	0	S	0	4	2	2	0	0
05/12/2014	DL	2	0950	1250	2	1	S	0	4	2	2	0	0
05/12/2014	DL	2	0950	1250	3	1	S	0	3	2	2	0	0
05/12/2014	DL	2	1320	1620	1	2	S	0	4	2	2	0	0
05/12/2014	DL	2	1320	1620	2	1	S	0	5	2	2	0	0
05/12/2014	DL	2	1320	1620	3	1	S	0	5	2	2	0	0
27/12/2014	DL	2	0815	1115	1	1	W	0	6	2	2	1	0
27/12/2014	DL	2	0815	1115	2	1	W	0	7	2	2	1	0
27/12/2014	DL	2	0815	1115	3	1	W	0	6	2	2	1	0
27/12/2014	DL	1	1325	1625	1	1	W	0	6	2	2	1	0
27/12/2014	DL	1	1325	1625	2	0	-	0	5	2	2	1	0
27/12/2014	DL	1	1325	1625	3	0	-	0	5	2	2	1	0
04/01/2015	DL	1	0925	1225	1	2	NE	0	7	2	2	0	0
04/01/2015	DL	1	0925	1225	2	1	NE	0	6	2	2	0	0
04/01/2015	DL	1	0925	1225	3	1	NE	0	6	2	2	0	0
04/01/2015	DL	2	1315	1615	1	2	NE	0	6	2	2	0	0
04/01/2015	DL	2	1315	1615	2	2	NE	0	6	2	2	0	0
04/01/2015	DL	2	1315	1615	3	2	NE	0	7	2	2	0	0
05/01/2015	DL	1	1315	1615	1	2	NE	0	6	2	2	0	0
05/01/2015	DL	1	1315	1615	2	2	NE	0	8	2	2	0	0
05/01/2015	DL	1	1315	1615	3	2	NE	2	8	2	2	0	0
25/01/2015	DL	2	1035	1335	1	1	W	0	4	2	2	0	0
25/01/2015	DL	2	1035	1335	2	1	W	0	4	2	2	0	0
25/01/2015	DL	2	1035	1335	3	1	W	0	4	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
07/02/2015	DL	2	1010	1310	1	2	N	0	4	2	2	0	0
07/02/2015	DL	2	1010	1310	2	2	N	0	4	2	2	0	0
07/02/2015	DL	2	1010	1310	3	1	NW	0	5	2	2	0	0
08/02/2015	DL	1	1130	1430	1	2	W	0	8	2	2	0	0
08/02/2015	DL	1	1130	1430	2	3	W	0	8	2	2	0	0
08/02/2015	DL	1	1130	1430	3	1	W	0	8	2	2	0	0
22/02/2015	DL	2	1055	1355	1	3	SE	0	3	2	2	0	0
22/02/2015	DL	2	1055	1355	2	4	SE	0	4	2	2	0	0
22/02/2015	DL	2	1055	1355	3	4	SE	0	4	2	2	0	0
22/02/2015	DL	1	1445	1745	1	2	SE	0	4	2	2	0	0
22/02/2015	DL	1	1445	1745	2	3	SE	0	6	2	2	0	0
22/02/2015	DL	1	1445	1745	3	4	SE	0	7	2	2	0	0
06/03/2015	DL	2	1000	1300	1	4	S	2	8	2	2	0	0
06/03/2015	DL	2	1000	1300	2	4	S	2	8	2	2	0	0
06/03/2015	DL	2	1000	1300	3	4	S	0	8	2	2	0	0
07/03/2015	DL	1	0900	1200	1	3	W	0	6	2	2	0	0
07/03/2015	DL	1	0900	1200	2	3	W	0	8	2	2	0	0
07/03/2015	DL	1	0900	1200	3	3	SW	2	8	2	2	0	0
07/03/2015	DL	1	1230	1530	1	2	SW	2	8	2	2	0	0
07/03/2015	DL	1	1230	1530	2	1	SW	0	7	2	2	0	0
07/03/2015	DL	1	1230	1530	3	2	SW	0	7	2	2	0	0
13/03/2015	DL	2	1205	1505	1	2	NE	0	5	2	2	0	0
13/03/2015	DL	2	1205	1505	2	2	NE	0	4	2	2	0	0
13/03/2015	DL	2	1205	1505	3	2	NE	0	4	2	2	0	0
18/04/2019	PS	2	1130	1430	1	3	ESE	0	7	2	2	0	0
18/04/2019	PS	2	1130	1430	2	2	ESE	0	6	2	2	0	0
18/04/2019	PS	2	1130	1430	3	3	SE	0	6	2	2	0	0
18/04/2019	PS	2	1500	1800	1	3	SE	0	7	2	2	0	0
18/04/2019	PS	2	1500	1800	2	4	SE	0	8	2	2	0	0
18/04/2019	PS	2	1500	1800	3	3	SE	0	8	2	2	0	0
24/04/2019	JD	2	1130	1430	1	4	SE	0	8	2	2	0	0
24/04/2019	JD	2	1130	1430	2	3	SE	0	8	2	2	0	0
24/04/2019	JD	2	1130	1430	3	3	SE	0	8	2	2	0	0
24/04/2019	JD	2	1500	1800	1	3	SE	0	8	1	2	0	0
24/04/2019	JD	2	1500	1800	2	3	SE	0	8	1	2	0	0
24/04/2019	JD	2	1500	1800	3	3	SE	0	8	1	2	0	0
02/05/2019	JD	2	0830	1130	1	2	NE	1	8	1	2	0	0
02/05/2019	JD	2	0830	1130	2	2	NE	2	8	1	2	0	0
02/05/2019	JD	2	0830	1130	3	3	NE	2	8	2	2	0	0
02/05/2019	JD	2	1200	1500	1	3	NE	0	8	2	2	0	0
02/05/2019	JD	2	1200	1500	2	3	NE	0	8	2	2	0	0
02/05/2019	JD	2	1200	1500	3	3	NE	0	8	2	2	0	0
20/05/2019	JD	2	1530	1830	1	1	NW	2	8	1	2	0	0
20/05/2019	JD	2	1530	1830	2	1	NW	1	8	1	2	0	0
20/05/2019	JD	2	1530	1830	3	1	NW	0	8	2	2	0	0
20/05/2019	JD	2	1900	2200	1	1	NW	0	8	2	2	0	0
20/05/2019	JD	2	1900	2200	2	2	NW	0	8	2	2	0	0
20/05/2019	JD	2	1900	2200	3	2	NW	0	8	2	2	0	0
05/06/2019	JD	2	1900	2200	1	1	NW	0	7	2	2	0	0
05/06/2019	JD	2	1900	2200	2	1	NW	0	8	2	2	0	0
05/06/2019	JD	2	1900	2200	3	0	-	0	8	2	2	0	0
20/06/2019	JD	2	0530	0830	1	0	-	1	7	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
20/06/2019	JD	2	0530	0830	2	1	SE	2	7	1	2	0	0
20/06/2019	JD	2	0530	0830	3	1	SE	0	6	2	2	0	0
12/07/2019	JD	2	0700	1000	1	1	NE	1	8	2	2	0	0
12/07/2019	JD	2	0700	1000	2	1	NE	0	8	2	2	0	0
12/07/2019	JD	2	0700	1000	3	0	-	1	8	2	2	0	0
17/07/2019	PS	2	1300	1600	1	3	SW	2	8	2	2	0	0
17/07/2019	PS	2	1300	1600	2	3	SW	0	8	2	2	0	0
17/07/2019	PS	2	1300	1600	3	3	SW	0	8	2	2	0	0
23/08/2019	PS	2	0820	1120	1	2	SW	2	8	2	2	0	0
23/08/2019	PS	2	0820	1120	2	1	SW	0	8	2	2	0	0
23/08/2019	PS	2	0820	1120	3	0	-	0	8	2	2	0	0
27/08/2019	PS	2	1610	1910	1	2	SE	0	8	2	2	0	0
27/08/2019	PS	2	1610	1910	2	0	-	0	8	2	2	0	0
27/08/2019	PS	2	1610	1910	3	1	SE	0	8	2	2	0	0
10/09/2019	PS	2	1140	1440	1	3	SE	0	8	2	2	0	0
10/09/2019	PS	2	1140	1440	2	3	SE	0	4	2	2	0	0
10/09/2019	PS	2	1140	1440	3	4	SE	0	6	2	2	0	0
10/09/2019	PS	2	1510	1810	1	3	SE	0	8	2	2	0	0
10/09/2019	PS	2	1510	1810	2	3	SE	0	8	2	2	0	0
10/09/2019	PS	2	1510	1810	3	3	SE	0	8	2	2	0	0
25/09/2019	PS	2	0800	1100	1	2	ESE	1	8	2	2	0	0
25/09/2019	PS	2	0800	1100	2	3	ESE	1	8	2	2	0	0
25/09/2019	PS	2	0800	1100	3	3	W	0	8	2	2	0	0
25/09/2019	PS	2	1130	1430	1	4	E	0	8	2	2	0	0
25/09/2019	PS	2	1130	1430	2	4	E	0	8	2	2	0	0
25/09/2019	PS	2	1130	1430	3	4	E	0	8	2	2	0	0
02/10/2019	PS	2	1140	1440	1	4	N	0	6	2	2	0	0
02/10/2019	PS	2	1140	1440	2	4	N	0	4	2	2	0	0
02/10/2019	PS	2	1140	1440	3	4	N	0	7	2	2	0	0
02/10/2019	PS	2	1510	1810	1	4	N	0	3	2	2	0	0
02/10/2019	PS	2	1510	1810	2	3	N	2	8	2	2	0	0
02/10/2019	PS	2	1510	1810	3	3	N	0	7	2	2	0	0
10/10/2019	NR	2	0950	1250	1	3	W	0	6	2	2	0	0
10/10/2019	NR	2	0950	1250	2	3	W	0	7	2	2	0	0
10/10/2019	NR	2	0950	1250	3	3	W	0	7	2	2	0	0
10/10/2019	NR	2	1320	1620	1	3	W	0	6	2	2	0	0
10/10/2019	NR	2	1320	1620	2	3	W	0	6	2	2	0	0
10/10/2019	NR	2	1320	1620	3	2	W	0	7	2	2	0	0
06/11/2019	NR	2	0810	1110	1	1	SW	6	7	2	2	1	0
06/11/2019	NR	2	0810	1110	2	1	N	0	7	2	2	0	0
06/11/2019	NR	2	0810	1110	3	1	N	2	8	2	2	0	0
06/11/2019	NR	2	1140	1440	1	2	NE	0	8	2	2	0	0
06/11/2019	NR	2	1140	1440	2	2	NE	0	7	2	2	0	0
06/11/2019	NR	2	1140	1440	3	2	NE	0	8	2	2	0	0
19/11/2019	PS	2	0845	1145	1	0	-	0	8	2	2	2	0
19/11/2019	PS	2	0845	1145	2	0	-	0	8	2	2	2	0
19/11/2019	PS	2	0845	1145	3	0	-	0	8	2	2	2	0
19/11/2019	PS	2	1215	1515	1	0	-	0	8	2	2	2	0
19/11/2019	PS	2	1215	1515	2	0	-	0	8	2	2	2	0
19/11/2019	PS	2	1215	1515	3	1	E	0	7	2	2	2	0
06/12/2019	NR	2	0855	1155	1	1	W	0	7	2	2	0	0
06/12/2019	NR	2	0855	1155	2	3	W	0	7	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
06/12/2019	NR	2	0855	1155	3	2	NW	0	8	2	2	0	0
09/12/2019	PS	2	0935	1235	1	1	SE	0	8	2	2	0	0
09/12/2019	PS	2	0935	1235	2	0	-	0	6	2	2	0	0
09/12/2019	PS	2	0935	1235	3	2	SE	0	4	2	2	0	0
16/01/2020	PS	2	1030	1330	1	4	ESE	0	8	2	2	0	0
16/01/2020	PS	2	1030	1330	2	4	ESE	0	8	2	2	0	0
16/01/2020	PS	2	1030	1330	3	1	ESE	0	8	2	2	0	0
22/01/2020	PS	2	1030	1330	1	1	S	0	8	2	2	0	0
22/01/2020	PS	2	1030	1330	2	1	S	0	8	2	2	0	0
22/01/2020	PS	2	1030	1330	3	1	S	1	8	2	2	0	0
02/02/2020	PS	2	1020	1320	1	0	-	0	7	2	2	1	0
02/02/2020	PS	2	1020	1320	2	0	-	0	7	2	2	1	0
02/02/2020	PS	2	1020	1320	3	0	-	0	8	2	2	0	0
22/02/2020	PS	2	1130	1430	1	3	SW	0	2	2	2	0	0
22/02/2020	PS	2	1130	1430	2	5	SW	0	1	2	2	0	0
22/02/2020	PS	2	1130	1430	3	4	SW	0	2	2	2	0	0
05/03/2020	JD	2	0830	1130	1	1	SW	0	1	2	2	0	0
05/03/2020	JD	2	0830	1130	2	1	SW	0	2	2	2	0	0
05/03/2020	JD	2	0830	1130	3	2	SW	0	3	2	2	0	0
05/03/2020	JD	2	1200	1500	1	3	SW	0	4	2	2	0	0
05/03/2020	JD	2	1200	1500	2	2	SW	0	7	2	2	0	0
05/03/2020	JD	2	1200	1500	3	1	SW	0	6	2	2	0	0
07/03/2020	JD	2	1400	1700	1	3	SW	0	8	2	2	0	0
07/03/2020	JD	2	1400	1700	2	4	SW	0	8	2	2	0	0
07/03/2020	JD	2	1400	1700	3	4	SW	0	8	2	2	0	0
08/03/2020	JD	2	1200	1500	1	3	NW	0	6	2	2	0	0
08/03/2020	JD	2	1200	1500	2	4	SW	0	7	2	2	0	0
08/03/2020	JD	2	1200	1500	3	3	SW	0	5	2	2	0	0
16/03/2020	NR	2	1025	1325	1	4	S	0	8	2	2	0	0
16/03/2020	NR	2	1025	1325	2	4	S	0	8	2	2	0	0
16/03/2020	NR	2	1025	1325	3	4	S	0	8	2	2	0	0
16/03/2020	NR	2	1355	1655	1	5	S	0	8	2	2	0	0
16/03/2020	NR	2	1355	1655	2	6	S	0	8	2	2	0	0
16/03/2020	NR	2	1355	1655	3	6	S	0	7	2	2	0	0
07/04/2020	NR	2	1020	1320	1	4	SW	0	6	2	2	0	0
07/04/2020	NR	2	1020	1320	2	3	SW	0	5	2	2	0	0
07/04/2020	NR	2	1020	1320	3	4	SW	0	5	2	2	0	0
07/04/2020	NR	2	1350	1650	1	5	SW	0	5	2	2	0	0
07/04/2020	NR	2	1350	1650	2	5	SW	0	5	2	2	0	0
07/04/2020	NR	2	1350	1650	3	5	SW	0	7	2	2	0	0
08/04/2020	NR	2	1025	1325	1	3	NW	1	8	1	2	0	0
08/04/2020	NR	2	1025	1325	2	3	NW	3	8	2	2	0	0
08/04/2020	NR	2	1025	1325	3	3	NW	0	8	2	2	0	0
08/04/2020	NR	2	1355	1655	1	3	NW	0	8	2	2	0	0
08/04/2020	NR	2	1355	1655	2	3	NW	0	8	2	2	0	0
08/04/2020	NR	2	1355	1655	3	3	NW	0	6	2	2	0	0
05/05/2020	NR	2	1510	1810	1	2	NE	0	5	2	2	0	0
05/05/2020	NR	2	1510	1810	2	2	NE	0	6	2	2	0	0
05/05/2020	NR	2	1510	1810	3	2	NE	0	6	2	2	0	0
12/05/2020	NR	2	0810	1110	1	1	NW	2	7	2	2	0	0
12/05/2020	NR	2	0810	1110	2	2	NW	0	6	2	2	0	0
12/05/2020	NR	2	0810	1110	3	3	NW	0	6	2	2	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
18/05/2020	NR	2	1145	1445	1	3	W	3	7	2	2	0	0
18/05/2020	NR	2	1145	1445	2	3	W	3	7	2	2	0	0
18/05/2020	NR	2	1145	1445	3	4	W	0	5	2	2	0	0
20/05/2020	NR	2	1550	1850	1	3	SE	0	7	2	2	0	0
20/05/2020	NR	2	1550	1850	2	3	SE	0	8	2	2	0	0
20/05/2020	NR	2	1550	1850	3	3	SE	0	6	2	2	0	0
03/06/2020	NR	2	1835	2135	1	3	N	0	8	2	2	0	0
03/06/2020	NR	2	1835	2135	2	3	N	2	8	2	2	0	0
03/06/2020	NR	2	1835	2135	3	3	N	2	8	2	2	0	0
22/06/2020	NR	2	1020	1320	1	4	S	0	8	2	2	0	0
22/06/2020	NR	2	1020	1320	2	5	S	0	8	2	2	0	0
22/06/2020	NR	2	1020	1320	3	6	S	0	7	2	2	0	0
02/07/2020	NR	2	1645	1945	1	3	NW	0	7	2	2	0	0
02/07/2020	NR	2	1645	1945	2	3	NW	0	5	2	2	0	0
02/07/2020	NR	2	1645	1945	3	3	NW	0	8	2	2	0	0
15/07/2020	KC	2	0715	1015	1	2	S	0	8	2	2	0	0
15/07/2020	KC	2	0715	1015	2	2	S	0	8	2	2	0	0
15/07/2020	KC	2	0715	1015	3	3	S	0	6	2	2	0	0
10/08/2020	JD	2	1100	1400	1	3	SE	0	8	2	2	0	0
10/08/2020	JD	2	1100	1400	2	3	SE	0	8	2	2	0	0
10/08/2020	JD	2	1100	1400	3	3	SE	0	8	2	2	0	0
10/08/2020	JD	2	1430	1730	1	1	SE	0	7	2	2	0	0
10/08/2020	JD	2	1430	1730	2	2	SE	0	4	2	2	0	0
10/08/2020	JD	2	1430	1730	3	1	SE	0	2	2	2	0	0
08/09/2020	NR	2	0950	1250	1	3	SW	0	8	2	2	0	0
08/09/2020	NR	2	0950	1250	2	3	SW	0	8	2	2	0	0
08/09/2020	NR	2	0950	1250	3	4	W	0	8	2	2	0	0
08/09/2020	NR	2	1320	1620	1	4	W	0	8	2	2	0	0
08/09/2020	NR	2	1320	1620	2	3	W	0	8	2	2	0	0
08/09/2020	NR	2	1320	1620	3	3	W	2	8	2	2	0	0
23/09/2020	NR	2	1415	1715	1	3	E	0	6	2	2	0	0
23/09/2020	NR	2	1415	1715	2	3	SE	2	7	2	2	0	0
23/09/2020	NR	2	1415	1715	3	2	SE	0	5	2	2	0	0
24/09/2020	NR	2	0705	1005	1	2	N	0	6	2	2	1	0
24/09/2020	NR	2	0705	1005	2	2	N	0	7	2	2	0	0
24/09/2020	NR	2	0705	1005	3	3	N	0	5	2	2	0	0
05/10/2020	NR	2	1105	1305	1	3	SE	0	8	2	2	0	0
05/10/2020	NR	2	1105	1305	2	3	SE	0	7	2	2	0	0
05/10/2020	NR	2	1105	1305	3	3	SE	0	7	2	2	0	0
05/10/2020	NR	2	1435	1735	1	3	SE	0	7	2	2	0	0
05/10/2020	NR	2	1435	1735	2	3	SE	0	7	2	2	0	0
05/10/2020	NR	2	1435	1735	3	3	SE	0	8	2	2	0	0
11/10/2020	NR	2	0855	1155	1	3	NW	2	7	2	2	0	0
11/10/2020	NR	2	0855	1155	2	3	NW	3	8	2	2	0	0
11/10/2020	NR	2	0855	1155	3	3	NW	3	7	2	2	0	0
11/10/2020	NR	2	1225	1525	1	3	NW	2	7	2	2	0	0
11/10/2020	NR	2	1225	1525	2	3	NW	0	7	2	2	0	0
11/10/2020	NR	2	1225	1525	3	4	NW	0	7	2	2	0	0
09/11/2020	NR	2	1125	1425	1	2	S	0	5	2	2	0	0
09/11/2020	NR	2	1125	1425	2	3	S	0	6	2	2	0	0
09/11/2020	NR	2	1125	1425	3	2	S	0	6	2	2	0	0
10/11/2020	NR	2	0720	1020	1	3	SE	0	2	2	1	0	0

Date	Observer	VP	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
10/11/2020	NR	2	0720	1020	2	2	SE	0	8	2	2	0	0
10/11/2020	NR	2	0720	1020	3	3	SE	0	8	1	2	0	0
10/11/2020	NR	2	1050	1350	1	3	SE	0	8	1	2	0	0
10/11/2020	NR	2	1050	1350	2	3	SE	0	4	2	2	0	0
10/11/2020	NR	2	1050	1350	3	4	SE	0	2	2	2	0	0
11/11/2020	NR	2	0850	1150	1	6	SE	0	8	2	2	0	0
11/11/2020	NR	2	0850	1150	2	6	SE	0	8	2	2	0	0
11/11/2020	NR	2	0850	1150	3	6	SE	0	8	2	2	0	0
15/12/2020	NR	2	1325	1555	1	3	S	0	1	2	2	0	0
15/12/2020	NR	2	1325	1555	2	3	S	0	1	2	2	0	0
15/12/2020	NR	2	1325	1555	3	3	S	0	1	2	2	0	0
17/12/2020	NR	2	0820	1050	1	3	SW	0	1	2	2	0	0
17/12/2020	NR	2	0820	1050	2	4	SW	0	1	2	2	0	0
17/12/2020	NR	2	0820	1050	3	3	SW	0	2	2	2	0	0
12/01/2021	NR	2	1335	1635	1	3	NW	0	6	2	2	0	0
12/01/2021	NR	2	1335	1635	2	3	NW	2	7	2	2	0	0
12/01/2021	NR	2	1335	1635	3	2	NW	0	7	2	2	0	0
18/01/2021	NR	2	1155	1355	1	4	SW	0	4	2	2	0	0
18/01/2021	NR	2	1155	1355	2	4	SW	0	5	2	2	0	1
11/02/2021	NR	2	0730	1000	1	1	NW	0	1	2	2	2	1
11/02/2021	NR	2	0730	1000	2	1	W	0	1	2	2	2	1
11/02/2021	NR	2	0730	1000	3	1	W	0	1	2	2	2	1
15/02/2021	PS	2	1510	1740	1	3	SE	0	6	2	2	0	1
15/02/2021	PS	2	1510	1740	2	3	SE	2	8	2	2	0	1
15/02/2021	PS	2	1510	1740	3	3	SE	0	2	2	2	1	1
03/03/2021	PS	2	1525	1825	1	0	-	0	8	2	2	0	0
03/03/2021	PS	2	1525	1825	2	0	-	0	8	2	2	0	0
03/03/2021	PS	2	1525	1825	3	0	-	0	8	2	2	0	0
04/03/2021	PS	2	0820	1120	1	2	NE	0	8	2	2	0	0
04/03/2021	PS	2	0820	1120	2	2	NE	0	8	2	2	0	0
04/03/2021	PS	2	0820	1120	3	2	NE	0	8	2	2	0	0
04/03/2021	PS	2	1150	1450	1	0	-	0	8	2	2	0	0
04/03/2021	PS	2	1150	1450	2	2	NNW	0	8	2	2	0	0
04/03/2021	PS	2	1150	1450	3	2	NNW	0	8	2	2	0	0

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C.2 Moorland Breeding Bird Surveys

Moorland breeding bird surveys were undertaken during the 2013, 2019 and 2020 breeding seasons. **Table C-4** details survey dates and weather data recorded. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-4 Meteorological conditions during breeding bird surveys at the Proposed Development (sorted chronologically)

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
02/05/2013	1	JS	0555	1135	1	0	0	0	3	2	2	0	0
02/05/2013	1	JS	0555	1135	2	0	0	0	3	2	2	0	0
02/05/2013	1	JS	0555	1135	3	0	0	0	3	2	2	0	0
02/05/2013	1	JS	0555	1135	4	0	0	0	4	2	2	0	0
02/05/2013	1	JS	0555	1135	5	2	SE	0	8	2	2	0	0
02/05/2013	1	JS	0555	1135	6	2	SE	0	8	2	2	0	0
06/06/2013	2	JS	0530	1130	1	2	W	0	8	1	2	0	0
06/06/2013	2	JS	0530	1130	2	2	W	0	8	1	2	0	0
06/06/2013	2	JS	0530	1130	3	2	W	0	8	1	2	0	0
06/06/2013	2	JS	0530	1130	4	2	W	2	8	1	2	0	0
06/06/2013	2	JS	0530	1130	5	2	W	0	8	1	2	0	0
06/06/2013	2	JS	0530	1130	6	2	W	0	8	1	2	0	0
01/07/2013	3	JS	0600	1200	1	2	W	0	7	2	2	0	0
01/07/2013	3	JS	0600	1200	2	2	SW	0	7	2	2	0	0
01/07/2013	3	JS	0600	1200	3	3	SW	0	8	2	2	0	0
01/07/2013	3	JS	0600	1200	4	2	SW	2	8	2	2	0	0
01/07/2013	3	JS	0600	1200	5	2	W	2	8	2	2	0	0
01/07/2013	3	JS	0600	1200	6	2	W	0	8	2	2	0	0
27/07/2013	4	JS	0600	1015	1	0	0	1	8	0	0	0	0
27/07/2013	4	JS	0600	1015	2	0	0	1	8	0	0	0	0
27/07/2013	4	JS	0600	1015	3	0	0	1	8	0	1	0	0
27/07/2013	4	JS	0600	1015	4	0	0	0	7	2	2	0	0
27/07/2013	4	JS	0600	1015	5	1	E	0	7	2	2	0	0
29/04/2019	5	PS	0930	1530	1	2	S	0	5	2	2	0	0
29/04/2019	5	PS	0930	1530	2	2	S	0	2	2	2	0	0
29/04/2019	5	PS	0930	1530	3	2	S	0	0	2	2	0	0
29/04/2019	5	PS	0930	1530	4	3	SE	0	0	2	2	0	0
29/04/2019	5	PS	0930	1530	5	2	SE	0	0	2	2	0	0
29/04/2019	5	PS	0930	1530	6	2	SE	0	1	2	2	0	0
23/05/2019	6	PS	0900	1500	1	3	NW	0	8	2	2	0	0
23/05/2019	6	PS	0900	1500	2	3	NW	0	8	2	2	0	0
23/05/2019	6	PS	0900	1500	3	3	NW	0	8	2	2	0	0
23/05/2019	6	PS	0900	1500	4	2	NW	0	8	2	2	0	0
23/05/2019	6	PS	0900	1500	5	2	NW	0	8	2	2	0	0
23/05/2019	6	PS	0900	1500	6	3	NW	0	8	2	2	0	0
28/06/2019	7	KC	0845	1145	1	2	SE	0	0	2	2	0	0
28/06/2019	7	NR	0845	1145	1	2	SE	0	0	2	2	0	0
28/06/2019	7	KC	0845	1145	2	2	SE	0	0	2	2	0	0
28/06/2019	7	NR	0845	1145	2	2	SE	0	0	2	2	0	0
28/06/2019	7	KC	0845	1145	3	2	SE	0	0	2	2	0	0
28/06/2019	7	NR	0845	1145	3	2	SE	0	0	2	2	0	0
11/07/2019	8	PS	1000	1600	1	1	E	0	8	2	2	0	0
11/07/2019	8	PS	1000	1600	2	2	E	0	8	2	2	0	0
11/07/2019	8	PS	1000	1600	3	1	E	0	8	2	2	0	0
11/07/2019	8	PS	1000	1600	4	1	E	0	8	2	2	0	0
11/07/2019	8	PS	1000	1600	5	2	E	0	8	2	2	0	0
11/07/2019	8	PS	1000	1600	6	2	E	0	8	2	2	0	0
09/04/2020	9	KC	0955	1255	1	2	SE	0	3	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
09/04/2020	9	NR	0955	1255	1	2	SE	0	3	2	2	0	0
09/04/2020	9	KC	0955	1255	2	3	SE	0	4	2	2	0	0
09/04/2020	9	NR	0955	1255	2	3	SE	0	4	2	2	0	0
09/04/2020	9	KC	0955	1255	3	3	SE	0	4	2	2	0	0
09/04/2020	9	NR	0955	1255	3	3	SE	0	4	2	2	0	0
12/05/2020	10	NR	0815	1115	1	3	NW	0	6	2	2	0	0
12/05/2020	10	NR	0815	1115	2	3	NW	0	7	2	2	0	0
12/05/2020	10	NR	0815	1115	3	3	NW	0	7	2	2	0	0
17/05/2020	10	NR	1445	1745	1	3	NE	1	8	1	2	0	0
17/05/2020	10	NR	1445	1745	2	2	NE	0	8	1	2	0	0
17/05/2020	10	NR	1445	1745	3	2	NE	0	8	1	2	0	0
11/06/2020	11	KC	1110	1410	1	2	NE	0	8	2	2	0	0
11/06/2020	11	KC	1110	1410	2	3	NE	0	6	2	2	0	0
11/06/2020	11	KC	1110	1410	3	3	N	0	5	2	2	0	0
11/06/2020	11	KC	1410	1710	1	3	N	0	4	2	2	0	0
11/06/2020	11	KC	1410	1710	2	3	N	0	2	2	2	0	0
11/06/2020	11	KC	1410	1710	3	3	N	0	7	2	2	0	0
09/07/2020	12	NR	0930	1230	1	2	NW	2	7	2	2	0	0
09/07/2020	12	NR	0930	1230	2	2	NW	0	7	2	2	0	0
09/07/2020	12	NR	0930	1230	3	2	NW	0	6	2	2	0	0
14/07/2020	12	KC	1530	1330	1	3	NW	0	3	2	2	0	0
14/07/2020	12	KC	1530	1330	2	3	NW	0	3	2	2	0	0
14/07/2020	12	KC	1530	1330	3	3	NW	0	3	2	2	0	0

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C.3 Winter Walkover Surveys

Winter walkover surveys were undertaken during the 2013/2014, 2019/2020 and 2020/2021 non-breeding seasons. **Table C-5** details survey dates and weather data recorded. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-5 Meteorological conditions during winter walkover surveys at the Proposed Development (sorted chronologically)

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
11/12/2013	1	DL	0900	1635	1	3	SE	0	7	2	2	0	0
11/12/2013	1	DL	0900	1635	2	3	SE	0	6	2	2	0	0
11/12/2013	1	DL	0900	1635	3	3	S	0	6	2	2	0	0
11/12/2013	1	DL	0900	1635	4	3	S	0	6	2	2	0	0
11/12/2013	1	DL	0900	1635	5	2	S	0	7	2	2	0	0
11/12/2013	1	DL	0900	1635	6	2	S	0	7	2	2	0	0
28/01/2014	2	DL	0930	1630	1	4	N	0	7	2	2	0	0
28/01/2014	2	DL	0930	1630	2	4	N	0	7	2	2	0	0
28/01/2014	2	DL	0930	1630	3	4	N	0	7	2	2	0	0
28/01/2014	2	DL	0930	1630	4	4	N	0	6	2	2	0	0
28/01/2014	2	DL	0930	1630	5	4	NE	2	7	2	2	0	0
28/01/2014	2	DL	0930	1630	6	4	NE	2	8	2	2	0	0
28/01/2014	2	DL	0930	1630	7	4	NE	2	8	2	2	0	0
13/02/2014	3	DL	0900	1635	1	3	S	2	8	2	2	0	0
13/02/2014	3	DL	0900	1635	2	4	S	3	8	2	1	0	0
13/02/2014	3	DL	0900	1635	3	3	S	3	8	2	1	0	0
13/02/2014	3	DL	0900	1635	4	3	S	3	8	2	2	0	0
13/02/2014	3	DL	0900	1635	5	3	S	2	7	2	1	0	0
13/02/2014	3	DL	0900	1635	6	3	S	0	8	2	2	0	0
13/02/2014	3	DL	0900	1635	7	3	S	0	7	2	2	0	0
24/11/2019	4	KC	1330	1630	1	3	SE	0	8	1	2	0	0
24/11/2019	4	KC	1330	1630	2	2	SE	0	8	1	2	0	0
24/11/2019	4	KC	1330	1630	3	2	SE	0	8	1	2	0	0
24/11/2019	4	NR	1330	1630	1	3	SE	0	8	1	2	0	0
24/11/2019	4	NR	1330	1630	2	2	SE	0	8	1	2	0	0
24/11/2019	4	NR	1330	1630	3	2	SE	0	8	1	2	0	0
06/12/2019	5	NR	1250	1550	1	2	NW	0	8	1	2	0	0
06/12/2019	5	NR	1250	1550	2	1	NW	1	8	1	2	0	0
06/12/2019	5	NR	1250	1550	3	1	NW	2	8	1	2	0	0
19/12/2019	5	PS	1315	1615	1	2	SW	0	5	2	2	0	0
19/12/2019	5	PS	1315	1615	2	0	-	0	5	2	2	0	0
19/12/2019	5	PS	1315	1615	3	0	-	0	4	2	2	0	0
16/01/2020	6	PS	1330	1630	1	4	ESE	0	8	2	2	0	0
16/01/2020	6	PS	1330	1630	2	5	SE	0	8	2	2	0	0
16/01/2020	6	PS	1330	1630	3	4	SE	0	8	2	2	0	0
22/01/2020	6	PS	1330	1630	1	1	SW	0	8	2	2	0	0
22/01/2020	6	PS	1330	1630	2	1	SW	1	8	2	2	0	0
22/01/2020	6	PS	1330	1630	3	1	SW	0	8	2	2	0	0
02/02/2020	7	PS	1350	1650	1	1	SW	0	8	2	2	0	0
02/02/2020	7	PS	1350	1650	2	2	SW	0	8	2	2	0	0
02/02/2020	7	PS	1350	1650	3	3	SW	2	8	2	2	0	0
22/02/2020	7	PS	1500	1800	1	4	WSW	0	1	2	2	0	0
22/02/2020	7	PS	1500	1800	2	4	WSW	0	4	2	2	0	0
22/02/2020	7	PS	1500	1800	3	4	WSW	0	6	2	2	0	0
05/03/2020	8	JD	1530	1830	1	1	SW	0	8	2	2	0	0
05/03/2020	8	JD	1530	1830	2	0	-	0	7	2	2	0	0
05/03/2020	8	JD	1530	1830	3	0	-	0	2	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
08/03/2020	8	JD	1540	1840	1	2	SW	1	8	2	2	0	0
08/03/2020	8	JD	1540	1840	2	2	SW	0	7	2	2	0	0
08/03/2020	8	JD	1540	1840	3	1	SW	0	2	2	2	0	0
09/11/2020	9	NR	1425	1710	1	2	S	0	6	2	2	0	0
09/11/2020	9	NR	1425	1710	2	1	S	0	7	2	2	0	0
09/11/2020	9	NR	1425	1710	3	2	S	0	7	2	2	0	0
10/11/2020	9	NR	1350	1700	1	4	SE	0	1	2	2	0	0
10/11/2020	9	NR	1350	1700	2	3	S	0	5	2	2	0	0
10/11/2020	9	NR	1350	1700	3	3	S	0	2	2	2	0	0
15/12/2020	10	NR	1045	1315	1	2	S	0	2	2	2	0	0
15/12/2020	10	NR	1045	1315	2	3	S	0	1	2	1	0	0
15/12/2020	10	NR	1045	1315	3	2	S	0	1	2	2	0	0
16/12/2020	10	NR	0755	1055	1	2	SE	0	7	2	2	0	0
16/12/2020	10	NR	0755	1055	2	5	SE	0	8	2	2	0	0
16/12/2020	10	NR	0755	1055	3	5	SE	4	8	2	2	0	0
16/12/2020	10	NR	1300	1615	1	5	SE	0	8	2	2	0	0
16/12/2020	10	NR	1300	1615	2	6	SE	0	8	2	2	0	0
16/12/2020	10	NR	1300	1615	3	5	SE	0	7	2	2	0	0
17/12/2020	10	NR	1050	1350	1	3	SW	0	2	2	2	0	0
17/12/2020	10	NR	1050	1350	2	3	SW	0	1	2	2	0	0
17/12/2020	10	NR	1050	1350	3	3	SW	0	1	2	2	0	0
12/01/2021	11	NR	1045	1335	1	2	NW	0	6	2	2	0	0
12/01/2021	11	NR	1045	1335	2	2	NW	2	7	2	2	0	0
12/01/2021	11	NR	1045	1335	3	2	NW	0	5	2	2	0	0
18/01/2021	11	NR	1355	1655	1	4	SW	2	7	2	2	0	0
18/01/2021	11	NR	1355	1655	2	3	W	2	7	2	2	0	0
18/01/2021	11	NR	1355	1655	3	3	W	2	7	2	2	0	0
26/01/2021	11	NR	1125	1705	1	1	SE	0	8	2	2	1	0
26/01/2021	11	NR	1125	1705	2	1	SE	2	8	2	2	1	0
26/01/2021	11	NR	1125	1705	3	1	SE	2	8	2	2	0	0
26/01/2021	11	NR	1125	1705	4	1	SE	0	8	2	2	0	0
26/01/2021	11	NR	1125	1705	5	1	SE	0	7	2	2	0	0
26/01/2021	11	NR	1125	1705	6	1	SE	0	7	2	2	0	0
10/02/2021	12	NR	1600	1800	1	1	NE	0	1	2	2	2	1
10/02/2021	12	NR	1600	1800	2	1	NW	0	1	2	2	2	1
11/02/2021	12	NR	1000	1300	1	1	W	0	1	2	2	2	1
11/02/2021	12	NR	1000	1300	2	1	W	0	2	2	2	2	1
11/02/2021	12	NR	1000	1300	3	1	W	0	4	2	2	2	1
11/02/2021	12	NR	1500	1800	1	1	W	2	6	2	2	2	1
11/02/2021	12	NR	1500	1800	2	1	W	0	4	2	2	2	1
11/02/2021	12	NR	1500	1800	3	1	W	0	4	2	2	2	1
12/02/2021	12	NR	0705	1005	1	6	SE	0	8	2	2	1	1
12/02/2021	12	NR	0705	1005	2	6	SE	0	7	2	2	0	1
12/02/2021	12	NR	0705	1005	3	5	SE	0	8	2	2	0	1
04/03/2021	13	PS	1520	1820	1	2	NE	0	8	2	2	0	0
04/03/2021	13	PS	1520	1820	2	2	NE	0	8	2	2	0	0
04/03/2021	13	PS	1520	1820	3	0	-	0	8	2	2	0	0
05/03/2021	13	PS	0840	1440	1	0	-	0	8	2	2	0	0
05/03/2021	13	PS	0840	1440	2	0	-	0	8	2	2	0	0
05/03/2021	13	PS	0840	1440	3	0	-	0	8	2	2	0	0
05/03/2021	13	PS	0840	1440	4	0	-	0	7	2	2	0	0
05/03/2021	13	PS	0840	1440	5	0	-	0	6	2	2	0	0
05/03/2021	13	PS	0840	1440	6	1	NW	0	3	2	2	0	0

C.4 Scarce Breeding Bird Surveys

Scarce breeding bird surveys were undertaken during the 2013, 2014, 2019, 2020 and 2022 breeding seasons. **Table C-6** details survey dates and weather data recorded. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-6 Meteorological conditions during scarce breeding bird surveys at the Proposed Development (sorted chronologically)

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
19/03/2013	1	DL	1200	1800	1	3	SE	0	6	2	2	0	0
19/03/2013	1	DL	1200	1800	2	3	SE	0	7	2	2	0	0
19/03/2013	1	DL	1200	1800	3	3	NE	0	8	2	2	0	0
19/03/2013	1	DL	1200	1800	4	2	NE	0	8	2	2	0	0
19/03/2013	1	DL	1200	1800	5	2	NE	0	8	2	2	0	0
19/03/2013	1	DL	1200	1800	6	2	NE	0	8	2	2	0	0
20/03/2013	1	DL	0900	1200	1	2	E	0	6	2	2	0	0
20/03/2013	1	DL	0900	1200	2	2	E	0	5	2	2	0	0
20/03/2013	1	DL	0900	1200	3	2	E	0	5	2	2	0	0
20/03/2013	1	DL	1200	1600	1	1	E	0	5	2	2	0	0
20/03/2013	1	DL	1200	1600	2	2	E	0	4	2	2	0	0
20/03/2013	1	DL	1200	1600	3	1	E	0	4	2	2	0	0
27/03/2013	1	JS	0945	1600	1	1	E	0	1	2	2	0	2
27/03/2013	1	JS	0945	1600	2	1	E	0	1	2	2	0	2
27/03/2013	1	JS	0945	1600	3	2	E	0	1	2	2	0	2
27/03/2013	1	JS	0945	1600	4	1	E	0	3	2	2	0	2
27/03/2013	1	JS	0945	1600	5	1	E	0	4	2	2	0	2
27/03/2013	1	JS	0945	1600	6	1	E	0	4	2	2	0	2
18/04/2013	2	JS	1420	1720	1	4	SW	3	8	1	1	0	0
18/04/2013	2	JS	1420	1720	2	5	SW	3	8	1	1	0	0
18/04/2013	2	JS	1420	1720	3	4	SW	2	8	2	2	0	0
19/04/2013	2	JS	0500	1100	1	1	N	0	8	2	1	0	0
19/04/2013	2	JS	0500	1100	2	2	NW	0	8	2	1	0	0
19/04/2013	2	JS	0500	1100	3	3	SW	0	7	2	2	0	0
19/04/2013	2	JS	0500	1100	4	3	SW	0	6	2	2	0	0
19/04/2013	2	JS	0500	1100	5	3	SW	0	6	2	2	0	0
19/04/2013	2	JS	0500	1100	6	3	SW	0	6	2	2	0	0
24/04/2013	2	JS	1130	1730	1	6	WSW	0	5	2	2	0	0
24/04/2013	2	JS	1130	1730	2	5	W	0	5	2	2	0	0
24/04/2013	2	JS	1130	1730	3	5	W	0	6	2	2	0	0
24/04/2013	2	JS	1130	1730	4	4	W	0	5	2	2	0	0
24/04/2013	2	JS	1130	1730	5	4	W	0	5	2	2	0	0
24/04/2013	2	JS	1130	1730	6	4	W	0	4	2	2	0	0
08/05/2013	3	JS	0900	1500	1	3	E	0	8	2	2	0	0
08/05/2013	3	JS	0900	1500	2	3	E	0	8	2	2	0	0
08/05/2013	3	JS	0900	1500	3	3	E	0	8	2	2	0	0
08/05/2013	3	JS	0900	1500	4	3	E	0	8	2	2	0	0
08/05/2013	3	JS	0900	1500	5	3	E	0	8	2	2	0	0
08/05/2013	3	JS	0900	1500	6	3	E	0	8	2	2	0	0
09/05/2013	3	JS	0520	0820	1	1	SE	0	2	2	2	0	0
09/05/2013	3	JS	0520	0820	2	2	SE	0	1	2	2	0	0
09/05/2013	3	JS	0520	0820	3	3	SE	0	1	2	2	0	0
11/05/2013	3	JS	1100	1400	1	1	NA	1	8	2	2	0	0
11/05/2013	3	JS	1100	1400	2	1	NA	1	8	2	2	0	0
11/05/2013	3	JS	1100	1400	3	2	NA	1	8	2	2	0	0
11/05/2013	3	JS	1500	1800	1	3	NA	0	7	2	2	0	0
11/05/2013	3	JS	1500	1800	2	3	NA	0	7	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
11/05/2013	3	JS	1500	1800	3	3	NA	0	7	2	2	0	0
14/05/2013	3	JS	1100	1700	1	3	SW	2	5	2	2	0	0
14/05/2013	3	JS	1100	1700	2	4	SW	2	7	2	2	0	0
14/05/2013	3	JS	1100	1700	3	5	SW	2	7	2	2	0	0
14/05/2013	3	JS	1100	1700	4	4	SW	2	7	2	2	0	0
14/05/2013	3	JS	1100	1700	5	3	SW	0	6	2	2	0	0
14/05/2013	3	JS	1100	1700	6	3	SW	0	6	2	2	0	0
16/05/2013	3	JS	1500	1800	1	3	SE	0	4	2	2	0	0
16/05/2013	3	JS	1500	1800	2	3	SE	0	5	2	2	0	0
16/05/2013	3	JS	1500	1800	3	3	SE	0	4	2	2	0	0
11/06/2013	4	JS	0800	1430	1	4	SE	0	7	2	2	0	0
11/06/2013	4	JS	0800	1430	2	4	SE	0	6	2	2	0	0
11/06/2013	4	JS	0800	1430	3	4	SE	0	5	2	2	0	0
11/06/2013	4	JS	0800	1430	4	3	SE	0	5	2	2	0	0
11/06/2013	4	JS	0800	1430	5	3	SE	0	4	2	2	0	0
11/06/2013	4	JS	0800	1430	6	4	SE	0	4	2	2	0	0
17/06/2013	4	JS	0730	1315	1	1	NE	0	7	2	2	0	0
17/06/2013	4	JS	0730	1315	2	0	-	0	7	2	2	0	0
17/06/2013	4	JS	0730	1315	3	2	NE	0	8	2	2	0	0
17/06/2013	4	JS	0730	1315	4	2	NE	0	8	2	2	0	0
17/06/2013	4	JS	0730	1315	5	2	NE	0	8	2	2	0	0
17/06/2013	4	JS	0730	1315	6	2	NE	0	8	2	2	0	0
18/06/2013	4	JS	0700	1300	1	3	SE	0	8	2	2	0	0
18/06/2013	4	JS	0700	1300	2	3	SE	0	8	2	2	0	0
18/06/2013	4	JS	0700	1300	3	3	SE	0	8	2	2	0	0
18/06/2013	4	JS	0700	1300	4	3	SE	0	8	2	2	0	0
18/06/2013	4	JS	0700	1300	5	3	SE	0	8	2	2	0	0
18/06/2013	4	JS	0700	1300	6	3	SE	0	8	2	2	0	0
22/06/2013	4	JS	0800	1430	1	4	SE	1	8	0	2	0	0
22/06/2013	4	JS	0800	1430	2	5	SE	2	8	1	2	0	0
22/06/2013	4	JS	0800	1430	3	5	SE	0	8	2	2	0	0
22/06/2013	4	JS	0800	1430	4	4	SE	0	8	2	2	0	0
22/06/2013	4	JS	0800	1430	5	4	SE	0	8	2	2	0	0
22/06/2013	4	JS	0800	1430	6	3	SE	0	8	2	2	0	0
27/06/2013	4	JS	0545	1145	1	0	-	0	6	2	2	0	0
27/06/2013	4	JS	0545	1145	2	1	N	0	6	2	2	0	0
27/06/2013	4	JS	0545	1145	3	2	N	0	7	2	2	0	0
27/06/2013	4	JS	0545	1145	4	2	N	0	7	2	2	0	0
27/06/2013	4	JS	0545	1145	5	3	N	0	7	2	2	0	0
14/07/2013	5	JS	0440	0740	1	0	-	0	8	2	2	0	0
14/07/2013	5	JS	0440	0740	2	0	-	0	8	2	2	0	0
14/07/2013	5	JS	0440	0740	3	2	W	0	8	2	2	0	0
14/07/2013	5	JS	0840	1140	1	2	W	0	8	2	2	0	0
14/07/2013	5	JS	0840	1140	2	2	W	0	8	2	2	0	0
14/07/2013	5	JS	0840	1140	3	2	W	0	8	2	2	0	0
24/07/2013	5	JS	0345	0645	1	1	SE	2	8	2	1	0	0
24/07/2013	5	JS	0345	0645	2	1	SE	0	8	2	2	0	0
24/07/2013	5	JS	0345	0645	3	1	SE	0	8	2	2	0	0
30/07/2013	5	JS	2000	2300	1	0	-	0	8	2	2	0	0
30/07/2013	5	JS	2000	2300	2	0	-	0	8	2	2	0	0
30/07/2013	5	JS	2000	2300	3	0	-	0	8	2	1	0	0
31/07/2013	5	JS	0345	0645	1	0	-	0	5	2	1	0	0
31/07/2013	5	JS	0345	0645	2	0	-	0	6	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
31/07/2013	5	JS	0345	0645	3	0	-	0	6	2	2	0	0
03/08/2013	5	JS	0400	0700	1	4	SSE	0	1	2	2	0	0
03/08/2013	5	JS	0400	0700	1	4	SSE	0	1	2	2	0	0
03/08/2013	5	JS	0400	0700	2	4	SSE	0	2	2	2	0	0
03/08/2013	5	JS	0400	0700	2	4	SSE	0	2	2	2	0	0
03/08/2013	5	JS	0400	0700	3	4	SSE	0	2	2	2	0	0
09/04/2014	6	DL	1000	1630	1	3	E	2	8	1	1	0	0
09/04/2014	6	DL	1000	1630	2	4	E	2	8	1	1	0	0
09/04/2014	6	DL	1000	1630	3	3	NE	2	8	2	2	0	0
09/04/2014	6	DL	1000	1630	4	2	NE	0	7	2	2	0	0
09/04/2014	6	DL	1000	1630	5	3	NE	0	8	2	2	0	0
09/04/2014	6	DL	1000	1630	6	3	NE	0	8	2	2	0	0
09/04/2014	6	DL	1000	1630	7	3	NE	0	8	2	2	0	0
18/04/2014	6	PG	0700	1000	1	1	W	0	7	2	2	1	0
18/04/2014	6	PG	0700	1000	2	1	W	0	7	2	2	0	0
18/04/2014	6	PG	0700	1000	3	2	WSW	0	7	2	2	0	0
18/04/2014	6	PG	1000	1400	1	2	SW	0	2	2	2	0	0
18/04/2014	6	PG	1000	1400	2	2	S	0	1	2	2	0	0
18/04/2014	6	PG	1000	1400	3	3	SE	0	1	2	2	0	0
07/05/2014	7	DL	1300	2000	1	3	SE	1	6	2	2	0	0
07/05/2014	7	DL	1300	2000	2	3	SE	2	8	1	1	0	0
07/05/2014	7	DL	1300	2000	3	3	SE	2	8	1	1	0	0
07/05/2014	7	DL	1300	2000	4	3	SE	0	8	2	2	0	0
07/05/2014	7	DL	1300	2000	5	3	SE	3	8	1	1	0	0
07/05/2014	7	DL	1300	2000	6	3	SE	2	8	2	2	0	0
07/05/2014	7	DL	1300	2000	7	3	SE	0	7	2	2	0	0
08/05/2014	7	DL	0700	1100	1	2	S	0	8	2	2	0	0
08/05/2014	7	DL	0700	1100	2	3	SW	0	8	2	2	0	0
08/05/2014	7	DL	0700	1100	3	3	NW	0	8	2	2	0	0
08/05/2014	7	DL	1300	1630	1	4	NE	0	8	2	2	0	0
08/05/2014	7	DL	1300	1630	2	3	NE	0	8	2	2	0	0
08/05/2014	7	DL	1300	1630	3	3	NE	0	7	2	2	0	0
08/05/2014	7	DL	1300	1630	4	3	NE	0	7	2	2	0	0
07/06/2014	8	JS	1030	1730	1	3	SSE	0	1	2	2	0	0
07/06/2014	8	JS	1030	1730	1	3	SSE	0	2	2	2	0	0
07/06/2014	8	JS	1030	1730	2	3	SSE	0	1	2	2	0	0
07/06/2014	8	JS	1030	1730	2	4	SSE	0	2	2	2	0	0
07/06/2014	8	JS	1030	1730	3	3	SSE	0	1	2	2	0	0
07/06/2014	8	JS	1030	1730	3	4	SSE	0	2	2	2	0	0
17/06/2014	8	JS	1230	1830	1	3	NW	1	8	1	1	0	0
17/06/2014	8	JS	1230	1830	2	3	NW	1	8	1	1	0	0
17/06/2014	8	JS	1230	1830	3	3	NW	1	8	1	1	0	0
17/06/2014	8	JS	1230	1830	4	3	NW	1	8	1	1	0	0
17/06/2014	8	JS	1230	1830	5	3	NW	1	8	1	1	0	0
17/06/2014	8	JS	1230	1830	6	3	NW	1	8	1	1	0	0
19/07/2014	9	DL	1215	1830	1	2	NW	0	6	2	2	0	0
19/07/2014	9	DL	1215	1830	2	2	NW	0	8	2	2	0	0
19/07/2014	9	DL	1215	1830	3	1	NW	0	8	2	2	0	0
19/07/2014	9	DL	1215	1830	4	2	NW	0	8	2	2	0	0
19/07/2014	9	DL	1215	1830	5	2	NW	0	8	2	2	0	0
19/07/2014	9	DL	1215	1830	6	1	NW	0	8	2	2	0	0
20/07/2014	9	DL	0700	1300	1	2	NW	0	8	2	2	0	0
20/07/2014	9	DL	0700	1300	2	1	NW	0	8	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
20/07/2014	9	DL	0700	1300	3	1	NW	1	8	1	2	0	0
20/07/2014	9	DL	0700	1300	4	1	NW	1	8	2	2	0	0
20/07/2014	9	DL	0700	1300	5	1	NW	1	8	1	2	0	0
20/07/2014	9	DL	0700	1300	6	1	NW	1	8	1	2	0	0
11/08/2014	10	DL	1000	1630	1	3	N	2	2	2	2	0	0
11/08/2014	10	DL	1000	1630	2	4	N	2	2	1	1	0	0
11/08/2014	10	DL	1000	1630	3	4	N	3	2	1	1	0	0
11/08/2014	10	DL	1000	1630	4	3	N	2	2	1	1	0	0
11/08/2014	10	DL	1000	1630	5	3	N	2	2	1	2	0	0
11/08/2014	10	DL	1000	1630	6	3	N	0	2	2	2	0	0
27/04/2019	11	NR	1325	1825	1	2	E	0	8	0	2	0	0
27/04/2019	11	NR	1325	1825	2	2	E	0	8	0	2	0	0
27/04/2019	11	NR	1325	1825	3	2	E	0	8	1	2	0	0
27/04/2019	11	NR	1325	1825	4	2	E	0	8	1	2	0	0
27/04/2019	11	NR	1325	1825	5	2	E	1	8	1	2	0	0
28/04/2019	11	NR	0545	1245	1	0	-	0	7	2	2	0	0
28/04/2019	11	NR	0545	1245	2	1	SW	0	7	2	2	0	0
28/04/2019	11	NR	0545	1245	3	1	SW	0	8	2	2	0	0
28/04/2019	11	NR	0545	1245	4	1	SW	0	8	2	2	0	0
28/04/2019	11	NR	0545	1245	5	1	SW	0	7	2	2	0	0
28/04/2019	11	NR	0545	1245	6	1	SW	0	7	2	2	0	0
28/04/2019	11	NR	0545	1245	7	1	SW	0	7	2	2	0	0
30/04/2019	11	JD	1000	1600	1	1	SW	0	0	2	2	0	0
30/04/2019	11	JD	1000	1600	2	1	SW	0	0	2	2	0	0
30/04/2019	11	JD	1000	1600	3	1	SW	0	2	2	2	0	0
30/04/2019	11	JD	1000	1600	4	2	SW	0	1	2	2	0	0
30/04/2019	11	JD	1000	1600	5	2	SW	0	1	2	2	0	0
30/04/2019	11	JD	1000	1600	6	1	SW	0	1	2	2	0	0
01/05/2019	12	PS	1000	1600	1	2	SE	0	8	2	2	0	0
01/05/2019	12	PS	1000	1600	2	2	SE	0	8	2	2	0	0
01/05/2019	12	PS	1000	1600	3	2	SE	0	8	2	2	0	0
01/05/2019	12	PS	1000	1600	4	1	SE	0	8	2	2	0	0
01/05/2019	12	PS	1000	1600	5	1	SE	0	8	2	2	0	0
01/05/2019	12	PS	1000	1600	6	1	SE	0	8	2	2	0	0
03/05/2019	12	JD	1400	2000	1	4	NW	2	8	2	2	0	0
03/05/2019	12	JD	1400	2000	2	4	NW	2	7	2	2	0	0
03/05/2019	12	JD	1400	2000	3	3	NW	2	8	2	2	0	0
03/05/2019	12	JD	1400	2000	4	4	NW	2	8	2	2	0	0
03/05/2019	12	JD	1400	2000	5	4	NW	2	8	2	2	0	0
03/05/2019	12	JD	1400	2000	6	3	NW	2	8	2	2	0	0
13/05/2019	12	JD	1100	1400	1	1	SE	0	6	2	2	0	0
13/05/2019	12	JD	1100	1400	2	1	SE	0	7	2	2	0	0
13/05/2019	12	JD	1100	1400	3	1	SE	0	7	2	2	0	0
13/05/2019	12	JD	1430	1730	1	1	SE	0	8	2	2	0	0
13/05/2019	12	JD	1430	1730	2	1	SE	0	7	2	2	0	0
13/05/2019	12	JD	1430	1730	3	2	SE	0	8	2	2	0	0
13/05/2019	12	JD	1800	2100	1	0	-	0	8	2	2	0	0
13/05/2019	12	JD	1800	2100	2	0	-	0	4	2	2	0	0
13/05/2019	12	JD	1800	2100	3	0	-	0	2	2	2	0	0
14/05/2019	12	PS	0620	0920	1	0	-	0	1	2	2	0	0
14/05/2019	12	PS	0620	0920	2	0	-	0	1	2	2	0	0
14/05/2019	12	PS	0620	0920	3	0	-	0	0	2	2	0	0
14/05/2019	12	PS	0950	1250	1	0	-	0	0	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
14/05/2019	12	PS	0950	1250	2	0	-	0	0	2	2	0	0
14/05/2019	12	PS	0950	1250	3	0	-	0	0	2	2	0	0
31/05/2019	12	JD	0900	1200	1	3	SE	1	8	2	2	0	0
31/05/2019	12	JD	0900	1200	2	3	SE	1	8	2	2	0	0
31/05/2019	12	JD	0900	1200	3	3	SE	2	8	2	2	0	0
05/06/2019	13	PS	0600	0900	1	0	-	0	8	2	2	0	0
05/06/2019	13	PS	0600	0900	2	0	-	2	8	2	2	0	0
05/06/2019	13	PS	0600	0900	3	0	-	0	8	2	2	0	0
05/06/2019	13	PS	0930	1230	1	0	-	0	8	2	2	0	0
05/06/2019	13	PS	0930	1230	2	0	-	0	8	2	2	0	0
05/06/2019	13	PS	0930	1230	3	0	-	0	8	2	2	0	0
05/06/2019	13	JD	1230	1800	1	2	NW	2	8	2	2	0	0
05/06/2019	13	JD	1230	1800	2	1	NW	0	8	2	2	0	0
05/06/2019	13	JD	1230	1800	3	1	NW	0	8	2	2	0	0
05/06/2019	13	JD	1230	1800	4	1	NW	0	8	2	2	0	0
05/06/2019	13	JD	1230	1800	5	1	NW	0	7	2	2	0	0
05/06/2019	13	JD	1230	1800	6	1	NW	0	6	2	2	0	0
05/06/2019	13	JD	2230	2300	1	1	NW	0	6	2	2	0	0
17/06/2019	13	JD	1630	2230	1	0	-	2	8	2	2	0	0
17/06/2019	13	JD	1630	2230	2	0	-	2	8	2	2	0	0
17/06/2019	13	JD	1630	2230	3	0	-	2	8	2	2	0	0
17/06/2019	13	JD	1630	2230	4	0	-	2	7	2	2	0	0
17/06/2019	13	JD	1630	2230	5	0	-	0	6	2	2	0	0
17/06/2019	13	JD	1630	2230	6	0	-	0	6	2	2	0	0
19/06/2019	13	JD	0330	0630	1	1	SE	0	8	2	2	0	0
19/06/2019	13	JD	0330	0630	2	1	SE	0	8	2	2	0	0
19/06/2019	13	JD	0330	0630	3	1	SE	0	8	2	2	0	0
19/06/2019	13	JD	0700	1000	1	1	SE	0	7	2	2	0	0
19/06/2019	13	JD	0700	1000	2	1	SE	0	7	2	2	0	0
19/06/2019	13	JD	0700	1000	3	1	SE	2	8	2	2	0	0
20/06/2019	13	JD	0300	0500	1	1	NE	0	8	2	2	0	0
20/06/2019	13	JD	0300	0500	2	0	-	0	8	2	2	0	0
20/06/2019	13	JD	0900	1000	1	1	SE	2	7	2	2	0	0
21/06/2019	13	JD	1400	1700	1	2	NW	0	6	2	2	0	0
21/06/2019	13	JD	1400	1700	2	3	NW	0	5	2	2	0	0
21/06/2019	13	JD	1400	1700	3	3	NW	0	4	2	2	0	0
02/07/2019	14	JD	1300	1600	1	2	NW	0	8	2	2	0	0
02/07/2019	14	JD	1300	1600	2	3	NW	2	7	2	2	0	0
02/07/2019	14	JD	1300	1600	3	3	NW	2	7	2	2	0	0
02/07/2019	14	JD	1630	1930	1	3	NW	0	5	2	2	0	0
02/07/2019	14	JD	1630	1930	2	3	NW	0	4	2	2	0	0
02/07/2019	14	JD	1630	1930	3	3	NW	0	3	2	2	0	0
11/07/2019	14	PS	0900	1000	1	1	E	0	8	1	1	0	0
11/07/2019	14	PS	1600	1800	1	2	E	0	8	2	2	0	0
11/07/2019	14	PS	1600	1800	2	2	E	0	8	2	2	0	0
12/07/2019	14	JD	0600	0700	1	1	NE	1	8	2	2	0	0
12/07/2019	14	JD	1030	1530	1	0	-	0	8	2	2	0	0
12/07/2019	14	JD	1030	1530	2	1	NE	0	8	2	2	0	0
12/07/2019	14	JD	1030	1530	3	0	-	0	8	2	2	0	0
12/07/2019	14	JD	1030	1530	4	1	NE	0	8	2	2	0	0
12/07/2019	14	JD	1030	1530	5	1	NE	0	8	2	2	0	0
15/07/2019	14	JD	1400	1700	1	2	NE	0	0	2	2	0	0
15/07/2019	14	JD	1400	1700	2	2	NE	0	0	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
15/07/2019	14	JD	1400	1700	3	2	NE	0	0	2	2	0	0
17/07/2019	14	JD	0900	1500	1	2	SE	0	7	2	2	0	0
17/07/2019	14	PS	0900	1300	1	3	SW	0	8	2	2	0	0
17/07/2019	14	JD	0900	1500	2	2	SE	0	7	2	2	0	0
17/07/2019	14	PS	0900	1300	2	3	SW	0	8	2	2	0	0
17/07/2019	14	JD	0900	1500	3	3	SE	0	8	2	2	0	0
17/07/2019	14	PS	0900	1300	3	3	SW	2	8	2	2	0	0
17/07/2019	14	JD	0900	1500	4	3	SE	2	8	2	2	0	0
17/07/2019	14	PS	0900	1300	4	3	SW	2	8	2	2	0	0
17/07/2019	14	JD	0900	1500	5	3	SE	2	8	2	2	0	0
17/07/2019	14	JD	0900	1500	6	3	SE	0	8	2	2	0	0
17/07/2019	14	PS	1600	1800	1	3	SW	2	8	2	2	0	0
17/07/2019	14	PS	1600	1800	2	3	SW	2	8	2	2	0	0
07/08/2019	15	JD	1100	1400	1	1	NE	0	8	2	2	0	0
07/08/2019	15	JD	1100	1400	2	1	NE	2	8	2	2	0	0
07/08/2019	15	JD	1100	1400	3	2	NE	2	8	2	2	0	0
09/08/2019	15	PS	1230	1530	1	2	SE	2	8	2	2	0	0
09/08/2019	15	PS	1230	1530	2	3	SE	2	8	2	2	0	0
09/08/2019	15	PS	1230	1530	3	3	SE	2	8	2	2	0	0
23/08/2019	15	PS	1130	1430	1	0	-	0	8	2	2	0	0
23/08/2019	15	PS	1130	1430	2	1	SW	0	8	2	2	0	0
23/08/2019	15	PS	1130	1430	3	1	SW	0	8	2	2	0	0
23/08/2019	15	PS	1500	1800	1	1	SW	0	8	2	2	0	0
23/08/2019	15	PS	1500	1800	2	1	SW	0	8	2	2	0	0
23/08/2019	15	PS	1500	1800	3	1	SW	0	8	2	2	0	0
07/04/2020	16	KC	1015	1315	1	4	SW	0	5	2	2	0	0
07/04/2020	16	KC	1015	1315	2	4	SW	0	5	2	2	0	0
07/04/2020	16	KC	1015	1315	3	4	SW	0	5	2	2	0	0
07/04/2020	16	KC	1315	1615	1	4	S	0	4	2	2	0	0
07/04/2020	16	KC	1315	1615	2	4	S	0	4	2	2	0	0
07/04/2020	16	KC	1315	1615	3	4	S	0	4	2	2	0	0
08/04/2020	16	KC	1030	1330	1	2	N	1	8	1	2	0	0
08/04/2020	16	KC	1030	1330	2	3	N	3	8	1	2	0	0
08/04/2020	16	KC	1030	1330	3	2	NW	0	8	2	2	0	0
08/04/2020	16	KC	1330	1630	1	3	NW	0	7	2	2	0	0
08/04/2020	16	KC	1330	1630	2	3	NW	0	7	2	2	0	0
08/04/2020	16	KC	1330	1630	3	3	NW	0	5	2	2	0	0
09/04/2020	16	NR	1300	1600	1	3	SE	0	4	2	2	0	0
09/04/2020	16	NR	1300	1600	2	3	SE	0	5	2	2	0	0
09/04/2020	16	NR	1300	1600	3	4	SE	0	7	2	2	0	0
09/04/2020	16	KC	1310	1610	1	3	SE	0	4	2	2	0	0
09/04/2020	16	KC	1310	1610	2	3	SE	0	4	2	2	0	0
09/04/2020	16	KC	1310	1610	3	3	SE	0	6	2	2	0	0
22/04/2020	16	NR	0945	1545	1	2	SE	0	3	2	2	0	0
22/04/2020	16	NR	0945	1545	2	2	SE	0	2	2	2	0	0
22/04/2020	16	NR	0945	1545	3	3	SE	0	3	2	2	0	0
22/04/2020	16	NR	0945	1545	4	3	SE	0	3	2	2	0	0
22/04/2020	16	NR	0945	1545	5	3	SE	0	4	2	2	0	0
22/04/2020	16	NR	0945	1545	6	3	SE	0	4	2	2	0	0
05/05/2020	17	NR	1145	1445	1	1	NE	0	4	2	2	0	0
05/05/2020	17	NR	1145	1445	2	2	NE	0	5	2	2	0	0
05/05/2020	17	NR	1145	1445	3	2	NE	0	5	2	2	0	0
14/05/2020	17	NR	1625	1925	1	4	W	0	7	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
14/05/2020	17	NR	1625	1925	2	5	W	0	6	2	2	0	0
14/05/2020	17	NR	1625	1925	3	4	W	0	6	2	2	0	0
16/05/2020	17	NR	1125	1425	1	4	NW	0	8	2	2	0	0
16/05/2020	17	NR	1125	1425	2	4	NW	0	8	2	2	0	0
16/05/2020	17	NR	1125	1425	3	4	NW	0	8	2	2	0	0
19/05/2020	17	NR	0410	0710	1	1	W	0	3	2	2	1	0
19/05/2020	17	NR	0410	0710	2	1	W	0	2	2	2	0	0
19/05/2020	17	NR	0410	0710	3	1	W	0	4	2	2	0	0
25/05/2020	17	NR	0845	1445	1	4	S	0	1	2	2	0	0
25/05/2020	17	NR	0845	1445	2	4	S	0	2	2	2	0	0
25/05/2020	17	NR	0845	1445	3	4	S	0	5	2	2	0	0
25/05/2020	17	NR	0845	1445	4	3	S	0	6	2	2	0	0
25/05/2020	17	NR	0845	1445	5	3	S	0	7	2	2	0	0
25/05/2020	17	NR	0845	1445	6	3	S	0	7	2	2	0	0
03/06/2020	18	NR	1615	1815	1	3	N	0	8	2	2	0	0
03/06/2020	18	NR	1615	1815	2	3	N	0	8	2	2	0	0
03/06/2020	18	NR	2150	2250	1	1	N	0	8	2	2	0	0
10/06/2020	18	KC	1130	1430	1	4	SE	2	8	2	2	0	0
10/06/2020	18	KC	1130	1430	2	5	SE	2	8	2	2	0	0
10/06/2020	18	KC	1130	1430	3	4	SE	1	8	2	2	0	0
10/06/2020	18	KC	1430	1730	1	5	SE	2	8	2	2	0	0
10/06/2020	18	KC	1430	1730	2	4	SE	2	8	2	2	0	0
10/06/2020	18	KC	1430	1730	3	4	SE	3	8	2	2	0	0
13/06/2020	18	KC	1930	2230	1	2	E	1	8	1	1	0	0
13/06/2020	18	KC	1930	2230	2	2	E	1	8	1	1	0	0
13/06/2020	18	KC	1930	2230	3	2	E	1	8	1	1	0	0
14/06/2020	18	KC	1100	1700	1	2	SE	0	8	1	2	0	0
14/06/2020	18	KC	1100	1700	2	3	SE	0	8	1	2	0	0
14/06/2020	18	KC	1100	1700	3	1	E	0	8	2	2	0	0
14/06/2020	18	KC	1100	1700	4	3	E	0	8	2	2	0	0
14/06/2020	18	KC	1100	1700	5	3	E	0	8	2	2	0	0
14/06/2020	18	KC	1100	1700	6	3	E	0	8	2	2	0	0
09/07/2020	19	NR	0830	0930	1	1	NW	0	7	2	2	0	0
09/07/2020	19	NR	1230	1730	1	2	NW	0	8	2	2	0	0
09/07/2020	19	NR	1230	1730	2	2	NW	0	7	2	2	0	0
09/07/2020	19	NR	1230	1730	3	2	NW	0	7	2	2	0	0
09/07/2020	19	NR	1230	1730	4	3	N	0	8	2	2	0	0
09/07/2020	19	NR	1230	1730	5	3	N	0	6	2	2	0	0
11/07/2020	19	NR	0735	1035	1	3	W	3	4	2	2	0	0
11/07/2020	19	NR	0735	1035	2	3	NW	0	7	2	2	0	0
11/07/2020	19	NR	0735	1035	3	3	NW	2	7	2	2	0	0
14/07/2020	19	KC	1230	1530	1	4	NE	0	7	2	2	0	0
14/07/2020	19	KC	1230	1530	2	3	NE	0	6	2	2	0	0
14/07/2020	19	KC	1230	1530	3	3	N	0	6	2	2	0	0
15/07/2020	19	KC	1030	1330	1	3	S	0	8	2	2	0	0
15/07/2020	19	KC	1030	1330	2	3	S	0	8	2	2	0	0
15/07/2020	19	KC	1030	1330	3	3	S	3	8	2	2	0	0
15/07/2020	19	KC	1330	1630	1	3	S	3	8	2	2	0	0
15/07/2020	19	KC	1330	1630	2	2	S	4	8	2	2	0	0
15/07/2020	19	KC	1330	1630	3	3	S	4	8	2	2	0	0
15/03/2022	20	PS	1215	1815	1	3	SW	0	8	2	2	0	0
15/03/2022	20	PS	1215	1815	2	3	SW	0	8	2	2	0	0
15/03/2022	20	PS	1215	1815	3	4	SW	0	8	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
15/03/2022	20	PS	1215	1815	4	3	SW	0	8	2	2	0	0
15/03/2022	20	PS	1215	1815	5	3	SW	1	8	2	2	0	0
15/03/2022	20	PS	1215	1815	6	3	SW	0	8	2	2	0	0
16/03/2022	20	PS	1220	1820	1	0	-	0	7	2	2	0	0
16/03/2022	20	PS	1220	1820	2	0	-	0	8	2	2	0	0
16/03/2022	20	PS	1220	1820	3	0	-	0	8	2	2	0	0
16/03/2022	20	PS	1220	1820	4	1	SE	0	8	2	2	0	0
16/03/2022	20	PS	1220	1820	5	0	-	0	7	2	2	0	0
16/03/2022	20	PS	1220	1820	6	0	-	0	2	2	2	0	0
22/04/2022	21	CT	0900	1800	1	2	SW	1	5	2	2	0	0
22/04/2022	21	CT	0900	1800	2	2	SW	0	6	2	2	0	0
22/04/2022	21	CT	0900	1800	3	2	SW	0	5	2	2	0	0
22/04/2022	21	CT	0900	1800	4	3	SW	0	4	2	2	0	0
22/04/2022	21	CT	0900	1800	5	2	SW	0	4	2	2	0	0
22/04/2022	21	CT	0900	1800	6	2	SW	0	3	2	2	0	0
22/04/2022	21	CT	0900	1800	7	2	SW	0	3	2	2	0	0
22/04/2022	21	CT	0900	1800	8	2	SW	0	2	2	2	0	0
22/04/2022	21	CT	0900	1800	9	1	SW	0	2	2	2	0	0
22/04/2022	21	MM	0900	1800	1	2	SW	0	8	2	2	0	0
22/04/2022	21	MM	0900	1800	2	2	SW	0	8	2	2	0	0
22/04/2022	21	MM	0900	1800	3	1	SW	0	8	2	2	0	0
22/04/2022	21	MM	0900	1800	4	1	SW	0	8	2	2	0	0
22/04/2022	21	MM	0900	1800	5	1	SW	0	8	2	2	0	0
22/04/2022	21	MM	0900	1800	6	1	S	0	8	2	2	0	0
22/04/2022	21	MM	0900	1800	7	1	S	0	8	2	2	0	0
22/04/2022	21	MM	0900	1800	8	1	S	0	6	2	2	0	0
22/04/2022	21	MM	0900	1800	9	2	S	0	6	2	2	0	0
14/05/2022	22	CT	1000	1900	1	2	SW	0	4	2	1	0	0
14/05/2022	22	CT	1000	1900	2	3	SW	0	4	2	2	0	0
14/05/2022	22	CT	1000	1900	3	3	SW	0	6	2	2	0	0
14/05/2022	22	CT	1000	1900	4	3	S	0	5	2	1	0	0
14/05/2022	22	CT	1000	1900	5	3	S	0	3	2	1	0	0
14/05/2022	22	CT	1000	1900	6	3	SW	0	4	2	1	0	0
14/05/2022	22	CT	1000	1900	7	3	S	0	3	2	1	0	0
14/05/2022	22	CT	1000	1900	8	2	SW	0	3	2	2	0	0
14/05/2022	22	CT	1000	1900	9	3	SW	0	3	2	2	0	0
14/05/2022	22	MM	1000	1900	1	3	SW	0	8	2	2	0	0
14/05/2022	22	MM	1000	1900	2	3	SW	0	7	2	2	0	0
14/05/2022	22	MM	1000	1900	3	3	SW	0	7	2	2	0	0
14/05/2022	22	MM	1000	1900	4	2	SW	0	7	2	2	0	0
14/05/2022	22	MM	1000	1900	5	2	SW	0	6	2	2	0	0
14/05/2022	22	MM	1000	1900	6	2	SW	0	7	2	2	0	0
14/05/2022	22	MM	1000	1900	7	2	SW	0	8	2	2	0	0
14/05/2022	22	MM	1000	1900	8	3	SW	0	7	2	2	0	0
14/05/2022	22	MM	1000	1900	9	3	SW	0	6	2	2	0	0
13/06/2022	23	NR	1455	1755	1	3	W	0	8	2	2	0	0
13/06/2022	23	NR	1455	1755	2	3	W	0	8	2	2	0	0
13/06/2022	23	NR	1455	1755	3	3	W	2	8	2	2	0	0
14/06/2022	23	NR	0555	1155	1	3	SW	0	8	2	2	0	0
14/06/2022	23	NR	0555	1155	2	2	SW	0	8	2	2	0	0
14/06/2022	23	NR	0555	1155	3	3	SW	0	8	2	2	0	0
14/06/2022	23	NR	0555	1155	4	3	SW	0	8	2	2	0	0
14/06/2022	23	NR	0555	1155	5	3	SW	0	8	2	2	0	0

Date	Survey visit	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
14/06/2022	23	NR	0555	1155	6	3	SW	0	8	2	2	0	0
14/06/2022	23	NR	1435	1735	1	3	SW	2	8	2	2	0	0
14/06/2022	23	NR	1435	1735	2	2	SW	2	8	2	2	0	0
14/06/2022	23	NR	1435	1735	3	2	SW	0	8	2	2	0	0
15/06/2022	23	NR	0350	0950	1	0	-	1	8	2	2	0	0
15/06/2022	23	NR	0350	0950	2	1	SW	0	8	2	2	0	0
15/06/2022	23	NR	0350	0950	3	1	S	0	8	2	2	0	0
15/06/2022	23	NR	0350	0950	4	1	S	0	8	2	2	0	0
15/06/2022	23	NR	0350	0950	5	2	S	0	8	2	2	0	0
15/06/2022	23	NR	0350	0950	6	2	S	0	8	2	2	0	0
05/07/2022	24	NR	1245	1745	1	3	NW	0	4	2	2	0	0
05/07/2022	24	NR	1245	1745	2	3	NW	0	5	2	2	0	0
05/07/2022	24	NR	1245	1745	3	3	NW	0	5	2	2	0	0
05/07/2022	24	NR	1245	1745	4	3	NW	0	5	2	2	0	0
05/07/2022	24	NR	1245	1745	5	2	NW	0	6	2	2	0	0
28/08/2022	25	JD	1200	1800	1	3	SE	0	8	2	2	0	0
28/08/2022	25	JD	1200	1800	2	3	SE	0	8	2	2	0	0
28/08/2022	25	JD	1200	1800	3	3	SE	0	8	2	2	0	0
28/08/2022	25	JD	1200	1800	4	3	SE	0	8	2	2	0	0
28/08/2022	25	JD	1200	1800	5	3	SE	0	8	2	2	0	0
28/08/2022	25	JD	1200	1800	6	3	SE	0	8	2	2	0	0

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C.5 Hen Harrier Roost Surveys

Hen harrier roost surveys were undertaken during the 2013/2014 and 2014/2015 non-breeding seasons. **Table C-7** details survey dates and weather data recorded. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-7 Meteorological conditions during hen harrier roost surveys at the Proposed Development (sorted chronologically)

Date	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
16/11/2013	JS	0730	0945	1	3	SW	0	4	2	1	0	0
16/11/2013	JS	0730	0945	2	3	SW	0	6	2	2	0	0
27/11/2013	JS	1430	1630	1	4	W	0	7	2	2	0	0
27/11/2013	JS	1430	1630	2	4	W	1	7	2	1	0	0
18/12/2013	JS	1400	1600	1	4	SE	0	7	2	2	0	0
18/12/2013	JS	1400	1600	2	4	SE	0	7	2	1	0	0
21/12/2013	JS	0815	1015	1	4	SSE	0	3	2	1	0	0
21/12/2013	JS	0815	1015	2	4	SSE	0	2	2	2	0	0
16/01/2014	JS	0815	1030	1	0	0	1	8	1	1	0	0
16/01/2014	JS	0815	1030	2	0	0	1	8	1	1	0	0
16/01/2014	JS	0815	1030	3	0	0	1	8	1	1	0	0
20/01/2014	JS	1430	1645	1	1	S	0	2	2	2	0	0
20/01/2014	JS	1430	1645	2	1	S	0	3	2	1	0	0
24/02/2014	JS	0700	0900	1	2	SSE	0	8	2	1	0	0
24/02/2014	JS	0700	0900	2	1	SSE	0	8	2	2	0	0
26/02/2014	RS	1600	1800	1	1	S	0	4	2	2	0	0
26/02/2014	RS	1600	1800	2	1	S	0	5	2	2	0	0
17/09/2014	DL	1730	2030	1	1	E	0	4	2	2	0	0
17/09/2014	DL	1730	2030	2	1	E	0	4	2	2	0	0
17/09/2014	DL	1730	2030	3	1	E	0	3	2	2	0	0
18/09/2014	DL	0550	0850	1	1	NE	0	8	1	1	0	0
18/09/2014	DL	0550	0850	2	1	NE	0	8	1	1	0	0
18/09/2014	DL	0550	0850	3	1	NE	0	8	1	1	0	0
09/10/2014	DL	1550	1850	1	2	NE	0	6	2	2	0	0
09/10/2014	DL	1550	1850	2	2	NE	0	7	2	2	0	0
09/10/2014	DL	1550	1850	3	1	NE	0	7	2	2	0	0
28/10/2014	DL	0630	0930	1	4	NE	0	8	2	2	0	0
28/10/2014	DL	0630	0930	2	4	N	0	8	2	2	0	0
28/10/2014	DL	0630	0930	3	4	N	0	8	2	2	0	0
06/11/2014	DL	0700	1000	1	3	SE	1	8	1	1	0	0
06/11/2014	DL	0700	1000	2	3	SE	0	8	2	1	0	0
06/11/2014	DL	0700	1000	3	3	SE	2	8	1	1	0	0
23/11/2014	DL	1325	1625	1	1	S	0	6	2	2	0	0
23/11/2014	DL	1325	1625	2	1	S	0	7	2	2	0	0
23/11/2014	DL	1325	1625	3	1	S	0	7	2	2	0	0
06/12/2014	DL	0750	1050	1	3	SW	0	6	1	2	0	0
06/12/2014	DL	0750	1050	2	3	SW	0	6	1	2	0	0
06/12/2014	DL	0750	1050	3	4	SW	0	7	1	2	0	0
06/12/2014	DL	1320	1620	1	1	SE	0	5	2	2	0	0
06/12/2014	DL	1320	1620	2	1	SE	0	5	2	2	0	0
06/12/2014	DL	1320	1620	3	1	SE	0	4	2	2	0	0
05/01/2015	DL	805	1105	1	2	NE	0	6	2	2	0	0
05/01/2015	DL	805	1105	2	2	NE	0	7	2	2	0	0
05/01/2015	DL	805	1105	3	1	NE	0	6	2	2	0	0
25/01/2015	DL	1405	1705	1	1	W	0	4	2	2	0	0
25/01/2015	DL	1405	1705	2	1	W	0	4	2	2	0	0
25/01/2015	DL	1405	1705	3	1	W	0	5	2	2	0	0

Date	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
07/02/2015	DL	1400	1700	1	1	NW	0	5	2	2	0	0
07/02/2015	DL	1400	1700	2	1	NW	0	8	2	2	0	0
07/02/2015	DL	1400	1700	3	1	NW	0	5	2	2	0	0
08/02/2015	DL	0730	1030	1	2	W	0	8	2	2	0	0
08/02/2015	DL	0730	1030	2	3	W	0	8	2	2	0	0
08/02/2015	DL	0730	1030	3	2	W	0	8	2	2	0	0
06/03/2015	DL	0630	0930	1	5	SW	0	8	2	2	0	0
06/03/2015	DL	0630	0930	2	5	SW	2	8	2	2	0	0
06/03/2015	DL	0630	0930	3	5	SW	0	8	2	2	0	0
13/03/2015	DL	1540	1840	1	2	NE	0	5	2	2	0	0
13/03/2015	DL	1540	1840	2	2	NE	0	5	2	2	0	0
13/03/2015	DL	1540	1840	3	1	NE	0	4	2	2	0	0

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C.6 Diver Flight Activity Surveys

Diver flight activity surveys were undertaken during the 2013 and 2020 breeding seasons. **Table C-8** details survey dates and weather data recorded. Refer to **Annex B** for survey methodology and **Annex D** for survey results.

Table C-8 Meteorological conditions during diver flight activity surveys at the Proposed Development

Date	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
23/07/2013	JS	1345	1830	1	4	SE	0	7	2	2	0	0
23/07/2013	JS	1345	1830	2	4	SE	0	7	2	2	0	0
23/07/2013	JS	1345	1830	3	3	SE	0	7	2	2	0	0
23/07/2013	JS	1345	1830	4	3	SE	0	7	2	2	0	0
23/07/2013	JS	1345	1830	5	3	SE	0	8	2	2	0	0
06/08/2013	JS	0450	0750	1	2	SW	0	7	2	2	0	0
06/08/2013	JS	0450	0750	2	2	SW	0	7	2	2	0	0
06/08/2013	JS	0450	0750	3	3	SW	0	7	2	2	0	0
06/08/2013	JS	0850	1150	1	3	SW	0	7	2	2	0	0
06/08/2013	JS	0850	1150	2	3	SW	0	6	2	2	0	0
06/08/2013	JS	0850	1150	3	3	SW	0	6	2	2	0	0
07/08/2013	JS	0500	0800	1	0	-	0	8	2	2	0	0
07/08/2013	JS	0500	0800	2	0	-	0	8	2	2	0	0
07/08/2013	JS	0500	0800	3	0	-	0	8	2	2	0	0
07/08/2013	JS	0900	1200	1	0	-	0	8	2	2	0	0
07/08/2013	JS	0900	1200	2	0	-	1	8	2	2	0	0
07/08/2013	JS	0900	1200	3	1	E	1	8	2	2	0	0
09/08/2013	JS	1530	1830	1	4	W	1	8	2	2	0	0
09/08/2013	JS	1530	1830	2	4	W	1	8	2	2	0	0
09/08/2013	JS	1530	1830	3	4	W	0	8	2	2	0	0
09/08/2013	JS	1930	2230	1	3	W	0	8	2	2	0	0
09/08/2013	JS	1930	2230	2	2	W	0	8	2	2	0	0
09/08/2013	JS	1930	2230	3	3	W	0	8	2	1	0	0
10/08/2013	JS	0450	0750	1	3	SW	0	8	2	1	0	0
10/08/2013	JS	0450	0750	2	3	SW	0	8	2	2	0	0
10/08/2013	JS	0450	0750	3	3	SW	0	8	2	2	0	0
10/08/2013	JS	1500	1800	1	2	NE	1	8	1	2	0	0
10/08/2013	JS	1500	1800	2	0	-	2	8	1	1	0	0
10/08/2013	JS	1500	1800	3	0	-	2	8	1	1	0	0
10/08/2013	JS	1900	2200	1	0	-	2	8	1	1	0	0
10/08/2013	JS	1900	2200	2	0	-	2	8	1	1	0	0
10/08/2013	JS	1900	2200	3	0	-	2	8	1	1	0	0
12/08/2013	JS	0450	0750	1	2	SW	0	7	2	1	0	0
12/08/2013	JS	0450	0750	2	2	SW	0	7	2	2	0	0
12/08/2013	JS	0450	0750	3	2	SW	0	7	2	2	0	0
12/08/2013	JS	0850	1150	1	3	W	2	8	2	2	0	0
12/08/2013	JS	0850	1150	2	4	W	2	8	2	2	0	0
12/08/2013	JS	0850	1150	3	3	W	2	8	2	2	0	0
13/08/2013	JS	0445	0745	1	2	W	0	5	2	2	0	0
13/08/2013	JS	0445	0745	2	2	W	0	7	2	2	0	0
13/08/2013	JS	0445	0745	3	2	W	0	8	2	2	0	0
13/08/2013	JS	0845	1145	1	2	W	2	8	2	2	0	0
13/08/2013	JS	0845	1145	2	2	W	2	8	2	2	0	0
13/08/2013	JS	0845	1145	3	2	W	2	8	2	2	0	0
03/05/2020	NR	1520	1820	1	2	W	0	2	2	2	0	0
03/05/2020	NR	1520	1820	2	2	W	0	1	2	2	0	0
03/05/2020	NR	1520	1820	3	2	W	0	1	2	2	0	0

Date	Observer	Survey start time	Survey finish time	Survey hour	Wind speed	Wind direction	Rain	Cloud cover	Cloud height	Visibility	Frost	Snow
13/05/2020	NR	1020	1320	1	3	NW	2	8	2	2	0	0
13/05/2020	NR	1020	1320	2	3	NW	0	8	2	2	0	0
13/05/2020	NR	1020	1320	3	3	NW	0	7	2	2	0	0
20/05/2020	NR	0940	1540	1	3	SE	0	6	2	2	0	0
20/05/2020	NR	0940	1540	2	3	SE	0	6	2	2	0	0
20/05/2020	NR	0940	1540	3	3	SE	0	7	2	2	0	0
20/05/2020	NR	0940	1540	4	3	SE	0	7	2	2	0	0
20/05/2020	NR	0940	1540	5	3	SE	0	7	2	2	0	0
20/05/2020	NR	0940	1540	6	3	SE	0	7	2	2	0	0
03/06/2020	NR	1255	1555	1	3	N	0	8	2	2	0	0
03/06/2020	NR	1255	1555	2	3	N	0	8	2	2	0	0
03/06/2020	NR	1255	1555	3	3	N	0	7	2	2	0	0
13/06/2020	KC	1330	1630	1	2	SE	0	8	1	1	0	0
13/06/2020	KC	1330	1630	2	2	SE	0	8	1	1	0	0
13/06/2020	KC	1330	1630	3	2	SE	0	8	1	1	0	0
22/06/2020	NR	1910	2210	1	2	S	0	8	2	2	0	0
22/06/2020	NR	1910	2210	2	2	S	0	7	2	2	0	0
22/06/2020	NR	1910	2210	3	3	S	2	8	2	2	0	0
26/06/2020	NR	0625	0925	1	1	SE	0	6	2	2	0	0
26/06/2020	NR	0625	0925	2	2	SE	0	5	2	2	0	0
26/06/2020	NR	0625	0925	3	3	SE	0	8	0	2	0	0
06/07/2020	NR	1345	1645	1	5	NW	0	7	2	2	0	0
06/07/2020	NR	1345	1645	2	6	NW	0	7	2	2	0	0
06/07/2020	NR	1345	1645	3	6	NW	0	5	2	2	0	0
10/07/2020	NR	0720	1020	1	3	NW	0	5	2	2	0	0
10/07/2020	NR	0720	1020	2	3	NW	0	5	2	2	0	0
10/07/2020	NR	0720	1020	3	3	NW	3	7	2	2	0	0
14/07/2020	KC	1945	2245	1	1	NW	0	2	2	0	0	0
14/07/2020	KC	1945	2245	2	1	NW	0	2	2	0	0	0
14/07/2020	KC	1945	2245	3	1	NW	0	2	2	0	0	0
23/07/2020	KC	0955	1255	1	2	NW	0	8	2	2	0	0
23/07/2020	KC	0955	1255	2	2	NW	0	7	2	2	0	0
23/07/2020	KC	0955	1255	3	2	NW	0	8	2	2	0	0
11/08/2020	JD	0700	1000	1	2	SE	0	8	2	2	0	0
11/08/2020	JD	0700	1000	2	2	SE	0	8	2	2	0	0
11/08/2020	JD	0700	1000	3	2	SE	0	8	2	2	0	0
11/08/2020	JD	1030	1330	1	2	SE	0	8	2	2	0	0
11/08/2020	JD	1030	1330	2	2	SE	0	8	2	2	0	0
11/08/2020	JD	1030	1330	3	1	SE	2	8	2	2	0	0

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ANNEX D. ORNITHOLOGICAL SURVEY RESULTS

D.1 Flight Activity Records: Target Species

In accordance with NatureScot guidance (SNH 2017), target species are those which may be considered to be at risk from the potential effects of wind farms. All flights of target species within the turbine area and the surrounding area were mapped and are detailed in **Table D-1**.

Table D-1 Details of target species recorded during flight activity surveys (sorted by species)

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
08/05/2013	RS	2	0539	Arctic skua	1	49	0.00	7.71	23.12	9.63	0.00	0.00	1.63	4.88	2.03	0.00
03/03/2021	PS	2	1816	Barn owl	1	117	117.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26/03/2013	JS	2	1716	Curlew	2	15	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00
10/04/2013	JS	1	1410	Curlew	3	70	15.00	10.48	31.43	13.10	0.00	0.00	0.00	0.00	0.00	0.00
10/04/2013	JS	1	1515	Curlew	1	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/04/2013	JS	1	1518	Curlew	2	70	70.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/04/2013	JS	1	1518	Curlew	2	100	41.19	6.42	19.26	8.02	0.00	13.81	2.15	6.46	2.69	0.00
10/04/2013	JS	1	1541	Curlew	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/04/2013	JS	1	1650	Curlew	2	40	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19/04/2013	RS	1	1830	Curlew	1	35	6.27	0.00	0.00	0.00	0.00	28.73	0.00	0.00	0.00	0.00
19/04/2013	RS	1	1851	Curlew	1	155	15.00	26.67	80.00	33.33	0.00	0.00	0.00	0.00	0.00	0.00
19/04/2013	RS	1	1915	Curlew	1	25	10.00	2.86	8.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00
19/04/2013	RS	1	1932	Curlew	1	120	45.00	14.29	42.86	17.86	0.00	0.00	0.00	0.00	0.00	0.00
19/04/2013	RS	1	1946	Curlew	2	36	6.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
23/04/2013	RS	1	1302	Curlew	2	18	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23/04/2013	RS	1	1322	Curlew	2	42	27.00	2.86	8.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00
23/04/2013	RS	1	1324	Curlew	1	70	40.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
25/04/2013	RS	2	1950	Curlew	3	48	0.00	0.58	1.74	0.73	0.00	0.00	8.56	25.69	10.70	0.00
29/04/2013	RS	1	0450	Curlew	1	15	12.57	0.00	0.00	0.00	0.00	2.43	0.00	0.00	0.00	0.00
29/04/2013	RS	1	0521	Curlew	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29/04/2013	RS	1	0642	Curlew	2	26	11.00	2.86	8.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00
30/04/2013	RS	2	1421	Curlew	2	40	32.68	0.00	0.00	0.00	0.00	7.32	0.00	0.00	0.00	0.00
01/05/2013	RS	1	2053	Curlew	2	72	15.00	10.86	32.57	13.57	0.00	0.00	0.00	0.00	0.00	0.00
01/05/2013	RS	1	2104	Curlew	1	36	6.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
04/05/2013	RS	1	1012	Curlew	2	39	29.89	0.00	0.00	0.00	0.00	9.11	0.00	0.00	0.00	0.00
04/05/2013	RS	1	94	Curlew	1	28	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/05/2013	RS	2	0911	Curlew	1	36	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/05/2013	RS	2	0914	Curlew	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/05/2013	RS	2	0917	Curlew	1	40	22.85	1.45	4.35	1.81	0.00	7.15	0.45	1.36	0.57	0.00
07/05/2013	RS	1	0432	Curlew	1	15	12.65	0.00	0.00	0.00	0.00	2.35	0.00	0.00	0.00	0.00
07/05/2013	RS	1	0445	Curlew	1	17	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/05/2013	RS	1	0449	Curlew	1	23	23.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2013	RS	1	1932	Curlew	1	20	12.62	0.00	0.00	0.00	0.00	7.38	0.00	0.00	0.00	0.00
08/05/2013	RS	1	1954	Curlew	1	30	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2013	RS	1	2023	Curlew	1	44	12.08	1.07	3.22	1.34	0.00	17.92	1.59	4.78	1.99	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
08/05/2013	RS	1	2045	Curlew	1	27	0.00	0.00	0.00	0.00	0.00	27.00	0.00	0.00	0.00	0.00
09/05/2013	JS	2	1930	Curlew	1	30	22.65	0.00	0.00	0.00	0.00	7.35	0.00	0.00	0.00	0.00
09/05/2013	JS	2	1956	Curlew	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/05/2013	JS	2	2034	Curlew	1	30	0.00	2.99	8.98	3.74	0.00	0.00	2.72	8.16	3.40	0.00
09/05/2013	JS	2	2100	Curlew	1	15	5.00	1.90	5.71	2.38	0.00	0.00	0.00	0.00	0.00	0.00
09/05/2013	JS	2	2117	Curlew	1	25	21.56	0.00	0.00	0.00	0.00	3.44	0.00	0.00	0.00	0.00
10/05/2013	RS	1	1550	Curlew	1	28	1.92	0.42	1.27	0.53	0.00	11.08	2.43	7.30	3.04	0.00
10/05/2013	RS	1	1606	Curlew	1	67	37.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
10/05/2013	RS	1	1631	Curlew	1	56	26.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
10/05/2013	RS	1	1640	Curlew	1	36	12.42	3.31	9.93	4.14	0.00	2.58	0.69	2.07	0.86	0.00
10/05/2013	RS	1	1744	Curlew	1	79	4.00	8.57	25.71	16.71	24.00	0.00	0.00	0.00	0.00	0.00
13/05/2013	RS	1	0358	Curlew	1	50	5.00	8.57	25.71	10.71	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2013	RS	1	0411	Curlew	1	63	18.00	8.57	25.71	10.71	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2013	RS	1	0426	Curlew	1	50	20.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2013	RS	1	0439	Curlew	1	72	12.00	11.43	34.29	14.29	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2013	RS	1	0446	Curlew	1	74	14.00	11.43	34.29	14.29	0.00	0.00	0.00	0.00	0.00	0.00
15/05/2013	RS	2	1958	Curlew	1	23	23.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/05/2013	RS	2	2047	Curlew	1	28	22.40	0.00	0.00	0.00	0.00	5.60	0.00	0.00	0.00	0.00
10/06/2013	RS	1	0319	Curlew	1	26	14.32	0.00	0.00	0.00	0.00	11.68	0.00	0.00	0.00	0.00
10/06/2013	RS	1	0350	Curlew	2	70	0.00	13.33	40.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00
10/06/2013	RS	1	0354	Curlew	1	29	0.00	3.27	9.81	4.09	0.00	0.00	2.25	6.76	2.82	0.00
10/06/2013	RS	1	0408	Curlew	1	31	3.28	0.67	2.00	0.83	0.00	11.72	2.38	7.14	2.98	0.00
10/06/2013	RS	1	0415	Curlew	1	27	27.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/06/2013	RS	1	0437	Curlew	1	88	58.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
10/06/2013	RS	1	0554	Curlew	1	23	23.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2013	RS	2	1305	Curlew	2	87	72.00	2.86	8.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2013	RS	2	1309	Curlew	1	58	13.00	8.57	25.71	10.71	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2013	RS	2	1316	Curlew	2	50	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2013	RS	2	1318	Curlew	2	37	7.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2013	RS	2	1342	Curlew	1	28	0.00	5.33	16.00	6.67	0.00	0.00	0.00	0.00	0.00	0.00
25/06/2013	RS	1	1812	Curlew	1	47	42.70	0.00	0.00	0.00	0.00	4.30	0.00	0.00	0.00	0.00
25/06/2013	RS	1	1813	Curlew	1	106	28.76	7.15	21.44	8.93	0.00	17.24	4.28	12.85	5.35	0.00
25/06/2013	RS	1	1951	Curlew	1	15	13.51	0.00	0.00	0.00	0.00	1.49	0.00	0.00	0.00	0.00
25/06/2013	RS	1	2024	Curlew	1	23	18.43	0.00	0.00	0.00	0.00	4.57	0.00	0.00	0.00	0.00
27/06/2013	RS	2	0726	Curlew	2	116	71.00	8.57	25.71	10.71	0.00	0.00	0.00	0.00	0.00	0.00
27/06/2013	RS	2	0843	Curlew	1	65	35.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
27/06/2013	RS	2	0849	Curlew	1	38	0.00	5.97	17.92	7.47	0.00	0.00	1.26	3.79	1.58	0.00
27/06/2013	RS	2	0936	Curlew	4	163	103.00	11.43	34.29	14.29	0.00	0.00	0.00	0.00	0.00	0.00
03/07/2013	RS	1	1931	Curlew	1	30	5.00	4.76	14.29	5.95	0.00	0.00	0.00	0.00	0.00	0.00
03/07/2013	RS	1	1931	Curlew	1	35	12.91	1.84	5.53	2.31	0.00	7.09	1.01	3.04	1.27	0.00
03/07/2013	RS	1	2045	Curlew	1	38	19.00	3.62	10.86	4.52	0.00	0.00	0.00	0.00	0.00	0.00
09/07/2013	RW	2	1854	Curlew	1	47	0.00	0.00	0.00	0.00	0.00	47.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
10/07/2013	RW	1	0906	Curlew	1	55	29.21	0.00	0.00	0.00	0.00	25.79	0.00	0.00	0.00	0.00
10/07/2013	RW	1	0938	Curlew	1	58	0.00	0.00	0.00	0.00	0.00	30.00	5.33	16.00	6.67	0.00
10/07/2013	RW	1	0956	Curlew	1	29	0.00	0.00	0.00	0.00	0.00	29.00	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0419	Curlew	1	17	0.00	0.00	0.00	0.00	0.00	17.00	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0422	Curlew	1	39	12.30	0.00	0.00	0.00	0.00	26.70	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0424	Curlew	1	20	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0453	Curlew	1	71	30.38	0.00	0.00	0.00	0.00	40.62	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0454	Curlew	1	68	27.97	0.00	0.00	0.00	0.00	40.03	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0521	Curlew	2	43	0.00	0.00	0.00	0.00	0.00	43.00	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0523	Curlew	1	83	34.72	0.00	0.00	0.00	0.00	48.28	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0548	Curlew	1	14	5.74	0.00	0.00	0.00	0.00	8.26	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0558	Curlew	2	58	23.83	0.00	0.00	0.00	0.00	34.17	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0601	Curlew	1	14	5.97	0.00	0.00	0.00	0.00	8.03	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0602	Curlew	1	19	0.00	0.00	0.00	0.00	0.00	19.00	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0605	Curlew	1	23	11.41	0.00	0.00	0.00	0.00	11.59	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0607	Curlew	1	183	0.00	0.00	0.00	0.00	0.00	30.00	29.14	87.43	36.43	0.00
09/08/2013	RS	1	1511	Curlew	1	18	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/08/2013	RS	1	1535	Curlew	1	24	10.00	0.00	0.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00
09/08/2013	RS	1	1549	Curlew	1	38	2.99	0.00	0.00	0.00	0.00	35.01	0.00	0.00	0.00	0.00
09/08/2013	RS	1	1601	Curlew	1	40	5.15	2.94	8.82	3.68	0.00	4.85	2.77	8.32	3.47	0.00
09/08/2013	RS	1	1604	Curlew	1	137	8.21	11.04	33.12	13.80	0.00	8.79	11.82	35.45	14.77	0.00
09/08/2013	RS	1	1647	Curlew	1	58	4.33	2.85	8.56	3.57	0.00	8.67	5.72	17.15	7.15	0.00
16/08/2013	PG	1	1825	Curlew	1	19	3.13	2.23	6.70	2.79	0.00	0.87	0.62	1.87	0.78	0.00
16/08/2013	PG	1	1856	Curlew	1	121	0.00	0.00	0.00	0.00	0.00	121.00	0.00	0.00	0.00	0.00
16/08/2013	PG	1	1907	Curlew	1	117	0.00	0.00	0.00	0.00	0.00	117.00	0.00	0.00	0.00	0.00
04/04/2014	RS	1	1613	Curlew	1	12	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/04/2014	RS	1	1624	Curlew	2	28	19.93	0.00	0.00	0.00	0.00	8.07	0.00	0.00	0.00	0.00
05/04/2014	JS	1	0606	Curlew	1	10	0.00	5.03	0.00	0.00	0.00	0.00	4.97	0.00	0.00	0.00
05/04/2014	JS	1	0648	Curlew	1	35	0.00	28.82	0.00	0.00	0.00	0.00	6.18	0.00	0.00	0.00
11/04/2014	RS	2	0530	Curlew	1	25	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/04/2014	RS	2	0550	Curlew	2	15	8.94	0.00	0.00	0.00	0.00	6.06	0.00	0.00	0.00	0.00
11/04/2014	RS	2	0605	Curlew	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/04/2014	RS	2	0645	Curlew	3	35	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/04/2014	RS	2	1843	Curlew	2	22	7.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/04/2014	RS	2	1928	Curlew	1	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2014	RS	1	1839	Curlew	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2014	RS	1	1905	Curlew	1	13	0.04	0.00	0.00	0.00	0.00	12.96	0.00	0.00	0.00	0.00
16/04/2014	RS	2	1521	Curlew	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2014	RS	2	1605	Curlew	1	60	41.79	0.00	0.00	0.00	0.00	18.21	0.00	0.00	0.00	0.00
18/04/2014	RS	1	0911	Curlew	2	26	26.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/04/2014	RS	1	1036	Curlew	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/04/2014	RS	1	1144	Curlew	1	24	4.49	7.49	0.00	0.00	0.00	4.51	7.51	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
18/04/2014	RS	2	0645	Curlew	1	20	16.75	0.00	0.00	0.00	0.00	3.25	0.00	0.00	0.00	0.00
18/04/2014	RS	2	0718	Curlew	1	42	12.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22/04/2014	RS	1	0704	Curlew	1	17	0.00	0.00	0.00	0.00	0.00	17.00	0.00	0.00	0.00	0.00
22/04/2014	RS	1	0713	Curlew	1	25	10.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27/04/2014	RS	2	1515	Curlew	1	45	0.00	7.20	0.00	0.00	0.00	0.00	37.80	0.00	0.00	0.00
27/04/2014	RS	2	1713	Curlew	1	30	21.36	0.00	0.00	0.00	0.00	8.64	0.00	0.00	0.00	0.00
28/04/2014	RS	1	0941	Curlew	2	35	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00	0.00
06/05/2014	JS	1	1607	Curlew	1	20	15.08	0.00	0.00	0.00	0.00	4.92	0.00	0.00	0.00	0.00
07/05/2014	RS	1	1945	Curlew	2	25	5.22	7.83	0.00	0.00	0.00	4.78	7.17	0.00	0.00	0.00
07/05/2014	RS	1	2040	Curlew	2	17	6.13	0.00	0.00	0.00	0.00	10.87	0.00	0.00	0.00	0.00
07/05/2014	RS	2	1520	Curlew	1	15	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00
07/05/2014	RS	2	1607	Curlew	2	23	0.00	0.00	0.00	0.00	0.00	23.00	0.00	0.00	0.00	0.00
07/05/2014	RS	2	1749	Curlew	1	15	2.30	0.00	0.00	0.00	0.00	12.70	0.00	0.00	0.00	0.00
08/05/2014	JS	1	0805	Curlew	1	40	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	1	0805	Curlew	1	40	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	2	0629	Curlew	1	30	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00
08/05/2014	JS	2	0629	Curlew	1	90	0.00	9.32	46.61	0.00	0.00	0.00	5.68	28.39	0.00	0.00
10/05/2014	RS	2	1936	Curlew	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	1	0517	Curlew	2	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	1	0602	Curlew	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0930	Curlew	1	48	0.66	1.10	0.00	0.00	0.00	17.34	28.90	0.00	0.00	0.00
13/05/2014	RS	1	0521	Curlew	1	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2014	RS	1	0522	Curlew	1	36	21.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2014	RS	1	0545	Curlew	1	27	12.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2014	RS	1	0629	Curlew	1	74	14.60	22.66	0.00	0.00	0.00	14.40	22.34	0.00	0.00	0.00
13/05/2014	RS	1	0631	Curlew	2	36	6.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2014	RS	1	0650	Curlew	1	29	11.24	10.49	0.00	0.00	0.00	3.76	3.51	0.00	0.00	0.00
13/05/2014	RS	1	2009	Curlew	1	20	7.13	0.00	0.00	0.00	0.00	12.87	0.00	0.00	0.00	0.00
13/05/2014	RS	1	2053	Curlew	1	33	2.99	14.93	14.93	0.00	0.00	0.01	0.07	0.07	0.00	0.00
14/05/2014	RS	1	1939	Curlew	1	25	10.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/05/2014	JS	2	0550	Curlew	2	90	0.00	45.45	22.73	0.00	0.00	0.00	14.55	7.27	0.00	0.00
14/05/2014	JS	2	0653	Curlew	1	40	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	1	1641	Curlew	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	1	1650	Curlew	1	20	9.64	0.00	0.00	0.00	0.00	10.36	0.00	0.00	0.00	0.00
18/06/2014	RS	1	1724	Curlew	1	44	29.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	1	1745	Curlew	1	55	40.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	1	1756	Curlew	1	40	31.56	0.00	0.00	0.00	0.00	8.44	0.00	0.00	0.00	0.00
18/06/2014	RS	2	1938	Curlew	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/04/2019	PS	2	1424	Curlew	1	32	0.00	0.00	0.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00
24/04/2019	JD	2	1717	Curlew	1	30	29.42	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00
02/05/2019	JD	2	1313	Curlew	1	96	0.00	0.00	0.00	0.00	0.00	21.00	75.00	0.00	0.00	0.00
20/05/2019	JD	2	1610	Curlew	1	14	1.36	0.00	0.00	0.00	0.00	12.64	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
20/05/2019	JD	2	1824	Curlew	1	18	0.00	0.00	0.00	0.00	0.00	3.00	15.00	0.00	0.00	0.00
20/05/2019	JD	2	2000	Curlew	1	14	0.00	7.67	0.00	0.00	0.00	0.00	6.33	0.00	0.00	0.00
05/06/2019	JD	2	2103	Curlew	1	20	0.00	16.39	0.00	0.00	0.00	0.00	3.61	0.00	0.00	0.00
05/06/2019	JD	2	2151	Curlew	1	20	1.83	5.49	0.00	0.00	0.00	3.17	9.51	0.00	0.00	0.00
20/06/2019	JD	2	0535	Curlew	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/06/2019	JD	2	0536	Curlew	1	28	12.14	10.52	0.00	0.00	0.00	2.86	2.48	0.00	0.00	0.00
20/06/2019	JD	2	0614	Curlew	1	11	6.02	0.00	0.00	0.00	0.00	4.98	0.00	0.00	0.00	0.00
20/06/2019	JD	2	0708	Curlew	1	13	4.05	0.00	0.00	0.00	0.00	8.95	0.00	0.00	0.00	0.00
08/04/2020	NR	2	1236	Curlew	2	53	2.84	3.70	0.00	0.00	0.00	20.16	26.30	0.00	0.00	0.00
12/05/2020	NR	2	0514	Curlew	1	18	1.85	0.00	0.00	0.00	0.00	16.15	0.00	0.00	0.00	0.00
12/05/2020	NR	2	0535	Curlew	2	154	0.00	27.19	58.27	0.00	0.00	0.00	21.81	46.73	0.00	0.00
12/05/2020	NR	2	0730	Curlew	1	12	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00
18/05/2020	NR	2	1203	Curlew	1	12	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/05/2020	NR	2	1610	Curlew	1	67	0.00	0.00	0.00	0.00	0.00	7.00	45.00	15.00	0.00	0.00
10/04/2013	JS	1	1558	Golden plover	4	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23/04/2013	RS	1	1410	Golden plover	1	73	20.37	6.24	18.71	7.80	0.00	7.63	2.33	7.00	2.92	0.00
01/05/2013	RS	1	2036	Golden plover	1	60	0.00	8.57	25.71	13.71	12.00	0.00	0.00	0.00	0.00	0.00
16/08/2013	PG	1	1630	Golden plover	2	248	0.00	0.00	0.00	0.00	0.00	248.00	0.00	0.00	0.00	0.00
16/08/2013	PG	1	1657	Golden plover	55	57	0.00	0.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00	0.00
07/10/2013	JS	2	1353	Golden plover	6	35	0.00	0.00	0.00	0.00	0.00	5.00	5.71	17.14	7.14	0.00
07/10/2013	JS	2	1356	Golden plover	7	25	0.00	0.00	0.00	0.00	0.00	0.00	4.76	14.29	5.95	0.00
11/10/2013	RS	1	1421	Golden plover	3	65	5.00	11.43	34.29	14.29	0.00	0.00	0.00	0.00	0.00	0.00
06/03/2014	DL	1	1440	Golden plover	30	60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	48.00
11/04/2014	RS	2	2026	Golden plover	50	20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00
18/04/2014	RS	1	1010	Golden plover	200	82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	82.00	0.00	0.00
22/04/2014	RS	1	0650	Golden plover	500	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
13/05/2014	RS	1	0613	Golden plover	1	47	3.68	6.50	0.00	0.00	0.00	13.32	23.50	0.00	0.00	0.00
18/09/2014	DL	2	0949	Golden plover	40	59	0.00	0.00	38.35	0.00	0.00	0.00	0.00	20.65	0.00	0.00
27/10/2014	DL	2	1039	Golden plover	20	66	0.00	44.80	20.91	0.00	0.00	0.00	0.20	0.09	0.00	0.00
07/03/2020	JD	2	1614	Golden plover	1	33	18.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/09/2020	NR	2	1402	Golden plover	14	49	0.00	0.00	29.13	0.00	0.00	0.00	0.00	19.87	0.00	0.00
25/06/2013	RS	1	1940	Great black-backed gull	1	52	7.00	8.57	25.71	10.71	0.00	0.00	0.00	0.00	0.00	0.00
10/07/2013	RW	1	0818	Great black-backed gull	1	73	73.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/07/2013	RW	1	0848	Great black-backed gull	1	43	42.60	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00
10/07/2013	RW	1	0912	Great black-backed gull	4	167	0.00	0.00	0.00	0.00	0.00	0.00	31.81	95.43	39.76	0.00
10/07/2013	RW	1	0936	Great black-backed gull	1	98	0.00	0.00	0.00	0.00	0.00	0.00	18.67	56.00	23.33	0.00
10/07/2013	RW	2	0514	Great black-backed gull	6	271	0.00	35.81	107.44	44.77	0.00	0.00	15.80	47.41	19.76	0.00
01/08/2013	RS	1	0713	Great black-backed gull	1	29	0.00	3.99	11.98	4.99	0.00	0.00	1.53	4.59	1.91	0.00
04/08/2013	RS	2	1337	Great black-backed gull	1	72	27.00	8.57	25.71	10.71	0.00	0.00	0.00	0.00	0.00	0.00
09/08/2013	RS	1	1456	Great black-backed gull	1	100	47.39	3.87	11.61	4.84	0.00	22.61	1.85	5.54	2.31	0.00
17/08/2013	PG	1	1735	Great black-backed gull	2	211	0.67	0.07	0.22	0.09	0.00	134.33	14.40	43.21	18.01	0.00
28/02/2014	RS	2	1105	Great black-backed gull	1	30	15.00	2.86	8.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)					
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m	
04/04/2014	RS	1	1551	Great black-backed gull	2	68	0.00	0.00	63.85	0.00	0.00	0.00	0.00	0.00	4.15	0.00	0.00
04/04/2014	RS	1	1558	Great black-backed gull	1	60	0.00	0.00	33.78	11.26	0.00	0.00	0.00	0.00	11.22	3.74	0.00
16/04/2014	RS	2	1449	Great black-backed gull	1	25	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2014	RS	2	1531	Great black-backed gull	1	56	0.00	12.36	33.79	0.00	0.00	0.00	0.00	2.64	7.21	0.00	0.00
16/04/2014	RS	2	1543	Great black-backed gull	1	53	0.00	11.56	29.27	0.00	0.00	0.00	0.00	3.44	8.73	0.00	0.00
16/04/2014	RS	2	1607	Great black-backed gull	1	150	29.14	58.29	58.29	0.00	0.00	0.86	1.71	1.71	0.00	0.00	0.00
18/04/2014	RS	1	1034	Great black-backed gull	1	150	0.00	0.00	7.52	4.51	3.01	0.00	0.00	67.48	40.49	26.99	0.00
06/05/2014	JS	1	1554	Great black-backed gull	1	60	0.00	0.00	52.08	0.00	0.00	0.00	0.00	7.92	0.00	0.00	0.00
07/05/2014	RS	1	1923	Great black-backed gull	1	30	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	1	0853	Great black-backed gull	2	60	11.06	33.19	0.00	0.00	0.00	3.94	11.81	0.00	0.00	0.00	0.00
13/05/2014	RS	1	2045	Great black-backed gull	1	60	51.57	0.00	0.00	0.00	0.00	8.43	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	1	1617	Great black-backed gull	1	118	0.00	15.00	60.00	43.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	2	2018	Great black-backed gull	1	28	11.63	10.08	0.00	0.00	0.00	3.37	2.92	0.00	0.00	0.00	0.00
29/07/2014	RS	2	1105	Great black-backed gull	1	28	0.00	15.00	13.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/08/2014	JS	1	1950	Great black-backed gull	1	70	0.00	41.48	0.00	0.00	0.00	0.00	28.52	0.00	0.00	0.00	0.00
02/05/2019	JD	2	1218	Great black-backed gull	2	142	0.00	45.58	78.89	0.00	0.00	0.00	6.42	11.11	0.00	0.00	0.00
02/05/2019	JD	2	1236	Great black-backed gull	1	126	30.00	15.00	81.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/05/2013	RS	2	0635	Greylag goose	20	190	0.00	27.25	81.76	39.43	21.46	0.00	3.22	9.66	4.66	2.54	0.00
05/05/2013	RS	2	0924	Greylag goose	31	92	0.00	3.20	9.61	7.52	14.06	0.00	5.37	16.10	12.59	23.54	0.00
29/09/2013	JS	2	0852	Greylag goose	1	60	0.00	2.57	7.72	3.22	0.00	0.00	8.86	26.57	11.07	0.00	0.00
16/10/2013	RS	2	0857	Greylag goose	1	49	0.00	0.00	0.00	9.76	39.03	0.00	0.00	0.00	0.04	0.17	0.00
17/10/2013	RS	1	1847	Greylag goose	1	43	0.00	0.00	0.00	5.57	22.26	0.00	0.00	0.00	3.03	12.14	0.00
05/11/2013	JS	2	0657	Greylag goose	25	60	0.00	0.00	0.00	8.13	32.53	0.00	0.00	0.00	3.87	15.47	0.00
05/11/2013	JS	2	0709	Greylag goose	40	120	0.00	7.60	22.81	9.50	0.00	0.00	15.25	45.76	19.07	0.00	0.00
05/11/2013	JS	2	0713	Greylag goose	36	90	0.00	10.71	32.12	13.38	0.00	0.00	6.43	19.30	8.04	0.00	0.00
05/11/2013	JS	2	0729	Greylag goose	180	150	0.00	9.52	28.55	11.90	0.00	0.00	19.05	57.16	23.82	0.00	0.00
05/11/2013	JS	2	0733	Greylag goose	50	120	0.00	0.00	0.00	17.70	70.82	0.00	0.00	0.00	6.30	25.18	0.00
05/11/2013	JS	2	0736	Greylag goose	35	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.00	96.00	0.00
05/11/2013	JS	2	0753	Greylag goose	64	105	0.00	5.49	16.48	6.87	0.00	0.00	14.51	43.52	18.13	0.00	0.00
05/11/2013	JS	2	0813	Greylag goose	70	180	0.00	3.87	11.62	12.98	32.54	0.00	7.56	22.67	25.31	63.46	0.00
05/11/2013	JS	2	0833	Greylag goose	2	45	0.00	2.48	7.43	3.09	0.00	0.00	6.10	18.29	7.62	0.00	0.00
06/11/2013	JS	1	0852	Greylag goose	9	300	0.00	32.32	96.95	40.40	0.00	0.00	24.83	74.48	31.03	0.00	0.00
13/11/2013	RS	1	1432	Greylag goose	38	179	0.00	2.73	8.20	11.96	34.17	0.00	5.84	17.52	25.56	73.03	0.00
19/11/2013	JS	1	0831	Greylag goose	5	200	0.00	8.02	24.06	10.02	0.00	0.00	30.08	90.23	37.59	0.00	0.00
19/11/2013	JS	1	0831	Greylag goose	17	150	0.00	11.99	35.96	14.98	0.00	0.00	16.58	49.75	20.73	0.00	0.00
19/11/2013	JS	1	0901	Greylag goose	59	130	0.00	9.98	29.93	12.47	0.00	0.00	14.78	44.35	18.48	0.00	0.00
19/11/2013	JS	1	0901	Greylag goose	13	150	0.00	10.61	31.84	13.26	0.00	0.00	17.96	53.88	22.45	0.00	0.00
19/11/2013	JS	1	1023	Greylag goose	3	120	0.00	14.13	42.39	17.66	0.00	0.00	8.73	26.18	10.91	0.00	0.00
21/11/2013	RS	1	0822	Greylag goose	53	103	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.60	82.40	0.00
21/11/2013	RS	1	0843	Greylag goose	17	80	0.00	0.00	0.00	13.62	54.46	0.00	0.00	0.00	2.38	9.54	0.00
30/11/2013	JS	2	0752	Greylag goose	27	90	0.00	9.06	27.19	11.33	0.00	0.00	8.08	24.24	10.10	0.00	0.00
30/11/2013	JS	2	0752	Greylag goose	10	120	0.00	0.00	0.00	0.00	0.00	0.00	22.86	68.57	28.57	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
31/12/2013	RS	1	0951	Greylag goose	5	58	0.00	8.42	25.27	10.53	0.00	0.00	2.62	7.87	3.28	0.00
06/03/2014	DL	1	0839	Greylag goose	75	80	0.00	0.00	0.00	5.09	20.36	0.00	0.00	0.00	10.91	43.64
04/04/2014	RS	1	1441	Greylag goose	2	20	0.00	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
16/04/2014	RS	1	1920	Greylag goose	2	25	17.31	0.00	0.00	0.00	0.00	7.69	0.00	0.00	0.00	0.00
18/04/2014	RS	1	0907	Greylag goose	2	49	25.95	0.00	0.00	0.00	0.00	23.05	0.00	0.00	0.00	0.00
27/04/2014	RS	2	1658	Greylag goose	4	32	0.00	0.00	32.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0905	Greylag goose	7	25	0.00	0.00	0.00	13.09	0.00	0.00	0.00	0.00	11.91	0.00
14/10/2014	DL	2	1246	Greylag goose	170	140	0.00	0.00	0.00	100.19	0.00	0.00	0.00	0.00	39.81	0.00
14/10/2014	DL	2	1256	Greylag goose	86	190	0.00	0.00	0.00	0.00	153.06	0.00	0.00	0.00	0.00	36.94
26/10/2014	DL	1	1529	Greylag goose	17	90	0.00	0.00	45.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00
27/10/2014	DL	2	0738	Greylag goose	23	70	0.00	0.00	39.86	0.00	0.00	0.00	0.00	30.14	0.00	0.00
05/11/2014	DL	1	1148	Greylag goose	60	145	0.00	0.00	0.00	56.91	0.00	0.00	0.00	0.00	88.09	0.00
05/11/2014	DL	1	1148	Greylag goose	60	145	0.00	0.00	0.00	37.15	0.00	0.00	0.00	0.00	107.85	0.00
06/11/2014	DL	2	1303	Greylag goose	400	85	0.00	0.00	0.00	0.00	78.13	0.00	0.00	0.00	0.00	6.87
06/11/2014	DL	2	1422	Greylag goose	290	130	0.00	0.00	0.00	109.90	0.00	0.00	0.00	0.00	20.10	0.00
05/01/2015	DL	1	1516	Greylag goose	8	130	0.00	0.00	0.00	97.67	0.00	0.00	0.00	0.00	32.33	0.00
07/03/2015	DL	1	0916	Greylag goose	350	95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00	0.00
13/03/2015	DL	2	1457	Greylag goose	67	66	0.00	0.00	0.00	38.40	0.00	0.00	0.00	0.00	27.60	0.00
20/05/2019	JD	2	1659	Greylag goose	15	106	0.00	0.00	0.00	0.00	0.00	0.00	60.00	30.00	16.00	0.00
05/06/2019	JD	2	2110	Greylag goose	4	44	0.00	0.00	9.87	19.08	0.00	0.00	0.00	5.13	9.92	0.00
06/11/2019	NR	2	0904	Greylag goose	33	165	0.00	0.00	0.00	0.00	38.96	0.00	0.00	0.00	0.00	126.04
22/01/2020	PS	2	1134	Greylag goose	110	146	0.00	0.00	43.63	0.00	0.00	0.00	0.00	102.37	0.00	0.00
02/02/2020	PS	2	1222	Greylag goose	3	68	0.00	0.00	43.36	0.00	0.00	0.00	0.00	24.64	0.00	0.00
16/03/2020	NR	2	1231	Greylag goose	80	195	0.00	0.00	0.00	0.00	0.00	120.00	75.00	0.00	0.00	0.00
07/04/2020	NR	2	1626	Greylag goose	2	74	0.00	0.00	0.00	0.00	0.00	14.00	15.00	45.00	0.00	0.00
08/04/2020	NR	2	1032	Greylag goose	12	90	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00	0.00
24/09/2020	NR	2	0728	Greylag goose	35	180	8.45	16.90	42.25	33.80	0.00	6.55	13.10	32.75	26.20	0.00
11/10/2020	NR	2	0926	Greylag goose	15	150	0.00	0.00	60.49	0.00	0.00	0.00	0.00	89.51	0.00	0.00
17/12/2020	NR	2	0835	Greylag goose	8	270	0.00	0.00	0.00	54.85	27.43	0.00	0.00	0.00	125.15	62.57
11/02/2021	NR	2	0913	Greylag goose	15	135	0.00	0.00	0.00	59.35	0.00	0.00	0.00	0.00	75.65	0.00
11/02/2021	NR	2	0936	Greylag goose	22	180	0.00	0.00	0.00	127.93	0.00	0.00	0.00	0.00	52.07	0.00
03/03/2021	PS	2	1624	Greylag goose	8	86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.00	0.00	0.00
04/03/2021	PS	2	0948	Greylag goose	250	208	0.00	0.00	0.00	0.00	0.00	28.00	60.00	120.00	0.00	0.00
04/03/2021	PS	2	1157	Greylag goose	30	87	0.00	0.00	30.67	0.00	0.00	0.00	0.00	56.33	0.00	0.00
04/03/2021	PS	2	1227	Greylag goose	250	154	0.48	3.88	0.61	0.00	0.00	14.52	116.12	18.39	0.00	0.00
04/03/2021	PS	2	1307	Greylag goose	200	81	0.00	0.00	0.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00
22/03/2013	JS	1	1459	Hen harrier	1	75	57.96	0.00	0.00	0.00	0.00	17.04	0.00	0.00	0.00	0.00
26/03/2013	JS	2	1331	Hen harrier	1	25	10.00	2.86	8.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00
09/07/2013	RW	1	2027	Hen harrier	1	312	67.86	0.00	0.00	0.00	0.00	244.14	0.00	0.00	0.00	0.00
09/07/2013	RW	1	2032	Hen harrier	1	16	0.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00
09/07/2013	RW	2	1752	Hen harrier	1	135	53.93	0.00	0.00	0.00	0.00	81.07	0.00	0.00	0.00	0.00
17/07/2013	RS	2	2030	Hen harrier	1	45	35.61	0.00	0.00	0.00	0.00	9.39	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
20/07/2013	PG	1	0829	Hen harrier	1	210	0.00	0.00	0.00	0.00	0.00	210.00	0.00	0.00	0.00	0.00
16/08/2013	PG	1	1929	Hen harrier	1	185	118.85	0.00	0.00	0.00	0.00	66.15	0.00	0.00	0.00	0.00
16/08/2013	PG	1	1933	Hen harrier	3	12	11.40	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00
17/08/2013	PG	1	1601	Hen harrier	1	342	0.00	65.14	195.43	81.43	0.00	0.00	0.00	0.00	0.00	0.00
17/08/2013	PG	1	1717	Hen harrier	1	8	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17/08/2013	PG	2	0724	Hen harrier	1	342	0.00	0.00	0.00	0.00	0.00	342.00	0.00	0.00	0.00	0.00
17/08/2013	PG	2	0743	Hen harrier	1	780	0.00	0.00	0.00	0.00	0.00	780.00	0.00	0.00	0.00	0.00
17/08/2013	PG	2	0749	Hen harrier	1	47	0.00	0.00	0.00	0.00	0.00	47.00	0.00	0.00	0.00	0.00
23/09/2013	JS	2	1727	Hen harrier	1	60	59.92	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00
23/09/2013	JS	2	1852	Hen harrier	1	15	0.00	0.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00
23/09/2013	JS	2	1903	Hen harrier	1	35	0.00	0.00	0.00	0.00	0.00	35.00	0.00	0.00	0.00	0.00
23/09/2013	JS	2	1910	Hen harrier	1	75	0.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00	0.00	0.00
26/09/2013	JS	1	1701	Hen harrier	1	45	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26/09/2013	JS	1	1802	Hen harrier	1	30	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26/09/2013	JS	1	1842	Hen harrier	1	480	127.47	11.04	33.11	13.79	0.00	202.53	17.54	52.61	21.92	0.00
26/09/2013	JS	1	1849	Hen harrier	1	15	0.00	0.00	0.00	0.00	0.00	0.00	2.86	8.57	3.57	0.00
26/09/2013	JS	1	1856	Hen harrier	1	80	34.42	0.00	0.00	0.00	0.00	45.58	0.00	0.00	0.00	0.00
26/09/2013	JS	1	1912	Hen harrier	1	300	0.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00
26/09/2013	JS	1	1915	Hen harrier	1	90	0.00	0.00	0.00	0.00	0.00	45.00	8.57	25.71	10.71	0.00
29/09/2013	JS	2	0655	Hen harrier	1	200	0.00	0.00	0.00	0.00	0.00	135.00	12.38	37.14	15.48	0.00
29/09/2013	JS	2	0705	Hen harrier	1	35	0.00	0.00	0.00	0.00	0.00	0.00	6.67	20.00	8.33	0.00
29/09/2013	JS	2	0712	Hen harrier	1	1260	153.94	14.66	43.98	18.33	0.00	686.06	65.34	196.02	81.67	0.00
29/09/2013	JS	2	0712	Hen harrier	1	1260	242.48	23.09	69.28	28.87	0.00	597.52	56.91	170.72	71.13	0.00
29/09/2013	JS	2	0758	Hen harrier	1	30	0.00	0.00	0.00	0.00	0.00	15.00	2.86	8.57	3.57	0.00
29/09/2013	JS	2	0847	Hen harrier	1	25	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
04/10/2013	JS	1	1532	Hen harrier	1	60	0.00	0.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00
04/10/2013	JS	1	1758	Hen harrier	1	70	51.18	0.00	0.00	0.00	0.00	18.82	0.00	0.00	0.00	0.00
04/10/2013	JS	1	1810	Hen harrier	1	70	0.00	0.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00	0.00
04/10/2013	JS	1	1810	Hen harrier	1	70	0.00	0.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00	0.00
07/10/2013	JS	2	1302	Hen harrier	1	420	0.00	0.00	0.00	0.00	0.00	420.00	0.00	0.00	0.00	0.00
11/10/2013	RS	1	1414	Hen harrier	1	139	93.97	0.00	0.00	0.00	0.00	45.03	0.00	0.00	0.00	0.00
11/10/2013	RS	1	1540	Hen harrier	1	223	148.07	2.03	6.10	2.54	0.00	59.93	0.82	2.47	1.03	0.00
11/10/2013	RS	1	1604	Hen harrier	1	43	0.00	0.00	0.00	0.00	0.00	28.00	2.86	8.57	3.57	0.00
06/11/2013	JS	1	0745	Hen harrier	1	25	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23/11/2013	RS	2	1510	Hen harrier	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26/11/2013	JS	1	1354	Hen harrier	1	120	73.63	4.67	14.02	5.84	0.00	16.37	1.04	3.12	1.30	0.00
17/12/2013	RS	1	1433	Hen harrier	1	152	137.00	2.86	8.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00
29/01/2014	RS	1	1114	Hen harrier	1	166	141.15	0.00	0.00	0.00	0.00	24.85	0.00	0.00	0.00	0.00
30/01/2014	RS	1	0840	Hen harrier	1	45	32.39	0.00	0.00	0.00	0.00	12.61	0.00	0.00	0.00	0.00
30/01/2014	RS	1	0956	Hen harrier	1	69	30.17	0.00	0.00	0.00	0.00	38.83	0.00	0.00	0.00	0.00
30/01/2014	RS	2	1147	Hen harrier	1	78	78.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/02/2014	RS	2	0821	Hen harrier	1	63	30.00	6.29	18.86	7.86	0.00	0.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
28/02/2014	RS	2	1232	Hen harrier	1	88	30.00	11.05	33.14	13.81	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	1	0807	Hen harrier	1	70	28.74	0.00	0.00	0.00	0.00	41.26	0.00	0.00	0.00	0.00
08/05/2014	JS	1	0859	Hen harrier	1	90	90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	1	0917	Hen harrier	1	35	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	1	0948	Hen harrier	1	110	16.50	2.60	0.00	0.00	0.00	78.50	12.40	0.00	0.00	0.00
08/05/2014	JS	1	1010	Hen harrier	1	40	0.00	13.30	7.98	0.00	0.00	0.00	11.70	7.02	0.00	0.00
08/05/2014	JS	1	1035	Hen harrier	1	25	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/05/2014	RS	2	2010	Hen harrier	1	345	150.00	105.00	60.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
10/05/2014	RS	2	2055	Hen harrier	1	63	30.52	0.00	0.00	0.00	0.00	32.48	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0958	Hen harrier	1	111	43.31	6.77	0.00	0.00	0.00	52.69	8.23	0.00	0.00	0.00
11/05/2014	RS	2	1010	Hen harrier	1	160	3.59	0.67	0.00	0.00	0.00	131.41	24.33	0.00	0.00	0.00
29/07/2014	RS	1	0825	Hen harrier	1	74	61.43	0.00	0.00	0.00	0.00	12.57	0.00	0.00	0.00	0.00
16/08/2014	RS	1	1547	Hen harrier	1	228	198.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/08/2014	RS	1	1549	Hen harrier	1	90	90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/08/2014	RS	2	1153	Hen harrier	1	64	1.93	3.86	2.45	0.00	0.00	13.07	26.14	16.55	0.00	0.00
18/08/2014	JS	1	1822	Hen harrier	1	50	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/08/2014	JS	1	1952	Hen harrier	1	405	307.79	0.00	0.00	0.00	0.00	97.21	0.00	0.00	0.00	0.00
18/08/2014	JS	2	1518	Hen harrier	1	30	23.53	0.00	0.00	0.00	0.00	6.47	0.00	0.00	0.00	0.00
18/08/2014	JS	2	1518	Hen harrier	1	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/08/2014	JS	2	1630	Hen harrier	1	70	0.00	0.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00	0.00
18/08/2014	JS	2	1630	Hen harrier	1	120	7.60	0.00	0.00	0.00	0.00	112.40	0.00	0.00	0.00	0.00
18/08/2014	JS	2	1638	Hen harrier	1	80	0.00	0.00	0.00	0.00	0.00	80.00	0.00	0.00	0.00	0.00
23/08/2014	RS	2	0725	Hen harrier	1	196	120.92	0.00	0.00	0.00	0.00	75.08	0.00	0.00	0.00	0.00
26/10/2014	DL	1	1126	Hen harrier	1	277	27.43	0.00	0.00	0.00	0.00	249.57	0.00	0.00	0.00	0.00
26/10/2014	DL	1	1151	Hen harrier	1	468	70.52	0.00	0.00	0.00	0.00	397.48	0.00	0.00	0.00	0.00
26/10/2014	DL	1	1202	Hen harrier	1	80	50.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26/10/2014	DL	1	1503	Hen harrier	1	197	197.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26/10/2014	DL	1	1512	Hen harrier	1	299	189.47	0.00	0.00	0.00	0.00	109.53	0.00	0.00	0.00	0.00
26/10/2014	DL	1	1524	Hen harrier	1	23	23.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26/10/2014	DL	1	1601	Hen harrier	1	245	215.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26/10/2014	DL	1	1608	Hen harrier	1	169	39.64	14.38	0.00	0.00	0.00	84.36	30.62	0.00	0.00	0.00
27/10/2014	DL	2	0702	Hen harrier	1	216	175.55	0.00	0.00	0.00	0.00	40.45	0.00	0.00	0.00	0.00
27/10/2014	DL	2	0811	Hen harrier	1	140	16.98	0.00	0.00	0.00	0.00	123.02	0.00	0.00	0.00	0.00
05/11/2014	DL	1	0758	Hen harrier	1	260	244.77	0.00	0.00	0.00	0.00	15.23	0.00	0.00	0.00	0.00
05/11/2014	DL	1	0817	Hen harrier	1	320	0.00	0.00	0.00	0.00	0.00	320.00	0.00	0.00	0.00	0.00
05/11/2014	DL	1	0823	Hen harrier	1	200	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/11/2014	DL	1	1047	Hen harrier	1	50	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06/11/2014	DL	2	1311	Hen harrier	1	200	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06/11/2014	DL	2	1632	Hen harrier	1	31	0.00	0.00	0.00	0.00	0.00	0.00	31.00	0.00	0.00	0.00
24/11/2014	DL	1	1322	Hen harrier	1	226	135.85	33.77	0.00	0.00	0.00	45.15	11.23	0.00	0.00	0.00
24/11/2014	DL	1	1324	Hen harrier	1	98	24.68	20.95	0.00	0.00	0.00	28.32	24.05	0.00	0.00	0.00
24/11/2014	DL	1	1451	Hen harrier	1	257	179.17	0.00	0.00	0.00	0.00	77.83	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
24/11/2014	DL	1	1457	Hen harrier	1	52	52.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24/11/2014	DL	1	1509	Hen harrier	1	133	72.09	0.00	0.00	0.00	0.00	60.91	0.00	0.00	0.00	0.00
24/11/2014	DL	1	1512	Hen harrier	1	250	12.60	3.55	0.00	0.00	0.00	182.40	51.45	0.00	0.00	0.00
24/11/2014	DL	1	1515	Hen harrier	1	65	0.00	0.00	0.00	0.00	0.00	30.00	35.00	0.00	0.00	0.00
04/12/2014	DL	1	0829	Hen harrier	1	198	0.00	0.00	0.00	0.00	0.00	198.00	0.00	0.00	0.00	0.00
04/12/2014	DL	1	0901	Hen harrier	1	260	216.58	28.25	0.00	0.00	0.00	13.42	1.75	0.00	0.00	0.00
04/12/2014	DL	1	1016	Hen harrier	1	70	0.00	0.00	0.00	0.00	0.00	60.00	10.00	0.00	0.00	0.00
05/12/2014	DL	2	1037	Hen harrier	1	230	73.01	0.00	0.00	0.00	0.00	156.99	0.00	0.00	0.00	0.00
27/12/2014	DL	1	1455	Hen harrier	1	55	38.34	0.00	0.00	0.00	0.00	16.66	0.00	0.00	0.00	0.00
27/12/2014	DL	1	1455	Hen harrier	1	50	36.25	0.00	0.00	0.00	0.00	13.75	0.00	0.00	0.00	0.00
27/12/2014	DL	1	1537	Hen harrier	1	210	102.96	0.00	0.00	0.00	0.00	107.04	0.00	0.00	0.00	0.00
27/12/2014	DL	1	1602	Hen harrier	1	108	0.00	0.00	0.00	0.00	0.00	78.00	30.00	0.00	0.00	0.00
27/12/2014	DL	2	1059	Hen harrier	1	28	0.00	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/01/2015	DL	1	1349	Hen harrier	1	234	234.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/01/2015	DL	1	1458	Hen harrier	1	197	103.77	0.00	0.00	0.00	0.00	93.23	0.00	0.00	0.00	0.00
05/01/2015	DL	1	1502	Hen harrier	1	220	8.87	0.00	0.00	0.00	0.00	211.13	0.00	0.00	0.00	0.00
07/03/2015	DL	1	0928	Hen harrier	1	221	221.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/03/2015	DL	1	1112	Hen harrier	1	81	0.00	0.00	0.00	0.00	0.00	81.00	0.00	0.00	0.00	0.00
13/03/2015	DL	2	1344	Hen harrier	1	95	95.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/10/2019	PS	2	1739	Hen harrier	1	23	19.15	0.00	0.00	0.00	0.00	3.85	0.00	0.00	0.00	0.00
10/10/2019	NR	2	1047	Hen harrier	1	520	183.52	11.24	0.00	0.00	0.00	306.48	18.76	0.00	0.00	0.00
20/05/2020	NR	2	1707	Hen harrier	1	375	15.00	30.00	240.00	90.00	0.00	0.00	0.00	0.00	0.00	0.00
08/09/2020	NR	2	1436	Hen harrier	1	168	0.00	0.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00	0.00
23/09/2020	NR	2	1615	Hen harrier	1	80	27.81	0.00	0.00	0.00	0.00	52.19	0.00	0.00	0.00	0.00
23/09/2020	NR	2	1635	Hen harrier	1	246	30.17	0.00	0.00	0.00	0.00	215.83	0.00	0.00	0.00	0.00
23/09/2020	NR	2	1708	Hen harrier	1	118	0.00	0.00	0.00	0.00	0.00	118.00	0.00	0.00	0.00	0.00
24/09/2020	NR	2	0928	Hen harrier	1	321	0.00	0.00	0.00	0.00	0.00	321.00	0.00	0.00	0.00	0.00
24/09/2020	NR	2	0959	Hen harrier	1	126	126.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/10/2020	NR	2	1108	Hen harrier	1	270	270.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/10/2020	NR	2	1523	Hen harrier	1	161	161.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/10/2020	NR	2	1541	Hen harrier	1	356	118.59	0.00	0.00	0.00	0.00	237.41	0.00	0.00	0.00	0.00
05/10/2020	NR	2	1629	Hen harrier	1	61	0.00	0.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00	0.00
11/10/2020	NR	2	1151	Hen harrier	1	69	68.27	0.00	0.00	0.00	0.00	0.73	0.00	0.00	0.00	0.00
11/10/2020	NR	2	1155	Hen harrier	1	72	60.20	0.00	0.00	0.00	0.00	11.80	0.00	0.00	0.00	0.00
11/10/2020	NR	2	1319	Hen harrier	1	178	0.00	0.00	0.00	0.00	0.00	178.00	0.00	0.00	0.00	0.00
09/11/2020	NR	2	1127	Hen harrier	1	13	13.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/11/2020	NR	2	1212	Hen harrier	1	21	0.00	0.00	0.00	0.00	0.00	21.00	0.00	0.00	0.00	0.00
09/11/2020	NR	2	1216	Hen harrier	1	164	0.00	0.00	0.00	0.00	0.00	119.00	45.00	0.00	0.00	0.00
09/11/2020	NR	2	1339	Hen harrier	1	174	0.00	0.00	0.00	0.00	0.00	174.00	0.00	0.00	0.00	0.00
09/11/2020	NR	2	1343	Hen harrier	1	640	127.95	0.00	0.00	0.00	0.00	512.05	0.00	0.00	0.00	0.00
09/11/2020	NR	2	1356	Hen harrier	1	175	0.00	0.00	0.00	0.00	0.00	175.00	0.00	0.00	0.00	0.00
09/11/2020	NR	2	1404	Hen harrier	1	499	0.00	0.00	0.00	0.00	0.00	499.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
09/11/2020	NR	2	1416	Hen harrier	1	210	47.20	23.60	39.34	0.00	0.00	42.80	21.40	35.66	0.00	0.00
09/11/2020	NR	2	1418	Hen harrier	1	90	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00	0.00	0.00
10/11/2020	NR	2	0846	Hen harrier	1	122	122.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/11/2020	NR	2	1155	Hen harrier	1	29	0.00	0.00	0.00	0.00	0.00	29.00	0.00	0.00	0.00	0.00
10/11/2020	NR	2	1203	Hen harrier	1	12	0.00	0.00	0.00	0.00	0.00	12.00	0.00	0.00	0.00	0.00
10/11/2020	NR	2	1234	Hen harrier	1	108	108.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/11/2020	NR	2	1259	Hen harrier	1	120	3.76	0.00	0.00	0.00	0.00	116.24	0.00	0.00	0.00	0.00
10/11/2020	NR	2	1305	Hen harrier	1	235	145.76	34.52	0.00	0.00	0.00	44.24	10.48	0.00	0.00	0.00
10/11/2020	NR	2	1328	Hen harrier	1	274	6.06	0.00	0.00	0.00	0.00	267.94	0.00	0.00	0.00	0.00
10/11/2020	NR	2	1344	Hen harrier	1	168	0.00	0.00	0.00	0.00	0.00	168.00	0.00	0.00	0.00	0.00
11/11/2020	NR	2	1047	Hen harrier	1	143	143.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15/12/2020	NR	2	1503	Hen harrier	1	184	15.00	0.00	0.00	0.00	0.00	169.00	0.00	0.00	0.00	0.00
15/12/2020	NR	2	1509	Hen harrier	1	765	160.57	0.00	0.00	0.00	0.00	604.43	0.00	0.00	0.00	0.00
12/01/2021	NR	2	1344	Hen harrier	1	129	0.00	0.00	0.00	0.00	0.00	129.00	0.00	0.00	0.00	0.00
12/01/2021	NR	2	1352	Hen harrier	1	16	0.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00
12/01/2021	NR	2	1411	Hen harrier	1	146	133.55	0.00	0.00	0.00	0.00	12.45	0.00	0.00	0.00	0.00
12/01/2021	NR	2	1517	Hen harrier	1	120	0.00	0.00	0.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00
03/03/2021	PS	2	1746	Hen harrier	1	93	67.90	0.00	0.00	0.00	0.00	25.10	0.00	0.00	0.00	0.00
24/03/2013	RS	2	1348	Herring gull	4	100	0.00	0.00	0.00	0.00	0.00	0.00	19.05	57.14	23.81	0.00
24/03/2013	RS	2	1414	Herring gull	5	60	0.00	0.00	0.00	0.00	0.00	0.00	11.43	34.29	14.29	0.00
24/03/2013	RS	2	1520	Herring gull	3	48	0.00	5.35	16.06	6.69	0.00	0.00	3.79	11.37	4.74	0.00
26/03/2013	JS	2	1134	Herring gull	10	80	0.00	0.00	0.00	7.70	30.79	0.00	0.00	0.00	8.30	33.21
26/03/2013	JS	2	1220	Herring gull	3	120	0.00	5.71	17.14	25.14	72.00	0.00	0.00	0.00	0.00	0.00
26/03/2013	JS	2	1244	Herring gull	3	40	0.00	0.00	0.00	8.00	32.00	0.00	0.00	0.00	0.00	0.00
26/03/2013	JS	2	1323	Herring gull	10	40	0.00	0.00	0.00	8.00	32.00	0.00	0.00	0.00	0.00	0.00
26/03/2013	JS	2	1330	Herring gull	4	60	0.00	0.00	0.00	10.55	42.20	0.00	0.00	0.00	1.45	5.80
26/03/2013	JS	2	1337	Herring gull	7	30	0.00	5.42	16.26	6.78	0.00	0.00	0.29	0.88	0.37	0.00
26/03/2013	JS	2	1515	Herring gull	7	45	0.00	0.00	0.00	8.38	33.53	0.00	0.00	0.00	0.62	2.47
26/03/2013	JS	2	1640	Herring gull	1	70	0.00	7.88	23.65	9.85	0.00	0.00	5.45	16.35	6.81	0.00
10/04/2013	JS	2	1440	Herring gull	2	140	26.09	18.22	54.66	22.78	0.00	3.91	2.73	8.19	3.41	0.00
10/04/2013	JS	2	1445	Herring gull	2	100	31.20	7.26	21.79	9.08	0.00	13.80	3.21	9.64	4.01	0.00
10/04/2013	JS	2	1600	Herring gull	1	60	32.93	0.00	0.00	0.00	0.00	27.07	0.00	0.00	0.00	0.00
10/04/2013	JS	2	1632	Herring gull	1	45	0.00	8.57	25.71	10.71	0.00	0.00	0.00	0.01	0.00	0.00
16/04/2013	JS	2	0548	Herring gull	7	75	0.00	4.33	13.00	5.42	0.00	0.00	9.95	29.86	12.44	0.00
16/04/2013	JS	2	0713	Herring gull	1	60	30.00	5.71	17.14	7.14	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2013	JS	2	0730	Herring gull	5	50	10.47	1.33	3.99	1.66	0.00	19.53	2.48	7.44	3.10	0.00
16/04/2013	JS	2	0745	Herring gull	2	60	0.00	0.00	0.00	0.00	0.00	0.00	11.43	34.29	14.29	0.00
25/04/2013	RS	2	2031	Herring gull	2	50	0.00	0.00	0.00	10.00	40.00	0.00	0.00	0.00	0.00	0.00
25/04/2013	RS	2	2058	Herring gull	3	45	0.00	0.00	0.00	7.66	30.62	0.00	0.00	0.00	1.34	5.38
25/04/2013	RS	2	2115	Herring gull	2	38	0.00	0.00	0.00	7.60	30.40	0.00	0.00	0.00	0.00	0.00
29/04/2013	RS	2	0515	Herring gull	1	38	15.00	4.38	13.14	5.48	0.00	0.00	0.00	0.00	0.00	0.00
29/04/2013	RS	2	0612	Herring gull	1	58	0.00	11.05	33.14	13.81	0.00	0.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
29/04/2013	RS	2	0656	Herring gull	5	70	26.79	6.80	20.41	8.50	0.00	3.21	0.82	2.45	1.02	0.00
29/04/2013	RS	2	0707	Herring gull	1	47	14.80	6.02	18.05	7.52	0.00	0.20	0.08	0.24	0.10	0.00
01/05/2013	RS	2	1925	Herring gull	1	63	0.00	7.10	21.31	11.21	9.32	0.00	2.04	6.12	3.22	2.68
01/05/2013	RS	2	2135	Herring gull	3	67	0.00	9.28	27.84	11.60	0.00	0.00	3.48	10.44	4.35	0.00
05/05/2013	RS	2	0818	Herring gull	1	63	0.00	8.36	25.07	10.45	0.00	0.00	3.64	10.93	4.55	0.00
05/05/2013	RS	2	0839	Herring gull	7	68	0.00	7.86	23.57	9.82	0.00	0.00	5.10	15.29	6.37	0.00
08/05/2013	RS	2	1940	Herring gull	1	51	3.89	5.55	16.66	6.94	0.00	2.11	3.02	9.05	3.77	0.00
08/05/2013	RS	2	0556	Herring gull	4	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	32.00
08/05/2013	RS	2	0611	Herring gull	1	58	0.00	7.29	21.87	9.11	0.00	0.00	3.76	11.27	4.70	0.00
09/05/2013	JS	2	1932	Herring gull	3	45	0.00	8.44	25.32	10.55	0.00	0.00	0.13	0.40	0.17	0.00
09/05/2013	JS	2	2113	Herring gull	2	70	0.00	13.07	39.22	16.34	0.00	0.00	0.26	0.78	0.33	0.00
09/05/2013	JS	2	2130	Herring gull	4	35	0.00	3.46	10.38	4.33	0.00	0.00	3.21	9.62	4.01	0.00
11/05/2013	RS	2	1647	Herring gull	2	38	30.00	1.52	4.57	1.90	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2013	RS	2	1711	Herring gull	3	43	30.00	2.48	7.43	3.10	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2013	RS	2	1723	Herring gull	1	35	0.00	5.71	17.14	8.14	4.00	0.00	0.00	0.00	0.00	0.00
11/05/2013	RS	2	1748	Herring gull	1	32	0.00	0.00	0.00	6.40	25.60	0.00	0.00	0.00	0.00	0.00
11/05/2013	RS	2	1753	Herring gull	1	28	15.00	2.48	7.43	3.10	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2013	RS	2	1753	Herring gull	1	25	8.62	2.46	7.39	3.08	0.00	1.38	0.39	1.18	0.49	0.00
13/05/2013	RS	2	0426	Herring gull	1	124	0.00	0.00	0.00	24.68	98.73	0.00	0.00	0.00	0.12	0.47
13/05/2013	RS	2	0439	Herring gull	1	88	0.00	0.00	0.00	17.60	70.40	0.00	0.00	0.00	0.00	0.00
13/05/2013	RS	2	0448	Herring gull	1	78	0.00	0.00	0.00	15.60	62.40	0.00	0.00	0.00	0.00	0.00
15/05/2013	RS	2	2032	Herring gull	2	49	0.00	4.53	13.59	5.66	0.00	0.00	4.80	14.41	6.01	0.00
10/06/2013	RS	2	0331	Herring gull	1	48	0.00	6.73	20.18	8.41	0.00	0.00	2.42	7.25	3.02	0.00
10/06/2013	RS	2	0343	Herring gull	2	51	0.00	6.09	18.28	7.62	0.00	0.00	3.62	10.86	4.52	0.00
10/06/2013	RS	2	0431	Herring gull	1	75	0.00	11.60	34.80	14.50	0.00	0.00	2.69	8.06	3.36	0.00
10/06/2013	RS	2	0513	Herring gull	1	80	0.00	9.85	29.55	12.31	0.00	0.00	5.39	16.16	6.73	0.00
18/06/2013	RS	2	1422	Herring gull	1	97	91.16	0.00	0.00	0.00	0.00	5.84	0.00	0.00	0.00	0.00
18/06/2013	RS	2	1436	Herring gull	2	44	11.15	4.55	13.65	5.69	0.00	2.85	1.16	3.49	1.45	0.00
18/06/2013	RS	2	1509	Herring gull	1	82	0.00	15.62	46.86	19.52	0.00	0.00	0.00	0.00	0.00	0.00
25/06/2013	RS	2	1835	Herring gull	1	35	0.00	6.67	20.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00
25/06/2013	RS	2	1859	Herring gull	1	85	0.00	14.35	43.05	17.94	0.00	0.00	1.84	5.52	2.30	0.00
25/06/2013	RS	2	1908	Herring gull	1	121	72.83	4.78	14.34	5.97	0.00	17.17	1.13	3.38	1.41	0.00
25/06/2013	RS	2	1944	Herring gull	3	89	41.92	3.86	11.58	4.82	0.00	18.08	1.66	4.99	2.08	0.00
25/06/2013	RS	2	2037	Herring gull	1	112	60.55	5.69	17.07	7.11	0.00	14.45	1.36	4.07	1.70	0.00
25/06/2013	RS	2	2052	Herring gull	1	63	0.00	7.91	23.72	9.88	0.00	0.00	4.09	12.28	5.12	0.00
27/06/2013	RS	2	0720	Herring gull	1	45	0.00	7.21	21.64	9.02	0.00	0.00	1.36	4.07	1.70	0.00
27/06/2013	RS	2	0728	Herring gull	1	65	0.00	5.31	15.93	6.64	0.00	0.00	7.07	21.21	8.84	0.00
27/06/2013	RS	2	0816	Herring gull	1	130	15.00	21.90	65.71	27.38	0.00	0.00	0.00	0.00	0.00	0.00
27/06/2013	RS	2	0853	Herring gull	1	49	0.00	9.33	28.00	11.67	0.00	0.00	0.00	0.00	0.00	0.00
03/07/2013	RS	2	1926	Herring gull	1	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.00	32.00
03/07/2013	RS	2	1956	Herring gull	1	74	59.61	1.77	5.32	2.22	0.00	4.39	0.13	0.39	0.16	0.00
03/07/2013	RS	2	2001	Herring gull	1	42	0.00	0.00	0.00	0.00	0.00	0.00	8.00	24.00	10.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
03/07/2013	RS	2	2004	Herring gull	1	40	6.69	0.00	0.00	0.00	0.00	33.31	0.00	0.00	0.00	0.00
03/07/2013	RS	2	2012	Herring gull	1	84	0.00	14.45	43.36	18.06	0.00	0.00	1.55	4.64	1.94	0.00
03/07/2013	RS	2	2012	Herring gull	3	35	0.00	0.00	0.00	7.00	28.00	0.00	0.00	0.00	0.00	0.00
03/07/2013	RS	2	2013	Herring gull	2	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.60	14.40
03/07/2013	RS	2	2015	Herring gull	1	48	0.00	4.29	12.86	5.36	0.00	0.00	4.85	14.56	6.07	0.00
03/07/2013	RS	2	2049	Herring gull	2	29	0.00	0.00	0.00	1.81	7.24	0.00	0.00	0.00	3.99	15.96
03/07/2013	RS	2	2135	Herring gull	4	29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.80	23.20
09/07/2013	RW	2	2029	Herring gull	1	50	19.93	0.00	0.00	0.00	0.00	30.07	0.00	0.00	0.00	0.00
09/07/2013	RW	2	1626	Herring gull	1	512	94.66	6.46	19.37	8.07	0.00	282.34	19.26	57.77	24.07	0.00
09/07/2013	RW	2	1703	Herring gull	1	222	31.82	1.54	4.62	1.93	0.00	145.18	7.03	21.09	8.79	0.00
09/07/2013	RW	2	1808	Herring gull	1	231	34.09	18.50	55.51	23.13	0.00	25.91	14.07	42.20	17.58	0.00
10/07/2013	RW	2	0707	Herring gull	1	233	0.00	25.28	75.84	31.60	0.00	0.00	19.10	57.31	23.88	0.00
10/07/2013	RW	2	0712	Herring gull	2	112	0.00	9.26	27.77	11.57	0.00	0.00	12.08	36.23	15.10	0.00
10/07/2013	RW	2	0732	Herring gull	1	141	0.00	20.72	62.17	25.90	0.00	0.00	6.13	18.40	7.67	0.00
10/07/2013	RW	2	0738	Herring gull	2	373	0.00	0.00	0.00	0.00	0.00	0.00	71.05	213.14	88.81	0.00
10/07/2013	RW	2	0747	Herring gull	1	664	372.35	15.64	46.93	19.56	0.00	171.65	7.21	21.64	9.02	0.00
10/07/2013	RW	2	0759	Herring gull	2	532	0.00	35.32	105.96	44.15	0.00	0.00	66.01	198.04	82.52	0.00
10/07/2013	RW	2	0808	Herring gull	1	41	7.97	0.00	0.00	0.00	0.00	33.03	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0430	Herring gull	7	199	94.75	0.00	0.00	0.00	0.00	104.25	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0449	Herring gull	1	261	35.71	16.87	50.61	21.09	0.00	39.29	18.56	55.68	23.20	0.00
10/07/2013	RW	2	0511	Herring gull	1	112	0.00	13.07	39.20	16.33	0.00	0.00	8.27	24.80	10.34	0.00
17/07/2013	RS	2	1832	Herring gull	2	20	10.06	0.00	0.00	0.00	0.00	9.94	0.00	0.00	0.00	0.00
17/07/2013	RS	2	1858	Herring gull	1	98	28.09	3.39	10.16	4.24	0.00	31.91	3.85	11.55	4.81	0.00
17/07/2013	RS	2	2025	Herring gull	1	69	0.00	8.57	25.71	15.51	19.20	0.00	0.00	0.00	0.00	0.00
17/07/2013	RS	2	2104	Herring gull	1	32	0.00	6.10	18.29	7.62	0.00	0.00	0.00	0.00	0.00	0.00
19/07/2013	RS	2	1238	Herring gull	2	94	14.89	14.94	44.82	18.67	0.00	0.11	0.11	0.32	0.13	0.00
19/07/2013	RS	2	1323	Herring gull	1	86	0.00	14.21	42.62	17.76	0.00	0.00	2.18	6.53	2.72	0.00
19/07/2013	RS	2	1451	Herring gull	2	64	9.03	5.62	16.85	7.02	0.00	5.97	3.72	11.15	4.64	0.00
20/07/2013	PG	2	0612	Herring gull	1	110	88.25	0.00	0.00	0.00	0.00	21.75	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0705	Herring gull	3	227	13.18	22.94	68.81	41.85	52.73	1.82	3.16	9.48	5.77	7.27
20/07/2013	PG	2	0720	Herring gull	6	177	0.00	29.57	88.70	36.96	0.00	0.00	4.15	12.44	5.18	0.00
20/07/2013	PG	2	0836	Herring gull	1	93	0.00	0.00	0.00	0.00	0.00	18.00	14.29	42.86	17.86	0.00
20/07/2013	PG	2	0854	Herring gull	1	154	0.00	0.00	0.00	0.00	0.00	19.00	20.00	60.00	31.00	24.00
20/07/2013	PG	2	1012	Herring gull	3	179	0.00	20.20	60.61	25.25	0.00	0.00	13.89	41.68	17.37	0.00
20/07/2013	PG	2	1026	Herring gull	3	192	0.00	0.00	0.00	0.00	0.00	87.00	20.00	60.00	25.00	0.00
20/07/2013	PG	2	1042	Herring gull	3	251	17.67	1.54	4.63	3.55	6.48	113.33	9.89	29.66	22.74	41.52
20/07/2013	PG	2	1057	Herring gull	2	133	0.00	0.00	0.00	0.00	0.00	0.00	19.62	58.86	30.52	24.00
20/07/2013	PG	2	1101	Herring gull	1	21	21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1130	Herring gull	1	62	0.00	0.00	0.00	0.00	0.00	0.00	11.81	35.43	14.76	0.00
20/07/2013	PG	2	1211	Herring gull	1	285	0.00	0.00	0.00	0.00	0.00	0.00	45.71	137.14	66.14	36.00
20/07/2013	PG	2	1236	Herring gull	2	21	0.00	0.00	0.00	0.00	0.00	0.00	4.00	12.00	5.00	0.00
20/07/2013	PG	2	1239	Herring gull	1	480	0.00	34.29	102.86	95.47	210.46	0.00	2.86	8.57	7.96	17.54

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
20/07/2013	PG	2	1242	Herring gull	2	295	0.00	25.71	77.14	64.14	128.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1249	Herring gull	3	123	123.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1312	Herring gull	2	157	0.00	29.90	89.71	37.38	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1321	Herring gull	1	114	54.00	11.43	34.29	14.29	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1347	Herring gull	4	780	0.00	115.08	345.24	143.85	0.00	0.00	33.49	100.47	41.86	0.00
20/07/2013	PG	2	1349	Herring gull	1	184	0.00	35.05	105.14	43.81	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1352	Herring gull	2	176	0.00	33.52	100.57	41.90	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1358	Herring gull	3	180	0.00	26.80	80.41	33.50	0.00	0.00	7.48	22.45	9.35	0.00
20/07/2013	PG	2	1401	Herring gull	1	21	21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1405	Herring gull	4	147	0.00	24.70	74.10	30.88	0.00	0.00	3.30	9.90	4.12	0.00
20/07/2013	PG	2	1411	Herring gull	1	123	0.00	20.81	62.43	26.01	0.00	0.00	2.62	7.85	3.27	0.00
20/07/2013	PG	2	1421	Herring gull	5	90	0.00	17.14	51.43	21.43	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1424	Herring gull	3	420	0.00	80.00	240.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1431	Herring gull	1	49	48.62	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1434	Herring gull	4	540	0.00	102.86	308.57	128.57	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1444	Herring gull	4	180	0.00	26.26	78.77	32.82	0.00	0.00	8.03	24.09	10.04	0.00
20/07/2013	PG	2	1452	Herring gull	5	480	0.00	91.43	274.29	114.29	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1500	Herring gull	9	1800	0.00	274.78	824.35	343.48	0.00	0.00	68.07	204.22	85.09	0.00
29/07/2013	RS	2	0724	Herring gull	1	35	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/08/2013	RS	2	0552	Herring gull	3	25	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/08/2013	RS	2	0611	Herring gull	1	28	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/08/2013	RS	2	0618	Herring gull	6	37	22.00	2.86	8.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00
01/08/2013	RS	2	0647	Herring gull	2	43	0.00	5.74	17.22	7.18	0.00	0.00	2.45	7.35	3.06	0.00
01/08/2013	RS	2	0724	Herring gull	2	45	0.00	8.57	25.71	10.71	0.00	0.00	0.00	0.00	0.00	0.00
01/08/2013	RS	2	0725	Herring gull	1	36	15.00	4.00	12.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
01/08/2013	RS	2	0812	Herring gull	6	42	0.00	0.00	0.00	0.00	0.00	42.00	0.00	0.00	0.00	0.00
01/08/2013	RS	2	0813	Herring gull	3	39	0.00	1.48	4.43	1.84	0.00	0.00	5.95	17.86	7.44	0.00
01/08/2013	RS	2	0822	Herring gull	1	80	0.00	15.24	45.71	19.05	0.00	0.00	0.00	0.00	0.00	0.00
01/08/2013	RS	2	0826	Herring gull	8	88	78.68	0.00	0.00	0.00	0.00	9.32	0.00	0.00	0.00	0.00
04/08/2013	RS	2	1345	Herring gull	1	34	0.00	4.96	14.88	6.20	0.00	0.00	1.52	4.55	1.90	0.00
04/08/2013	RS	2	1412	Herring gull	1	110	0.00	19.60	58.79	24.50	0.00	0.00	1.36	4.07	1.69	0.00
04/08/2013	RS	2	1415	Herring gull	1	26	7.11	0.00	0.00	0.00	0.00	18.89	0.00	0.00	0.00	0.00
04/08/2013	RS	2	1417	Herring gull	1	23	12.81	0.00	0.00	0.00	0.00	10.19	0.00	0.00	0.00	0.00
04/08/2013	RS	2	1456	Herring gull	1	38	30.00	1.52	4.57	1.90	0.00	0.00	0.00	0.00	0.00	0.00
04/08/2013	RS	2	1610	Herring gull	1	43	0.00	0.00	0.00	3.39	13.56	0.00	0.00	0.00	5.21	20.84
04/08/2013	RS	2	1614	Herring gull	1	150	0.00	0.00	0.00	20.59	82.35	0.00	0.00	0.00	9.41	37.65
09/08/2013	RS	2	1716	Herring gull	1	29	0.00	5.11	15.32	6.38	0.00	0.00	0.42	1.25	0.52	0.00
12/08/2013	RS	2	0708	Herring gull	4	38	0.00	7.24	21.71	9.05	0.00	0.00	0.00	0.00	0.00	0.00
12/08/2013	RS	2	0756	Herring gull	1	25	0.00	4.76	14.29	5.95	0.00	0.00	0.00	0.00	0.00	0.00
12/08/2013	RS	2	0806	Herring gull	1	40	0.00	6.98	20.95	8.73	0.00	0.00	0.64	1.91	0.79	0.00
12/08/2013	RS	2	0917	Herring gull	1	33	0.00	5.65	16.96	7.07	0.00	0.00	0.63	1.90	0.79	0.00
12/08/2013	RS	2	0941	Herring gull	2	70	0.00	7.26	21.78	9.07	0.00	0.00	6.07	18.22	7.59	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
16/08/2013	PG	2	1645	Herring gull	3	210	0.00	0.00	0.00	0.00	0.00	0.00	40.00	120.00	50.00	0.00
16/08/2013	PG	2	1705	Herring gull	13	189	0.00	0.00	0.00	0.00	0.00	0.00	36.00	108.00	45.00	0.00
16/08/2013	PG	2	1836	Herring gull	2	8	0.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00
16/08/2013	PG	2	1849	Herring gull	1	4	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
16/08/2013	PG	2	1923	Herring gull	5	72	0.00	0.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00	0.00
17/08/2013	PG	2	1446	Herring gull	2	36	0.00	0.00	0.00	0.00	0.00	6.00	5.71	17.14	7.14	0.00
17/08/2013	PG	2	1450	Herring gull	6	33	0.00	0.00	0.00	0.00	0.00	3.00	5.71	17.14	7.14	0.00
17/08/2013	PG	2	1452	Herring gull	5	29	0.00	0.00	0.00	0.00	0.00	15.00	2.67	8.00	3.33	0.00
17/08/2013	PG	2	1453	Herring gull	132	324	0.00	0.00	0.00	0.00	0.00	0.00	61.71	185.14	77.14	0.00
17/08/2013	PG	2	1626	Herring gull	1	137	0.00	26.10	78.29	32.62	0.00	0.00	0.00	0.00	0.00	0.00
17/08/2013	PG	2	1639	Herring gull	1	107	0.00	0.00	0.00	0.00	0.00	0.00	20.38	61.14	25.48	0.00
17/08/2013	PG	2	1709	Herring gull	11	79	0.00	15.02	45.05	18.77	0.00	0.00	0.03	0.09	0.04	0.00
17/08/2013	PG	2	1720	Herring gull	1	253	17.03	24.11	72.32	30.13	0.00	12.97	18.37	55.10	22.96	0.00
17/08/2013	PG	2	0657	Herring gull	8	840	0.00	0.00	0.00	0.00	0.00	0.00	160.00	480.00	200.00	0.00
17/08/2013	PG	2	0721	Herring gull	1	176	0.00	0.00	0.00	0.00	0.00	41.00	25.71	77.14	32.14	0.00
17/08/2013	PG	2	0802	Herring gull	10	123	0.00	0.00	0.00	0.00	0.00	0.00	23.43	70.29	29.29	0.00
17/08/2013	PG	2	0818	Herring gull	1	101	0.00	0.00	0.00	0.00	0.00	0.00	19.24	57.71	24.05	0.00
17/08/2013	PG	2	0902	Herring gull	1	164	0.00	30.57	91.70	38.21	0.00	0.00	0.67	2.01	0.84	0.00
17/08/2013	PG	2	0907	Herring gull	2	127	0.00	21.56	64.68	26.95	0.00	0.00	2.63	7.89	3.29	0.00
17/08/2013	PG	2	1044	Herring gull	10	247	0.00	27.85	83.55	34.81	0.00	0.00	19.20	57.59	24.00	0.00
17/08/2013	PG	2	1055	Herring gull	1	32	0.00	5.43	16.29	6.79	0.00	0.00	0.66	1.99	0.83	0.00
17/08/2013	PG	2	1104	Herring gull	1	62	0.00	7.03	21.10	8.79	0.00	0.00	4.77	14.32	5.97	0.00
17/08/2013	PG	2	1214	Herring gull	1	58	0.00	6.74	20.21	8.42	0.00	0.00	4.31	12.93	5.39	0.00
17/08/2013	PG	2	1233	Herring gull	4	89	29.00	11.43	34.29	14.29	0.00	0.00	0.00	0.00	0.00	0.00
17/08/2013	PG	2	1300	Herring gull	2	48	0.00	8.15	24.45	10.19	0.00	0.00	0.99	2.98	1.24	0.00
29/01/2014	RS	2	1102	Herring gull	1	92	30.00	11.81	35.43	14.76	0.00	0.00	0.00	0.00	0.00	0.00
29/01/2014	RS	2	1210	Herring gull	2	78	16.92	5.16	15.47	6.45	0.00	13.08	3.98	11.95	4.98	0.00
30/01/2014	RS	2	0933	Herring gull	1	38	0.00	6.56	19.67	8.20	0.00	0.00	0.68	2.05	0.85	0.00
30/01/2014	RS	2	0950	Herring gull	2	27	14.83	2.26	6.78	2.82	0.00	0.17	0.03	0.08	0.03	0.00
30/01/2014	RS	2	1236	Herring gull	2	35	0.00	2.68	8.05	3.36	0.00	0.00	3.98	11.95	4.98	0.00
01/02/2014	DL	2	1503	Herring gull	2	156	0.00	17.01	51.04	21.27	0.00	0.00	12.70	38.10	15.88	0.00
14/02/2014	RS	2	1235	Herring gull	5	38	0.00	0.00	0.00	7.60	30.40	0.00	0.00	0.00	0.00	0.00
14/02/2014	RS	2	1258	Herring gull	1	21	21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28/02/2014	RS	2	1538	Herring gull	2	22	22.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28/02/2014	RS	2	1545	Herring gull	8	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28/02/2014	RS	2	1640	Herring gull	5	65	30.00	5.71	17.14	8.14	4.00	0.00	0.00	0.00	0.00	0.00
28/02/2014	RS	2	1655	Herring gull	2	79	15.00	5.71	17.14	13.94	27.20	0.00	0.00	0.00	0.00	0.00
28/02/2014	RS	2	1710	Herring gull	2	33	0.00	5.59	16.76	6.98	0.00	0.00	0.70	2.10	0.87	0.00
28/02/2014	RS	2	1145	Herring gull	8	15	0.00	0.00	0.00	0.39	1.56	0.00	0.00	0.00	2.61	10.44
28/02/2014	RS	2	1255	Herring gull	3	18	0.00	0.00	0.00	1.41	5.65	0.00	0.00	0.00	2.19	8.75
28/02/2014	RS	2	1308	Herring gull	4	25	0.00	1.90	5.71	5.38	12.00	0.00	0.00	0.00	0.00	0.00
28/02/2014	RS	2	1340	Herring gull	1	69	0.00	10.29	30.86	15.86	12.00	0.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
06/03/2014	DL	2	0836	Herring gull	11	110	0.00	12.85	38.54	16.06	0.00	0.00	8.10	24.31	10.13	0.00
06/03/2014	DL	2	1011	Herring gull	5	72	0.00	0.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00	0.00
04/04/2014	RS	2	1431	Herring gull	2	30	0.00	0.00	20.18	0.00	0.00	0.00	0.00	9.82	0.00	0.00
04/04/2014	RS	2	1439	Herring gull	1	49	0.00	0.00	49.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/04/2014	RS	2	1448	Herring gull	1	48	0.00	0.00	30.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00
04/04/2014	RS	2	1458	Herring gull	2	35	0.00	13.12	0.00	0.00	0.00	0.00	21.88	0.00	0.00	0.00
04/04/2014	RS	2	1600	Herring gull	5	25	0.00	0.00	0.00	21.89	0.00	0.00	0.00	0.00	3.11	0.00
04/04/2014	RS	2	1605	Herring gull	5	58	0.00	0.00	53.58	0.00	0.00	0.00	0.00	4.42	0.00	0.00
05/04/2014	JS	2	1000	Herring gull	2	90	0.00	0.00	21.23	0.00	0.00	0.00	0.00	68.77	0.00	0.00
05/04/2014	JS	2	1035	Herring gull	2	103	0.00	0.00	91.27	0.00	0.00	0.00	0.00	11.73	0.00	0.00
05/04/2014	JS	2	1102	Herring gull	3	60	0.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/04/2014	JS	2	1109	Herring gull	25	150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	150.00	0.00
05/04/2014	JS	2	1140	Herring gull	1	45	0.00	0.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
05/04/2014	JS	2	1155	Herring gull	2	90	0.00	0.00	67.80	0.00	0.00	0.00	0.00	22.20	0.00	0.00
11/04/2014	RS	2	1820	Herring gull	2	28	0.00	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/04/2014	RS	2	1828	Herring gull	4	20	0.00	0.00	0.00	10.38	0.00	0.00	0.00	0.00	9.62	0.00
11/04/2014	RS	2	1906	Herring gull	5	25	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/04/2014	RS	2	1945	Herring gull	1	29	0.00	0.00	28.36	0.00	0.00	0.00	0.00	0.64	0.00	0.00
16/04/2014	RS	2	1856	Herring gull	4	25	0.00	0.00	18.65	0.00	0.00	0.00	0.00	6.35	0.00	0.00
16/04/2014	RS	2	1948	Herring gull	6	32	0.00	17.65	1.18	0.00	0.00	0.00	12.35	0.82	0.00	0.00
16/04/2014	RS	2	2045	Herring gull	21	25	0.00	8.29	12.44	0.00	0.00	0.00	1.71	2.56	0.00	0.00
16/04/2014	RS	2	1513	Herring gull	2	38	0.00	0.00	28.29	0.00	0.00	0.00	0.00	9.71	0.00	0.00
16/04/2014	RS	2	1540	Herring gull	1	73	0.00	15.00	58.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16/04/2014	RS	2	1623	Herring gull	1	35	0.00	0.00	27.02	0.00	0.00	0.00	0.00	7.98	0.00	0.00
16/04/2014	RS	2	1710	Herring gull	6	30	0.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
18/04/2014	RS	2	0958	Herring gull	1	44	0.00	0.00	41.55	0.00	0.00	0.00	0.00	2.45	0.00	0.00
18/04/2014	RS	2	1049	Herring gull	2	25	0.00	0.00	3.71	0.00	0.00	0.00	0.00	21.29	0.00	0.00
18/04/2014	RS	2	1101	Herring gull	2	31	1.92	2.05	0.00	0.00	0.00	13.08	13.95	0.00	0.00	0.00
18/04/2014	RS	2	0531	Herring gull	5	36	0.00	0.00	0.00	15.27	0.00	0.00	0.00	0.00	20.73	0.00
18/04/2014	RS	2	0547	Herring gull	6	33	0.00	0.00	0.00	10.94	0.00	0.00	0.00	0.00	22.06	0.00
18/04/2014	RS	2	0549	Herring gull	1	24	0.00	0.00	0.00	0.00	3.48	0.00	0.00	0.00	0.00	20.52
18/04/2014	RS	2	0556	Herring gull	5	36	0.00	0.00	0.00	12.77	0.00	0.00	0.00	0.00	23.23	0.00
18/04/2014	RS	2	0616	Herring gull	3	32	0.00	0.00	0.00	0.00	17.13	0.00	0.00	0.00	0.00	14.87
18/04/2014	RS	2	0625	Herring gull	2	22	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	15.00	0.00
22/04/2014	RS	2	0615	Herring gull	1	20	0.00	0.00	17.99	0.00	0.00	0.00	0.00	2.01	0.00	0.00
22/04/2014	RS	2	0635	Herring gull	5	32	0.00	7.42	8.41	0.00	0.00	0.00	7.58	8.59	0.00	0.00
22/04/2014	RS	2	0708	Herring gull	3	18	0.00	7.43	0.00	0.00	0.00	0.00	10.57	0.00	0.00	0.00
22/04/2014	RS	2	0715	Herring gull	3	36	0.00	0.00	19.40	0.00	0.00	0.00	0.00	16.60	0.00	0.00
27/04/2014	RS	2	1503	Herring gull	5	32	0.00	0.00	32.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27/04/2014	RS	2	1517	Herring gull	8	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
27/04/2014	RS	2	1535	Herring gull	1	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.00	0.00
27/04/2014	RS	2	1558	Herring gull	4	50	0.00	0.00	31.86	0.00	0.00	0.00	0.00	18.14	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
27/04/2014	RS	2	1650	Herring gull	7	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00
27/04/2014	RS	2	1710	Herring gull	5	28	0.00	2.15	1.87	0.00	0.00	0.00	12.85	11.13	0.00	0.00
06/05/2014	JS	2	1639	Herring gull	1	70	0.00	0.00	43.72	0.00	0.00	0.00	0.00	26.28	0.00	0.00
06/05/2014	JS	2	1715	Herring gull	1	30	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06/05/2014	JS	2	1729	Herring gull	1	30	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06/05/2014	JS	2	1945	Herring gull	1	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
06/05/2014	JS	2	2010	Herring gull	3	60	0.00	0.00	44.98	0.00	0.00	0.00	0.00	15.02	0.00	0.00
06/05/2014	JS	2	2053	Herring gull	17	45	0.00	0.00	12.65	0.00	0.00	0.00	0.00	32.35	0.00	0.00
06/05/2014	JS	2	2055	Herring gull	2	30	0.00	0.00	12.29	0.00	0.00	0.00	0.00	17.71	0.00	0.00
06/05/2014	JS	2	2143	Herring gull	10	45	0.00	0.00	32.37	0.00	0.00	0.00	0.00	12.63	0.00	0.00
06/05/2014	JS	2	2152	Herring gull	17	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00	0.00	0.00
07/05/2014	RS	2	1928	Herring gull	6	58	0.00	0.00	0.00	10.24	29.34	0.00	0.00	0.00	4.76	13.66
07/05/2014	RS	2	1929	Herring gull	2	30	0.00	0.00	0.00	21.56	0.00	0.00	0.00	0.00	8.44	0.00
07/05/2014	RS	2	1531	Herring gull	3	32	0.00	9.60	10.88	0.00	0.00	0.00	5.40	6.12	0.00	0.00
07/05/2014	RS	2	1546	Herring gull	5	44	0.00	0.00	32.82	0.00	0.00	0.00	0.00	11.18	0.00	0.00
07/05/2014	RS	2	1558	Herring gull	1	50	11.81	23.61	3.94	0.00	0.00	3.19	6.39	1.06	0.00	0.00
07/05/2014	RS	2	1631	Herring gull	1	29	0.00	0.00	15.00	14.00	0.00	0.00	0.00	0.00	0.00	0.00
07/05/2014	RS	2	1650	Herring gull	4	38	0.00	0.00	0.00	38.00	0.00	0.00	0.00	0.00	0.00	0.00
07/05/2014	RS	2	1734	Herring gull	3	27	0.00	0.00	27.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	2	0845	Herring gull	1	70	0.00	0.00	34.00	0.00	0.00	0.00	0.00	36.00	0.00	0.00
08/05/2014	JS	2	0901	Herring gull	1	25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
08/05/2014	JS	2	0930	Herring gull	8	40	0.00	8.64	2.88	0.00	0.00	0.00	21.36	7.12	0.00	0.00
08/05/2014	JS	2	0508	Herring gull	5	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
08/05/2014	JS	2	0508	Herring gull	2	40	0.00	0.00	13.82	0.00	0.00	0.00	0.00	26.18	0.00	0.00
08/05/2014	JS	2	0640	Herring gull	3	35	0.00	0.00	20.15	0.00	0.00	0.00	0.00	14.85	0.00	0.00
08/05/2014	JS	2	0645	Herring gull	1	60	0.00	0.00	50.31	0.00	0.00	0.00	0.00	9.69	0.00	0.00
10/05/2014	RS	2	1918	Herring gull	2	35	0.00	0.00	33.06	0.00	0.00	0.00	0.00	1.94	0.00	0.00
10/05/2014	RS	2	1921	Herring gull	1	20	0.00	0.00	13.33	0.00	0.00	0.00	0.00	6.67	0.00	0.00
10/05/2014	RS	2	1930	Herring gull	2	34	0.00	6.80	8.61	0.00	0.00	0.00	8.20	10.39	0.00	0.00
10/05/2014	RS	2	1945	Herring gull	2	35	12.09	9.07	0.00	0.00	0.00	7.91	5.93	0.00	0.00	0.00
10/05/2014	RS	2	2018	Herring gull	2	35	0.00	0.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0446	Herring gull	2	25	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0455	Herring gull	3	32	0.00	0.00	32.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0544	Herring gull	2	45	0.00	0.00	39.95	0.00	0.00	0.00	0.00	5.05	0.00	0.00
11/05/2014	RS	2	0557	Herring gull	1	29	0.00	0.00	0.00	0.00	0.00	0.00	15.00	14.00	0.00	0.00
11/05/2014	RS	2	0630	Herring gull	2	54	0.00	15.00	39.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0634	Herring gull	4	29	0.00	25.67	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00
11/05/2014	RS	2	0645	Herring gull	1	40	0.00	0.00	25.62	8.54	0.00	0.00	0.00	4.38	1.46	0.00
11/05/2014	RS	2	0817	Herring gull	3	25	0.00	6.16	0.00	0.00	0.00	0.00	18.84	0.00	0.00	0.00
11/05/2014	RS	2	0842	Herring gull	4	20	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0849	Herring gull	7	36	7.02	9.83	0.00	0.00	0.00	7.98	11.17	0.00	0.00	0.00
11/05/2014	RS	2	0941	Herring gull	2	25	0.00	0.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
11/05/2014	RS	2	0948	Herring gull	5	87	49.74	10.36	0.00	0.00	0.00	22.26	4.64	0.00	0.00	0.00
11/05/2014	RS	2	0952	Herring gull	1	28	0.00	0.00	5.44	0.00	0.00	0.00	0.00	22.56	0.00	0.00
11/05/2014	RS	2	1038	Herring gull	1	32	0.00	0.00	0.00	0.00	20.81	0.00	0.00	0.00	0.00	11.19
13/05/2014	RS	2	0520	Herring gull	1	33	0.00	0.00	0.00	0.00	22.83	0.00	0.00	0.00	0.00	10.17
13/05/2014	RS	2	0525	Herring gull	1	60	0.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2014	RS	2	0605	Herring gull	4	58	0.00	0.00	49.57	0.00	0.00	0.00	0.00	8.43	0.00	0.00
13/05/2014	RS	2	0637	Herring gull	3	70	0.00	0.00	0.00	53.18	0.00	0.00	0.00	0.00	16.82	0.00
13/05/2014	RS	2	2017	Herring gull	1	31	0.00	0.00	23.90	0.00	0.00	0.00	0.00	7.10	0.00	0.00
13/05/2014	RS	2	2102	Herring gull	1	25	0.00	0.00	17.88	0.00	0.00	0.00	0.00	7.12	0.00	0.00
13/05/2014	RS	2	2130	Herring gull	1	30	0.00	0.00	25.10	0.00	0.00	0.00	0.00	4.90	0.00	0.00
14/05/2014	JS	2	0443	Herring gull	7	60	0.00	0.00	23.92	0.00	0.00	0.00	0.00	36.08	0.00	0.00
14/05/2014	JS	2	0453	Herring gull	4	40	0.00	0.00	6.26	0.00	0.00	0.00	0.00	33.74	0.00	0.00
14/05/2014	JS	2	0500	Herring gull	2	40	0.00	0.00	3.66	0.00	0.00	0.00	0.00	36.34	0.00	0.00
14/05/2014	JS	2	0510	Herring gull	30	40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	0.00	0.00
14/05/2014	JS	2	0510	Herring gull	4	30	0.00	0.00	0.00	22.47	0.00	0.00	0.00	0.00	7.53	0.00
14/05/2014	JS	2	0525	Herring gull	1	40	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/05/2014	JS	2	0615	Herring gull	2	60	0.00	15.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/05/2014	JS	2	0654	Herring gull	1	30	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/06/2014	RS	2	0932	Herring gull	1	73	0.00	0.00	0.00	45.76	0.00	0.00	0.00	0.00	27.24	0.00
09/06/2014	RS	2	0945	Herring gull	1	34	0.00	0.00	0.00	0.00	0.00	0.00	4.00	30.00	0.00	0.00
09/06/2014	RS	2	1006	Herring gull	5	30	0.00	3.19	3.19	0.00	0.00	0.00	11.81	11.81	0.00	0.00
09/06/2014	RS	2	1020	Herring gull	3	22	22.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/06/2014	RS	2	1151	Herring gull	1	43	0.00	23.29	0.00	0.00	0.00	0.00	19.71	0.00	0.00	0.00
09/06/2014	RS	2	1305	Herring gull	1	42	29.32	0.00	0.00	0.00	0.00	12.68	0.00	0.00	0.00	0.00
09/06/2014	RS	2	1312	Herring gull	1	63	14.12	15.53	0.00	0.00	0.00	15.88	17.47	0.00	0.00	0.00
09/06/2014	RS	2	1357	Herring gull	1	25	0.00	22.30	0.00	0.00	0.00	0.00	2.70	0.00	0.00	0.00
09/06/2014	RS	2	1409	Herring gull	1	75	0.00	0.00	17.72	26.57	0.00	0.00	0.00	12.28	18.43	0.00
18/06/2014	RS	2	1520	Herring gull	1	19	0.00	0.00	6.40	0.00	0.00	0.00	0.00	12.60	0.00	0.00
18/06/2014	RS	2	1558	Herring gull	1	25	11.99	7.99	0.00	0.00	0.00	3.01	2.01	0.00	0.00	0.00
18/06/2014	RS	2	1656	Herring gull	1	89	89.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	2	1748	Herring gull	1	192	120.00	45.00	27.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	2	1917	Herring gull	2	32	13.45	15.25	0.00	0.00	0.00	1.55	1.75	0.00	0.00	0.00
18/06/2014	RS	2	1928	Herring gull	1	19	0.00	0.00	4.96	0.00	0.00	0.00	0.00	14.04	0.00	0.00
18/06/2014	RS	2	2006	Herring gull	2	20	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	2	2015	Herring gull	1	36	15.00	15.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	2	2057	Herring gull	1	15	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	2	2115	Herring gull	1	34	4.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/06/2014	RS	2	2135	Herring gull	1	22	0.00	22.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29/07/2014	RS	2	0820	Herring gull	1	28	0.00	0.00	22.11	0.00	0.00	0.00	0.00	5.89	0.00	0.00
29/07/2014	RS	2	0836	Herring gull	1	38	6.25	23.44	0.00	0.00	0.00	1.75	6.56	0.00	0.00	0.00
29/07/2014	RS	2	1034	Herring gull	1	22	0.00	10.39	0.00	0.00	0.00	0.00	11.61	0.00	0.00	0.00
29/07/2014	RS	2	1130	Herring gull	1	25	0.00	0.00	14.15	0.00	0.00	0.00	0.00	10.85	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
29/07/2014	RS	2	1152	Herring gull	2	20	0.00	3.45	3.45	0.00	0.00	0.00	6.55	6.55	0.00	0.00
29/07/2014	RS	2	1240	Herring gull	1	13	0.00	2.53	0.00	0.00	0.00	0.00	10.47	0.00	0.00	0.00
29/07/2014	RS	2	1246	Herring gull	11	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.00	5.00
16/08/2014	RS	2	1440	Herring gull	1	45	12.32	24.64	0.00	0.00	0.00	2.68	5.36	0.00	0.00	0.00
16/08/2014	RS	2	1530	Herring gull	1	29	0.00	0.00	18.59	0.00	0.00	0.00	0.00	10.41	0.00	0.00
16/08/2014	RS	2	1543	Herring gull	1	15	0.00	0.00	7.58	0.00	0.00	0.00	0.00	7.42	0.00	0.00
16/08/2014	RS	2	1030	Herring gull	1	18	7.53	1.51	0.00	0.00	0.00	7.47	1.49	0.00	0.00	0.00
16/08/2014	RS	2	1035	Herring gull	1	24	0.00	0.00	5.11	0.00	0.00	0.00	0.00	18.89	0.00	0.00
16/08/2014	RS	2	1133	Herring gull	2	38	0.00	17.90	4.77	0.00	0.00	0.00	12.10	3.23	0.00	0.00
16/08/2014	RS	2	1210	Herring gull	1	12	0.00	5.36	0.00	0.00	0.00	0.00	6.64	0.00	0.00	0.00
16/08/2014	RS	2	1225	Herring gull	2	18	0.00	0.00	1.53	0.00	0.00	0.00	0.00	16.47	0.00	0.00
16/08/2014	RS	2	1231	Herring gull	2	13	0.00	0.00	0.00	6.02	0.00	0.00	0.00	0.00	6.98	0.00
16/08/2014	RS	2	1248	Herring gull	2	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/08/2014	JS	2	2000	Herring gull	1	45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.00	0.00	0.00
18/08/2014	JS	2	2025	Herring gull	1	45	0.00	0.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/08/2014	JS	2	1417	Herring gull	4	100	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/08/2014	JS	2	1510	Herring gull	1	45	0.00	23.89	0.00	0.00	0.00	0.00	21.11	0.00	0.00	0.00
18/08/2014	JS	2	1609	Herring gull	55	60	0.00	0.00	49.34	0.00	0.00	0.00	0.00	10.66	0.00	0.00
23/08/2014	RS	2	1015	Herring gull	1	15	0.00	0.00	0.00	8.57	0.00	0.00	0.00	0.00	6.43	0.00
23/08/2014	RS	2	1130	Herring gull	5	35	0.00	0.00	29.31	0.00	0.00	0.00	0.00	5.69	0.00	0.00
23/08/2014	RS	2	0603	Herring gull	3	25	0.00	0.00	0.00	15.61	0.00	0.00	0.00	0.00	9.39	0.00
23/08/2014	RS	2	0625	Herring gull	1	20	0.00	0.00	1.77	0.00	0.00	0.00	0.00	18.23	0.00	0.00
23/08/2014	RS	2	0634	Herring gull	15	40	0.00	0.00	9.47	15.78	0.00	0.00	0.00	5.53	9.22	0.00
23/08/2014	RS	2	0650	Herring gull	3	18	0.00	0.00	9.99	0.00	0.00	0.00	0.00	8.01	0.00	0.00
23/08/2014	RS	2	0652	Herring gull	2	15	0.00	4.69	0.00	0.00	0.00	0.00	10.31	0.00	0.00	0.00
23/08/2014	RS	2	0740	Herring gull	6	35	0.00	20.35	0.00	0.00	0.00	0.00	14.65	0.00	0.00	0.00
23/08/2014	RS	2	0805	Herring gull	2	15	0.00	10.24	0.00	0.00	0.00	0.00	4.76	0.00	0.00	0.00
22/02/2015	DL	2	1608	Herring gull	4	155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	155.00	0.00	0.00
22/02/2015	DL	2	1616	Herring gull	2	129	0.00	0.00	46.45	0.00	0.00	0.00	0.00	82.55	0.00	0.00
07/03/2015	DL	2	1002	Herring gull	6	98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	38.00	0.00
13/03/2015	DL	2	1406	Herring gull	1	50	0.00	40.88	0.00	0.00	0.00	0.00	9.12	0.00	0.00	0.00
18/04/2019	PS	2	1145	Herring gull	15	48	0.00	0.00	24.62	0.00	0.00	0.00	0.00	23.38	0.00	0.00
18/04/2019	PS	2	1151	Herring gull	2	39	0.00	0.00	15.14	0.00	0.00	0.00	0.00	23.86	0.00	0.00
18/04/2019	PS	2	1214	Herring gull	25	68	0.00	0.00	48.26	0.00	0.00	0.00	0.00	19.74	0.00	0.00
18/04/2019	PS	2	1245	Herring gull	5	76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	76.00	0.00	0.00
18/04/2019	PS	2	1335	Herring gull	11	64	0.00	0.00	30.65	0.00	0.00	0.00	0.00	33.35	0.00	0.00
18/04/2019	PS	2	1427	Herring gull	2	83	0.00	82.78	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
18/04/2019	PS	2	1518	Herring gull	1	17	0.00	0.00	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/04/2019	PS	2	1619	Herring gull	1	28	0.00	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18/04/2019	PS	2	1646	Herring gull	1	156	0.00	156.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24/04/2019	JD	2	1115	Herring gull	2	65	0.00	35.04	15.57	0.00	0.00	0.00	9.96	4.43	0.00	0.00
24/04/2019	JD	2	1120	Herring gull	2	40	0.00	18.87	0.00	0.00	0.00	0.00	21.13	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
24/04/2019	JD	2	1212	Herring gull	7	40	6.04	10.07	0.00	0.00	0.00	8.96	14.93	0.00	0.00	0.00
24/04/2019	JD	2	1220	Herring gull	1	45	14.17	7.08	0.00	0.00	0.00	15.83	7.92	0.00	0.00	0.00
24/04/2019	JD	2	1242	Herring gull	3	54	30.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24/04/2019	JD	2	1303	Herring gull	4	28	0.00	23.39	0.00	0.00	0.00	0.00	4.61	0.00	0.00	0.00
24/04/2019	JD	2	1309	Herring gull	4	60	0.00	56.14	0.00	0.00	0.00	0.00	3.86	0.00	0.00	0.00
24/04/2019	JD	2	1404	Herring gull	5	68	23.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24/04/2019	JD	2	1502	Herring gull	5	30	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24/04/2019	JD	2	1635	Herring gull	3	70	45.00	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/05/2019	JD	2	0849	Herring gull	2	115	0.00	0.00	83.78	0.00	0.00	0.00	0.00	31.22	0.00	0.00
02/05/2019	JD	2	0910	Herring gull	1	40	0.00	0.00	10.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00
02/05/2019	JD	2	0913	Herring gull	1	45	0.00	30.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/05/2019	JD	2	1020	Herring gull	5	149	0.00	0.00	125.92	14.10	0.00	0.00	0.00	8.08	0.90	0.00
02/05/2019	JD	2	1053	Herring gull	9	49	0.00	19.00	15.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00
02/05/2019	JD	2	1109	Herring gull	11	71	11.00	15.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
02/05/2019	JD	2	1115	Herring gull	7	82	30.12	36.63	0.00	0.00	0.00	6.88	8.37	0.00	0.00	0.00
02/05/2019	JD	2	1201	Herring gull	1	14	11.65	0.00	0.00	0.00	0.00	2.35	0.00	0.00	0.00	0.00
02/05/2019	JD	2	1202	Herring gull	2	25	15.85	0.00	0.00	0.00	0.00	9.15	0.00	0.00	0.00	0.00
02/05/2019	JD	2	1204	Herring gull	1	24	5.85	3.51	0.00	0.00	0.00	9.15	5.49	0.00	0.00	0.00
02/05/2019	JD	2	1207	Herring gull	2	33	11.59	13.90	0.00	0.00	0.00	3.41	4.10	0.00	0.00	0.00
02/05/2019	JD	2	1207	Herring gull	1	146	9.72	53.00	66.25	0.00	0.00	1.28	7.00	8.75	0.00	0.00
02/05/2019	JD	2	1301	Herring gull	2	34	12.46	9.84	0.00	0.00	0.00	6.54	5.16	0.00	0.00	0.00
20/06/2019	JD	2	0605	Herring gull	1	40	0.00	18.01	0.00	0.00	0.00	0.00	21.99	0.00	0.00	0.00
27/08/2019	PS	2	1830	Herring gull	1	49	0.00	19.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22/01/2020	PS	2	1217	Herring gull	1	38	0.00	0.00	14.54	0.00	0.00	0.00	0.00	23.46	0.00	0.00
05/03/2020	JD	2	0915	Herring gull	5	30	0.00	0.00	21.79	0.00	0.00	0.00	0.00	8.21	0.00	0.00
05/03/2020	JD	2	1103	Herring gull	8	150	0.00	0.00	0.00	94.88	0.00	0.00	0.00	0.00	55.12	0.00
05/03/2020	JD	2	1200	Herring gull	2	37	0.00	0.00	0.00	22.58	0.00	0.00	0.00	0.00	14.42	0.00
07/03/2020	JD	2	1440	Herring gull	1	72	0.00	0.00	59.53	0.00	0.00	0.00	0.00	12.47	0.00	0.00
07/03/2020	JD	2	1548	Herring gull	15	126	0.00	0.00	58.17	39.55	0.00	0.00	0.00	16.83	11.45	0.00
08/03/2020	JD	2	1252	Herring gull	1	61	0.00	0.00	0.00	61.00	0.00	0.00	0.00	0.00	0.00	0.00
16/03/2020	NR	2	1117	Herring gull	1	157	0.00	0.00	0.00	0.00	0.00	0.00	127.00	30.00	0.00	0.00
16/03/2020	NR	2	1252	Herring gull	2	86	0.00	5.00	5.49	0.00	0.00	0.00	36.00	39.51	0.00	0.00
16/03/2020	NR	2	1448	Herring gull	7	225	0.00	0.00	16.36	89.96	16.36	0.00	0.00	13.64	75.04	13.64
16/03/2020	NR	2	1603	Herring gull	2	28	0.00	0.00	0.00	0.00	0.00	0.00	28.00	0.00	0.00	0.00
07/04/2020	NR	2	1108	Herring gull	1	145	0.00	0.00	0.00	0.00	0.00	0.00	30.00	115.00	0.00	0.00
07/04/2020	NR	2	1121	Herring gull	1	75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	75.00	0.00	0.00
07/04/2020	NR	2	1138	Herring gull	1	65	0.00	0.00	3.64	0.00	0.00	0.00	0.00	61.36	0.00	0.00
07/04/2020	NR	2	1200	Herring gull	1	135	0.00	0.00	90.40	0.00	0.00	0.00	0.00	44.60	0.00	0.00
07/04/2020	NR	2	1226	Herring gull	1	75	0.00	0.00	0.00	75.00	0.00	0.00	0.00	0.00	0.00	0.00
07/04/2020	NR	2	1245	Herring gull	1	180	0.00	0.00	88.49	44.25	0.00	0.00	0.00	31.51	15.75	0.00
07/04/2020	NR	2	1250	Herring gull	3	90	0.00	0.00	0.00	60.00	30.00	0.00	0.00	0.00	0.00	0.00
07/04/2020	NR	2	1541	Herring gull	25	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
07/04/2020	NR	2	1553	Herring gull	20	105	0.00	0.00	0.00	0.00	0.00	0.00	30.00	75.00	0.00	0.00
07/04/2020	NR	2	1603	Herring gull	20	120	0.00	0.00	0.00	0.00	0.00	0.00	15.00	105.00	0.00	0.00
07/04/2020	NR	2	1609	Herring gull	3	96	0.00	18.85	41.46	0.00	0.00	0.00	11.15	24.54	0.00	0.00
07/04/2020	NR	2	1615	Herring gull	40	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.00	0.00	0.00
07/04/2020	NR	2	1642	Herring gull	2	98	0.00	68.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/04/2020	NR	2	1031	Herring gull	11	101	7.81	22.51	0.00	0.00	0.00	18.19	52.49	0.00	0.00	0.00
08/04/2020	NR	2	1040	Herring gull	18	95	0.00	9.37	8.43	0.00	0.00	0.00	40.63	36.57	0.00	0.00
08/04/2020	NR	2	1045	Herring gull	6	64	0.00	0.00	37.23	0.00	0.00	0.00	0.00	26.77	0.00	0.00
08/04/2020	NR	2	1048	Herring gull	16	55	0.00	0.00	0.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
08/04/2020	NR	2	1052	Herring gull	3	45	0.00	0.00	17.00	0.00	0.00	0.00	0.00	28.00	0.00	0.00
08/04/2020	NR	2	1055	Herring gull	15	60	0.00	0.00	40.93	0.00	0.00	0.00	0.00	19.07	0.00	0.00
08/04/2020	NR	2	1106	Herring gull	4	75	0.00	0.00	0.00	0.00	0.00	0.00	15.00	60.00	0.00	0.00
08/04/2020	NR	2	1120	Herring gull	4	68	0.00	0.00	0.00	0.00	0.00	0.00	23.00	45.00	0.00	0.00
08/04/2020	NR	2	1122	Herring gull	3	82	49.49	11.08	0.00	0.00	0.00	17.51	3.92	0.00	0.00	0.00
08/04/2020	NR	2	1125	Herring gull	32	75	0.00	0.00	0.00	0.00	0.00	30.00	45.00	0.00	0.00	0.00
08/04/2020	NR	2	1128	Herring gull	30	75	0.00	0.00	0.00	0.00	0.00	15.00	30.00	30.00	0.00	0.00
08/04/2020	NR	2	1133	Herring gull	25	75	0.00	23.69	15.79	0.00	0.00	0.00	21.31	14.21	0.00	0.00
08/04/2020	NR	2	1135	Herring gull	14	120	0.24	0.24	1.41	0.00	0.00	14.76	14.76	88.59	0.00	0.00
08/04/2020	NR	2	1141	Herring gull	20	135	6.61	33.05	19.83	0.00	0.00	8.39	41.95	25.17	0.00	0.00
08/04/2020	NR	2	1145	Herring gull	6	50	0.00	17.62	0.00	0.00	0.00	0.00	32.38	0.00	0.00	0.00
08/04/2020	NR	2	1153	Herring gull	17	100	0.00	0.00	0.00	0.00	0.00	0.00	10.00	90.00	0.00	0.00
08/04/2020	NR	2	1156	Herring gull	25	120	0.00	0.00	106.37	0.00	0.00	0.00	0.00	13.63	0.00	0.00
08/04/2020	NR	2	1208	Herring gull	30	90	0.00	22.84	22.84	0.00	0.00	0.00	22.16	22.16	0.00	0.00
08/04/2020	NR	2	1215	Herring gull	18	75	0.00	0.00	25.41	0.00	0.00	0.00	0.00	49.59	0.00	0.00
08/04/2020	NR	2	1217	Herring gull	20	120	0.00	0.00	31.95	0.00	0.00	0.00	0.00	88.05	0.00	0.00
08/04/2020	NR	2	1244	Herring gull	17	135	0.00	0.00	77.44	0.00	0.00	0.00	0.00	57.56	0.00	0.00
08/04/2020	NR	2	1359	Herring gull	8	95	0.00	0.00	60.80	0.00	0.00	0.00	0.00	34.20	0.00	0.00
08/04/2020	NR	2	1406	Herring gull	10	60	0.00	23.65	23.65	0.00	0.00	0.00	6.35	6.35	0.00	0.00
12/05/2020	NR	2	0511	Herring gull	1	88	75.02	0.00	0.00	0.00	0.00	12.98	0.00	0.00	0.00	0.00
12/05/2020	NR	2	0519	Herring gull	2	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.00	0.00	0.00
12/05/2020	NR	2	0549	Herring gull	11	75	0.00	14.89	22.33	0.00	0.00	0.00	15.11	22.67	0.00	0.00
12/05/2020	NR	2	0553	Herring gull	3	83	0.00	32.48	38.47	0.00	0.00	0.00	5.52	6.53	0.00	0.00
12/05/2020	NR	2	0721	Herring gull	1	165	0.00	0.00	120.41	0.00	0.00	0.00	0.00	44.59	0.00	0.00
18/05/2020	NR	2	1229	Herring gull	1	36	0.21	0.00	0.00	0.00	0.00	35.79	0.00	0.00	0.00	0.00
18/05/2020	NR	2	1243	Herring gull	1	50	1.51	0.00	0.00	0.00	0.00	48.49	0.00	0.00	0.00	0.00
18/05/2020	NR	2	1303	Herring gull	2	240	0.00	18.77	131.39	0.00	0.00	0.00	11.23	78.61	0.00	0.00
18/05/2020	NR	2	1322	Herring gull	4	64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	64.00	0.00	0.00
18/05/2020	NR	2	1327	Herring gull	2	37	11.93	11.93	5.57	0.00	0.00	3.07	3.07	1.43	0.00	0.00
18/05/2020	NR	2	1340	Herring gull	2	90	0.00	0.00	0.00	12.96	12.96	0.00	0.00	0.00	32.04	32.04
20/05/2020	NR	2	1623	Herring gull	1	80	78.40	0.00	0.00	0.00	0.00	1.60	0.00	0.00	0.00	0.00
20/05/2020	NR	2	1635	Herring gull	1	152	0.00	0.00	44.42	0.00	0.00	0.00	0.00	107.58	0.00	0.00
20/05/2020	NR	2	1658	Herring gull	1	90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
20/05/2020	NR	2	1701	Herring gull	45	150	0.00	0.00	0.00	135.25	0.00	0.00	0.00	0.00	14.75	0.00
20/05/2020	NR	2	1705	Herring gull	1	67	0.00	5.23	44.82	0.00	0.00	0.00	1.77	15.18	0.00	0.00
20/05/2020	NR	2	1718	Herring gull	2	150	0.00	30.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/05/2020	NR	2	1723	Herring gull	1	165	0.00	0.00	156.90	0.00	0.00	0.00	0.00	8.10	0.00	0.00
20/05/2020	NR	2	1746	Herring gull	4	145	8.30	37.35	74.70	0.00	0.00	1.70	7.65	15.30	0.00	0.00
20/05/2020	NR	2	1750	Herring gull	3	43	7.74	17.87	0.00	0.00	0.00	5.26	12.13	0.00	0.00	0.00
03/06/2020	NR	2	1914	Herring gull	1	92	47.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22/06/2020	NR	2	1022	Herring gull	3	47	47.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22/06/2020	NR	2	1034	Herring gull	1	51	40.43	0.00	0.00	0.00	0.00	10.57	0.00	0.00	0.00	0.00
22/06/2020	NR	2	1131	Herring gull	1	67	0.00	13.46	40.39	6.28	0.00	0.00	1.54	4.61	0.72	0.00
02/07/2020	NR	2	1712	Herring gull	1	64	0.00	0.00	23.90	0.00	0.00	0.00	0.00	40.10	0.00	0.00
15/07/2020	NR	2	0910	Herring gull	2	40	0.00	0.00	30.54	0.00	0.00	0.00	0.00	9.46	0.00	0.00
10/08/2020	JD	2	1204	Herring gull	4	72	0.00	0.00	33.28	0.00	0.00	0.00	0.00	38.72	0.00	0.00
10/08/2020	JD	2	1319	Herring gull	1	60	0.00	0.00	2.88	0.00	0.00	0.00	0.00	57.12	0.00	0.00
15/02/2021	PS	2	1548	Herring gull	3	109	0.00	0.00	89.43	0.00	0.00	0.00	0.00	19.57	0.00	0.00
15/02/2021	PS	2	1602	Herring gull	2	97	0.00	0.00	88.65	0.00	0.00	0.00	0.00	8.35	0.00	0.00
04/03/2021	PS	2	0915	Herring gull	3	21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.00	0.00	0.00
04/03/2021	PS	2	1113	Herring gull	23	84	0.00	0.00	40.09	0.00	0.00	0.00	0.00	43.91	0.00	0.00
24/03/2013	RS	2	1434	Lapwing	1	15	11.43	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00
26/03/2013	JS	2	1159	Lapwing	10	40	0.00	0.00	0.00	0.00	0.00	15.00	4.76	14.29	5.95	0.00
26/03/2013	JS	2	1715	Lapwing	4	150	0.00	0.00	0.00	0.00	0.00	90.00	11.43	34.29	14.29	0.00
10/04/2013	JS	2	1540	Lapwing	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/04/2013	JS	2	1547	Lapwing	1	25	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/04/2013	JS	2	1610	Lapwing	2	25	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23/04/2013	RS	2	1309	Lapwing	1	25	24.96	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
29/04/2013	RS	2	0724	Lapwing	1	52	37.00	2.86	8.57	3.57	0.00	0.00	0.00	0.00	0.00	0.00
01/05/2013	RS	2	1906	Lapwing	2	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/05/2013	RS	2	2007	Lapwing	1	28	28.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
04/05/2013	RS	2	0804	Lapwing	1	48	1.72	0.72	2.16	0.90	0.00	13.28	5.56	16.69	6.96	0.00
04/05/2013	RS	2	0835	Lapwing	2	158	32.52	6.86	20.57	8.57	0.00	42.48	8.95	26.86	11.19	0.00
04/05/2013	RS	2	0925	Lapwing	1	27	27.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/05/2013	RS	2	0513	Lapwing	1	15	12.32	0.00	0.00	0.00	0.00	2.68	0.00	0.00	0.00	0.00
07/05/2013	RS	2	0526	Lapwing	1	70	29.34	4.19	12.57	5.24	0.00	10.66	1.52	4.57	1.90	0.00
07/05/2013	RS	2	0528	Lapwing	1	62	12.22	7.29	21.88	9.12	0.00	2.78	1.66	4.98	2.07	0.00
07/05/2013	RS	2	0535	Lapwing	1	81	12.32	3.99	11.96	4.98	0.00	17.68	5.73	17.18	7.16	0.00
07/05/2013	RS	2	0631	Lapwing	1	38	35.23	0.00	0.00	0.00	0.00	2.77	0.00	0.00	0.00	0.00
10/05/2013	RS	2	1502	Lapwing	1	25	25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/05/2013	RS	2	1723	Lapwing	1	24	13.86	0.00	0.00	0.00	0.00	10.14	0.00	0.00	0.00	0.00
13/05/2013	RS	2	0519	Lapwing	1	20	0.00	0.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00
10/06/2013	RS	2	0426	Lapwing	1	38	38.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/06/2013	RS	2	0519	Lapwing	1	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
03/07/2013	RS	2	2021	Lapwing	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
09/07/2013	RW	2	1942	Lapwing	22	153	19.82	9.66	28.97	12.07	0.00	23.18	11.29	33.88	14.12	0.00
09/07/2013	RW	2	1953	Lapwing	1	21	21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/07/2013	RW	2	2011	Lapwing	1	14	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/07/2013	RW	2	2012	Lapwing	1	3	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
09/07/2013	RW	2	2034	Lapwing	1	5	4.36	0.00	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.00
09/07/2013	RW	2	2044	Lapwing	1	7	6.14	0.00	0.00	0.00	0.00	0.86	0.00	0.00	0.00	0.00
09/07/2013	RW	2	2122	Lapwing	1	12	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0718	Lapwing	2	37	37.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0823	Lapwing	1	21	21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0833	Lapwing	1	81	81.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/07/2013	RW	2	0910	Lapwing	1	21	21.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19/07/2013	RS	2	1416	Lapwing	1	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0504	Lapwing	1	18	15.00	0.57	1.71	0.71	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0535	Lapwing	1	6	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0550	Lapwing	1	31	24.03	0.00	0.00	0.00	0.00	6.97	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0644	Lapwing	1	23	16.82	0.00	0.00	0.00	0.00	6.18	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0646	Lapwing	1	19	4.45	0.00	0.00	0.00	0.00	14.55	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0657	Lapwing	2	36	36.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0723	Lapwing	1	13	13.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0906	Lapwing	1	7	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0934	Lapwing	1	14	14.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0943	Lapwing	1	6	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	0945	Lapwing	2	8	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1009	Lapwing	1	43	43.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1009	Lapwing	1	43	43.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1115	Lapwing	1	67	67.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20/07/2013	PG	2	1115	Lapwing	1	67	67.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
01/08/2013	RS	2	0801	Lapwing	48	174	21.90	14.60	43.79	23.94	22.77	8.10	5.40	16.21	8.86	8.43
09/08/2013	RS	2	1628	Lapwing	1	27	24.93	0.00	0.00	0.00	0.00	2.07	0.00	0.00	0.00	0.00
16/08/2013	PG	2	1630	Lapwing	23	248	0.00	0.00	0.00	0.00	0.00	248.00	0.00	0.00	0.00	0.00
16/08/2013	PG	2	1657	Lapwing	24	57	0.00	0.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00	0.00
16/08/2013	PG	2	1740	Lapwing	11	121	0.00	0.00	0.00	0.00	0.00	121.00	0.00	0.00	0.00	0.00
17/08/2013	PG	2	1456	Lapwing	6	48	0.00	0.00	0.00	0.00	0.00	33.00	2.86	8.57	3.57	0.00
29/09/2013	JS	2	0818	Lapwing	170	120	0.00	0.00	0.00	0.00	0.00	15.00	20.00	60.00	25.00	0.00
29/09/2013	JS	2	0858	Lapwing	16	40	0.00	4.47	13.42	5.59	0.00	0.00	3.15	9.44	3.93	0.00
11/10/2013	RS	2	1332	Lapwing	12	98	0.00	13.41	40.24	16.77	0.00	0.00	5.25	15.76	6.57	0.00
29/01/2014	RS	2	1020	Lapwing	28	72	21.07	5.62	16.85	7.02	0.00	8.93	2.38	7.15	2.98	0.00
04/04/2014	RS	2	1507	Lapwing	2	25	5.03	0.00	0.00	0.00	0.00	19.97	0.00	0.00	0.00	0.00
05/04/2014	JS	2	0820	Lapwing	1	100	0.00	22.41	52.28	0.00	0.00	0.00	7.59	17.72	0.00	0.00
27/04/2014	RS	2	1630	Lapwing	1	30	7.94	7.94	0.00	0.00	0.00	7.06	7.06	0.00	0.00	0.00
27/04/2014	RS	2	1728	Lapwing	5	66	0.00	0.00	10.25	0.00	34.84	0.00	0.00	4.75	0.00	16.16
28/04/2014	RS	2	0905	Lapwing	6	40	0.00	5.79	0.00	0.00	0.00	0.00	34.21	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
06/05/2014	JS	2	1527	Lapwing	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
06/05/2014	JS	2	1628	Lapwing	1	20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/05/2014	RS	2	1917	Lapwing	2	20	18.81	0.00	0.00	0.00	0.00	1.19	0.00	0.00	0.00	0.00
07/05/2014	RS	2	1921	Lapwing	1	17	17.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/05/2014	RS	2	1947	Lapwing	1	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/05/2014	RS	2	1958	Lapwing	1	18	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
07/05/2014	RS	2	2016	Lapwing	3	29	3.99	4.27	0.00	0.00	0.00	10.01	10.73	0.00	0.00	0.00
08/05/2014	JS	2	0820	Lapwing	1	240	120.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	2	0950	Lapwing	4	180	90.00	90.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	2	0627	Lapwing	2	45	0.00	45.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
08/05/2014	JS	2	0649	Lapwing	1	45	0.00	0.00	23.07	0.00	0.00	0.00	0.00	21.93	0.00	0.00
11/05/2014	RS	2	0532	Lapwing	1	38	23.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0550	Lapwing	2	33	14.19	0.00	0.00	0.00	0.00	18.81	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0620	Lapwing	1	10	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
11/05/2014	RS	2	0624	Lapwing	1	25	2.31	3.47	0.00	0.00	0.00	7.69	11.53	0.00	0.00	0.00
11/05/2014	RS	2	0648	Lapwing	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2014	RS	2	0527	Lapwing	1	15	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2014	RS	2	0555	Lapwing	1	67	52.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2014	RS	2	0611	Lapwing	1	34	13.89	10.97	0.00	0.00	0.00	5.11	4.03	0.00	0.00	0.00
13/05/2014	RS	2	1952	Lapwing	1	38	23.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13/05/2014	RS	2	2034	Lapwing	2	26	16.23	0.00	0.00	0.00	0.00	9.77	0.00	0.00	0.00	0.00
18/06/2014	RS	2	1800	Lapwing	7	10	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29/07/2014	RS	2	0714	Lapwing	14	25	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
29/07/2014	RS	2	0805	Lapwing	4	38	5.29	19.85	0.00	0.00	0.00	2.71	10.15	0.00	0.00	0.00
29/07/2014	RS	2	1217	Lapwing	5	15	0.00	9.21	0.00	0.00	0.00	0.00	5.79	0.00	0.00	0.00
23/08/2014	RS	2	1025	Lapwing	8	35	15.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23/08/2014	RS	2	1052	Lapwing	4	15	0.00	11.68	0.00	0.00	0.00	0.00	3.32	0.00	0.00	0.00
23/08/2014	RS	2	1106	Lapwing	4	10	6.21	0.00	0.00	0.00	0.00	3.79	0.00	0.00	0.00	0.00
05/12/2014	DL	2	1340	Lapwing	24	70	0.00	0.00	39.49	0.00	0.00	0.00	0.00	30.51	0.00	0.00
07/03/2015	DL	2	1413	Lapwing	37	50	0.00	0.00	17.60	0.00	0.00	0.00	0.00	32.40	0.00	0.00
07/03/2015	DL	2	1449	Lapwing	35	28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.00	0.00	0.00
18/04/2019	PS	2	1732	Lapwing	1	18	9.42	0.00	0.00	0.00	0.00	8.58	0.00	0.00	0.00	0.00
08/09/2020	NR	2	1223	Lapwing	29	84	9.70	2.11	0.00	0.00	0.00	59.30	12.89	0.00	0.00	0.00
23/09/2020	NR	2	1631	Lapwing	15	76	0.00	0.00	0.00	0.00	0.00	0.00	61.00	15.00	0.00	0.00
05/10/2020	NR	2	1505	Lapwing	13	300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.00	60.00	195.00
10/11/2020	NR	2	1201	Lapwing	1	105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	105.00	0.00	0.00
16/08/2013	PG	2	1829	Merlin	1	7	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00
17/08/2013	PG	2	1641	Merlin	1	192	192.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14/10/2014	DL	2	1558	Merlin	1	16	0.00	0.00	0.00	0.00	0.00	0.00	16.00	0.00	0.00	0.00
06/11/2014	DL	2	1532	Merlin	1	47	6.92	0.00	0.00	0.00	0.00	40.08	0.00	0.00	0.00	0.00
08/04/2020	NR	2	1306	Merlin	1	18	0.00	0.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12/05/2020	NR	2	0801	Merlin	1	46	15.00	31.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
22/06/2020	NR	2	1110	Merlin	1	49	0.00	34.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22/06/2020	NR	2	1116	Merlin	1	33	2.95	29.50	0.00	0.00	0.00	0.05	0.50	0.00	0.00	0.00
02/07/2020	NR	2	1927	Merlin	1	63	1.19	5.94	17.83	0.00	0.00	1.81	9.06	27.17	0.00	0.00
05/05/2013	RS	2	0548	Osprey	1	52	0.00	0.00	0.00	0.00	0.00	0.00	9.90	29.71	12.38	0.00
05/05/2013	RS	2	0824	Osprey	1	215	15.66	15.34	46.03	19.18	0.00	19.34	18.94	56.83	23.68	0.00
07/05/2013	RS	2	0541	Osprey	1	49	0.00	9.33	28.00	11.67	0.00	0.00	0.00	0.00	0.00	0.00
11/05/2013	RS	2	1632	Osprey	1	162	0.00	0.00	0.00	19.98	79.93	0.00	0.00	0.00	12.42	49.67
13/05/2013	RS	2	0529	Osprey	1	89	0.00	3.47	10.41	4.34	0.00	0.00	13.48	40.45	16.85	0.00
17/08/2013	PG	2	0829	Osprey	2	214	64.00	28.57	85.71	35.71	0.00	0.00	0.00	0.00	0.00	0.00
17/08/2013	PG	2	0849	Osprey	1	390	97.56	11.61	34.84	14.52	0.00	142.44	16.96	50.87	21.20	0.00
17/08/2013	PG	2	1041	Osprey	1	205	0.00	0.00	0.00	0.00	0.00	45.00	30.48	91.43	38.10	0.00
11/05/2014	RS	2	1020	Osprey	1	62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.00	30.00	0.00
24/04/2019	JD	2	1234	Osprey	1	53	18.36	7.25	0.00	0.00	0.00	19.64	7.75	0.00	0.00	0.00
05/05/2020	NR	2	1540	Osprey	1	86	0.00	0.00	0.00	0.00	0.00	0.00	56.00	30.00	0.00	0.00
18/05/2020	NR	2	1317	Osprey	1	131	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.00	90.00	0.00
18/05/2020	NR	2	1422	Osprey	1	630	0.00	0.00	52.70	39.53	184.46	0.00	0.00	67.30	50.47	235.54
20/05/2020	NR	2	1809	Osprey	1	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.00	75.00	0.00
22/06/2020	NR	2	1124	Osprey	1	130	0.00	9.79	41.11	0.00	0.00	0.00	15.21	63.89	0.00	0.00
08/09/2020	NR	2	1023	Osprey	1	225	0.00	0.00	0.00	0.00	0.00	0.00	75.00	120.00	30.00	0.00
10/10/2019	NR	2	1323	Peregrine falcon	1	192	0.00	17.47	62.39	0.00	0.00	0.00	24.53	87.61	0.00	0.00
22/03/2013	JS	2	1705	Pink-footed goose	7	20	0.00	0.00	0.00	0.00	0.00	5.00	2.86	8.57	3.57	0.00
24/03/2013	RS	2	1336	Pink-footed goose	400	60	0.00	0.00	0.00	0.00	0.00	15.00	8.57	25.71	10.71	0.00
24/03/2013	RS	2	1608	Pink-footed goose	80	175	0.00	2.86	8.58	9.33	23.01	0.00	8.57	25.71	27.96	68.99
19/04/2013	RS	2	1935	Pink-footed goose	24	128	0.00	0.00	0.00	13.15	52.59	0.00	0.00	0.00	12.45	49.81
19/04/2013	RS	2	2007	Pink-footed goose	350	139	0.00	0.00	0.00	16.66	66.66	0.00	0.00	0.00	11.14	44.54
19/04/2013	RS	2	2116	Pink-footed goose	50	60	0.00	8.14	24.41	10.17	0.00	0.00	3.29	9.88	4.12	0.00
25/04/2013	RS	2	1954	Pink-footed goose	72	70	0.00	0.00	0.00	3.76	15.04	0.00	0.00	0.00	10.24	40.96
07/10/2013	JS	2	1351	Pink-footed goose	90	300	0.00	0.00	0.00	0.00	0.00	0.00	57.14	171.43	71.43	0.00
07/10/2013	JS	2	1456	Pink-footed goose	69	180	0.00	11.96	35.88	14.95	0.00	0.00	22.32	66.97	27.91	0.00
07/10/2013	JS	2	1541	Pink-footed goose	50	200	0.00	0.00	0.00	0.00	0.00	0.00	38.10	114.29	47.62	0.00
30/11/2013	JS	2	1020	Pink-footed goose	3	40	0.00	7.62	22.86	9.52	0.00	0.00	0.00	0.00	0.00	0.00
01/02/2014	DL	2	1416	Pink-footed goose	75	125	0.00	0.00	0.00	16.85	67.40	0.00	0.00	0.00	8.15	32.60
14/02/2014	RS	2	0740	Pink-footed goose	24	30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	24.00
14/02/2014	RS	2	0858	Pink-footed goose	58	43	0.00	0.00	0.00	4.57	18.27	0.00	0.00	0.00	4.03	16.13
28/02/2014	RS	2	1117	Pink-footed goose	82	35	0.00	0.00	0.00	0.00	0.00	20.00	2.86	8.57	3.57	0.00
05/04/2014	JS	2	0647	Pink-footed goose	55	90	0.00	0.00	54.24	0.00	0.00	0.00	0.00	35.76	0.00	0.00
05/04/2014	JS	2	1007	Pink-footed goose	55	120	0.00	0.00	24.29	0.00	0.00	0.00	0.00	95.71	0.00	0.00
05/04/2014	JS	2	1056	Pink-footed goose	56	120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	120.00	0.00
18/04/2014	RS	2	1026	Pink-footed goose	50	25	4.38	6.56	0.00	0.00	0.00	5.62	8.44	0.00	0.00	0.00
18/04/2014	RS	2	0538	Pink-footed goose	80	20	0.00	0.00	0.00	0.00	0.00	5.00	15.00	0.00	0.00	0.00
14/10/2014	DL	2	1342	Pink-footed goose	98	144	0.00	0.00	98.27	0.00	0.00	0.00	0.00	45.73	0.00	0.00
14/10/2014	DL	2	1354	Pink-footed goose	250	129	0.00	0.00	52.63	73.09	0.00	0.00	0.00	1.37	1.91	0.00

Date	Observer	VP	Flight start time	Species	No. of birds	Duration (s)	Inside CRAA (seconds)					Outside CRAA (seconds)				
							0-20m	21-40m	41-100m	101-150m	>150m	0-20m	21-40m	41-100m	101-150m	>150m
14/10/2014	DL	2	1702	Pink-footed goose	50	80	0.00	0.00	0.00	0.00	44.46	0.00	0.00	0.00	0.00	35.54
05/11/2014	DL	2	0826	Pink-footed goose	200	95	0.00	0.00	0.00	82.16	0.00	0.00	0.00	12.84	0.00	
10/10/2019	NR	2	1124	Pink-footed goose	21	150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	45.00	105.00	
06/11/2019	NR	2	0924	Pink-footed goose	18	145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	145.00	
06/11/2019	NR	2	1202	Pink-footed goose	120	135	0.00	0.00	0.00	0.00	58.05	0.00	0.00	0.00	76.95	
16/03/2020	NR	2	1618	Pink-footed goose	13	121	0.00	0.00	0.00	0.00	0.00	61.00	60.00	0.00	0.00	
16/03/2020	NR	2	1627	Pink-footed goose	6	95	0.00	0.00	0.00	0.00	0.00	35.00	45.00	15.00	0.00	
16/03/2020	NR	2	1644	Pink-footed goose	7	78	0.00	0.00	0.00	0.00	0.00	63.00	15.00	0.00	0.00	
16/03/2020	NR	2	1650	Pink-footed goose	45	49	0.00	0.00	0.00	0.00	0.00	19.00	30.00	0.00	0.00	
23/09/2020	NR	2	1426	Pink-footed goose	38	170	0.00	0.00	0.00	0.00	102.94	0.00	0.00	0.00	67.06	
11/10/2020	NR	2	1358	Pink-footed goose	18	67	0.00	0.00	0.00	0.00	38.88	0.00	0.00	0.00	28.12	
09/11/2020	NR	2	1333	Pink-footed goose	70	90	0.00	0.00	0.00	0.00	36.46	0.00	0.00	0.00	53.54	
10/11/2020	NR	2	0724	Pink-footed goose	80	165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	105.00	
11/11/2020	NR	2	0910	Pink-footed goose	80	54	0.00	0.00	0.00	17.70	0.00	0.00	0.00	36.30	0.00	
29/07/2014	RS	2	1020	Red kite	1	174	0.00	0.00	53.45	28.13	0.00	0.00	0.00	60.55	31.87	
09/05/2013	JS	2	2005	Red-throated diver	1	150	0.00	0.00	0.00	0.00	0.00	0.00	28.57	85.71	35.71	
19/07/2013	PG	2	2014	Red-throated diver	1	30	0.00	1.12	3.36	1.40	0.00	0.00	4.59	13.78	5.74	
19/07/2013	PG	2	2035	Red-throated diver	1	39	0.00	0.00	0.00	0.00	0.00	0.00	7.43	22.29	9.29	
20/07/2014	RS	2	1702	Sandwich tern	2	60	0.00	0.00	23.80	0.00	0.00	0.00	0.00	36.20	0.00	
15/12/2020	NR	2	1351	Short-eared owl	1	28	11.83	0.00	0.00	0.00	0.00	16.17	0.00	0.00	0.00	
15/02/2021	PS	2	1743	Short-eared owl	1	22	22.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
20/07/2014	RS	2	1858	Whimbrel	1	45	0.00	0.00	9.19	0.00	0.00	0.00	0.00	35.81	0.00	
12/01/2021	NR	2	1504	White-tailed eagle	1	43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.00	15.00	
30/11/2013	JS	2	1000	Whooper swan	6	35	0.00	5.12	15.35	6.40	0.00	0.00	1.55	4.65	1.94	
04/12/2014	DL	2	1139	Whooper swan	14	67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.00	0.00	
11/10/2020	NR	2	0926	Whooper swan	11	150	21.38	32.07	0.00	0.00	0.00	38.62	57.93	0.00	0.00	

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D.2 Flight Activity Records: Secondary Species

Table D-2 details secondary species recorded per season during flight activity surveys. Secondary species were recorded to give an indication of the use of the site by these species. Refer to **Annex B** for survey methodology and **Annex C** for weather data.

Table D-2 Summary of secondary species recorded during flight activity surveys

Species	2013 breeding season		2013/2014 non-breeding season		2014 breeding season		2014/2015 non-breeding season		2019 breeding season		2019/2020 non-breeding season		2020 breeding season		2020/2021 non-breeding season	
	No. of records	No. of birds	No. of records	No. of birds	No. of records	No. of birds	No. of records	No. of birds	No. of records	No. of birds	No. of records	No. of birds	No. of records	No. of birds	No. of records	No. of birds
Black-headed gull	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Buzzard	80	97	37	42	21	27	26	30	17	24	23	28	-	-	-	-
Common gull	17	26	-	-	1	5	-	-	-	-	-	-	2	4	-	-
Great black-backed gull	-	-	-	-	-	-	-	-	-	-	-	-	40	62	-	-
Great skua	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kestrel	8	13	-	-	3	3	6	6	1	1	-	-	27	29	3	3
Mallard	4	6	-	-	6	9	-	-	-	-	-	-	-	-	7	17
Oystercatcher	7	8	-	-	-	-	-	-	4	5	-	-	-	-	-	-
Red grouse	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	29
Redshank	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Snipe	10	10	3	11	15	16	1	1	10	10	1	1	2	3	5	13
Sparrowhawk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	20
Tawny owl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1

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Date	Observer	Survey visit	Species	Number recorded	Notes
11/07/2019	PS	8	Snipe	1	
11/07/2019	PS	8	Snipe	1	Singing.
11/07/2019	PS	8	Oystercatcher	2	
11/07/2019	PS	8	Snipe	1	Calling.
11/07/2019	PS	8	Snipe	1	Calling.
11/07/2019	PS	8	Snipe	1	Calling.
09/04/2020	KC	9	Snipe	2	
09/04/2020	KC	9	Snipe	2	
09/04/2020	KC	9	Snipe	1	
09/04/2020	KC	9	Snipe	2	
09/04/2020	KC	9	Snipe	2	
09/04/2020	KC	9	Snipe	2	
09/04/2020	KC	9	Snipe	2	
09/04/2020	KC	9	Snipe	1	
09/04/2020	KC	9	Lapwing	1	
09/04/2020	KC	9	Lapwing	1	
09/04/2020	KC	9	Snipe	1	
09/04/2020	KC	9	Snipe	1	
09/04/2020	NR	9	Snipe	2	
09/04/2020	NR	9	Snipe	2	
09/04/2020	NR	9	Snipe	1	
09/04/2020	NR	9	Snipe	1	
09/04/2020	NR	9	Snipe	1	
09/04/2020	NR	9	Snipe	1	
09/04/2020	NR	9	Snipe	1	
09/04/2020	NR	9	Snipe	1	
12/05/2020	NR	10	Snipe	1	
12/05/2020	NR	10	Snipe	1	
12/05/2020	NR	10	Snipe	1	
12/05/2020	NR	10	Snipe	1	
12/05/2020	NR	10	Snipe	1	Alarm calling.
12/05/2020	NR	10	Snipe	1	
12/05/2020	NR	10	Golden plover	1	
12/05/2020	NR	10	Snipe	1	Calling.
12/05/2020	NR	10	Snipe	1	Calling.
12/05/2020	NR	10	Snipe	1	Calling.
17/05/2020	NR	10	Snipe	1	Calling.
17/05/2020	NR	10	Snipe	1	Calling.
17/05/2020	NR	10	Snipe	1	Calling.
17/05/2020	NR	10	Snipe	1	Calling.
17/05/2020	NR	10	Snipe	1	
11/06/2020	KC	11	Snipe	5	Family; 2 adults and 3 chicks.
11/06/2020	KC	11	Snipe	1	
11/06/2020	KC	11	Snipe	1	
11/06/2020	KC	11	Snipe	1	
11/06/2020	KC	11	Snipe	2	
11/06/2020	KC	11	Lapwing	1	
11/06/2020	KC	11	Snipe	1	
11/06/2020	KC	11	Snipe	1	
11/06/2020	KC	11	Snipe	1	
11/06/2020	KC	11	Snipe	1	

Date	Observer	Survey visit	Species	Number recorded	Notes
09/07/2020	NR	12	Snipe	1	
14/07/2020	KC	12	Lapwing	1	In flight.
14/07/2020	KC	12	Snipe	1	

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D.4 Winter Walkover Records

Table D-4 details all the species recorded. Refer to Annex B for survey methodology and Annex C for weather data.

Table D-4 Winter walkover survey records: 2013/2014, 2019/2020 and 2020/2021 non-breeding seasons

Date	Observer	Survey visit	Species	Number recorded	Notes
11/12/2013	DL	1	Hen harrier	1	Ringtail; hunting.
11/12/2013	DL	1	Red grouse	4	ND 2141 5318.
28/01/2014	DL	2	Great black-backed gull	1	
28/01/2014	DL	2	Herring gull	24	
28/01/2014	DL	2	Herring gull	29	
28/01/2014	DL	2	Lapwing	40	
28/01/2014	DL	2	Pink-footed goose	60	
28/01/2014	DL	2	Red grouse	6	
28/01/2014	DL	2	Curlew	1	
28/01/2014	DL	2	Tufted duck	6	
28/01/2014	DL	2	Whooper swan	10	
13/02/2014	DL	3	Hen harrier	1	
13/02/2014	DL	3	Pink-footed goose	100	
24/11/2019	KC	4	Buzzard	1	In flight, Burn of Acharole.
24/11/2019	KC	4	Grey heron	1	In flight, Wester Watten Moss.
24/11/2019	KC	4	Hen harrier	1	
24/11/2019	KC	4	Raven	6	Cnoc sgadain.
24/11/2019	KC	4	Sparrowhawk	1	In flight, Red Burn; with kill.
24/11/2019	KC	4	Stonechat	1	Acharole.
24/11/2019	KC	4	Stonechat	1	Burn of Acharole.
24/11/2019	KC	4	Woodcock	2	
24/11/2019	NR	4	Raven	1	
24/11/2019	NR	4	Snipe	1	
24/11/2019	NR	4	Snipe	1	
24/11/2019	NR	4	Snipe	1	
24/11/2019	NR	4	Woodcock	1	In flight.
24/11/2019	NR	4	Wren	1	
06/12/2019	NR	5	Common crossbill	1	Blar an t-siomain.
06/12/2019	NR	5	Cormorant	1	
06/12/2019	NR	5	Grey heron	1	
06/12/2019	NR	5	Hen harrier	1	Hunting.
06/12/2019	NR	5	Hen harrier	1	
06/12/2019	NR	5	Hooded crow	1	
06/12/2019	NR	5	Raven	1	
06/12/2019	NR	5	Raven	1	
06/12/2019	NR	5	Raven	1	
06/12/2019	NR	5	Raven	2	

Date	Observer	Survey visit	Species	Number recorded	Notes
06/12/2019	NR	5	Red grouse	1	Red Burn.
06/12/2019	NR	5	Snipe	1	Acharole.
06/12/2019	NR	5	Snipe	1	Druimdubh.
06/12/2019	NR	5	Stonechat	1	
06/12/2019	NR	5	Stonechat	1	
06/12/2019	NR	5	Stonechat	1	
06/12/2019	NR	5	Wren	1	
06/12/2019	NR	5	Wren	1	
19/12/2019	NR	5	Buzzard	1	In flight, Red Burn.
19/12/2019	NR	5	Fieldfare	12	In flight, Red Burn.
19/12/2019	NR	5	Raven	5	
16/01/2020	PS	6	Buzzard	1	In flight, Red Burn.
16/01/2020	PS	6	Jackdaw	40	
16/01/2020	PS	6	Lesser black-backed gull	1	In flight, north of Red Burn.
16/01/2020	PS	6	Raven	21	
16/01/2020	PS	6	Stonechat	1	
22/01/2020	PS	6	Buzzard	1	In flight, Wester Watten Moss.
22/01/2020	PS	6	Coal tit	3	
22/01/2020	PS	6	Common crossbill	1	Wester Watten Moss.
22/01/2020	PS	6	Common crossbill	1	Blar an t-siomain.
22/01/2020	PS	6	Goldcrest	1	
22/01/2020	PS	6	Herring gull	1	In flight, Druim Dubh.
22/01/2020	PS	6	Herring gull	1	In flight, Druim Dubh.
22/01/2020	PS	6	Raven	3	
22/01/2020	PS	6	Robin	1	
22/01/2020	PS	6	Siskin	1	
22/01/2020	PS	6	Snipe	1	North of Red Burn.
02/02/2020	PS	7	Buzzard	1	
02/02/2020	PS	7	Coal tit	1	
02/02/2020	PS	7	Raven	1	
22/02/2020	PS	7	Common crossbill	2	Druimdubh Moss.
22/02/2020	PS	7	Fieldfare	20	
22/02/2020	PS	7	Golden eagle	1	In flight, mobbed by raven.
22/02/2020	PS	7	Raven	10	
22/02/2020	PS	7	Raven	2	
22/02/2020	PS	7	Skylark	1	
22/02/2020	PS	7	Sparrowhawk	1	In flight, Wester Watten Moss.
22/02/2020	PS	7	Starling	40	
22/02/2020	PS	7	Stonechat	1	
05/03/2020	JD	8	Buzzard	1	
05/03/2020	JD	8	Carrion crow	1	
05/03/2020	JD	8	Carrion crow	3	
05/03/2020	JD	8	Grey heron	1	
05/03/2020	JD	8	Jackdaw	30	
05/03/2020	JD	8	Mistle thrush	2	
05/03/2020	JD	8	Pied wagtail	1	
05/03/2020	JD	8	Raven	4	
05/03/2020	JD	8	Reed bunting	4	
05/03/2020	JD	8	Starling	60	
05/03/2020	JD	8	Stonechat	1	
05/03/2020	JD	8	Stonechat	1	
08/03/2020	JD	8	Carrion crow	4	

Date	Observer	Survey visit	Species	Number recorded	Notes
08/03/2020	JD	8	Common crossbill	2	Pair; female gathering nesting material.
08/03/2020	JD	8	Fieldfare	4	
08/03/2020	JD	8	Greylag goose	4	
08/03/2020	JD	8	Greylag goose	6	
08/03/2020	JD	8	Herring gull	23	
08/03/2020	JD	8	Jackdaw	20	
08/03/2020	JD	8	Raven	1	
08/03/2020	JD	8	Raven	1	
08/03/2020	JD	8	Raven	5	
08/03/2020	JD	8	Redwing	2	
08/03/2020	JD	8	Redwing	3	
08/03/2020	JD	8	Reed bunting	9	
08/03/2020	JD	8	Starling	60	
08/03/2020	JD	8	Woodcock	1	
09/11/2020	NR	9	Barn owl	1	Flushed from disused barn.
09/11/2020	NR	9	Buzzard	-	
09/11/2020	NR	9	Carrion crow	-	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	Female.
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	Female.
09/11/2020	NR	9	Hen harrier	2	
09/11/2020	NR	9	Hen harrier	1	Female.
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Hen harrier	1	
09/11/2020	NR	9	Jackdaw	-	
09/11/2020	NR	9	Kestrel	-	
09/11/2020	NR	9	Pink-footed goose	80	
09/11/2020	NR	9	Raven	-	
09/11/2020	NR	9	Short-eared owl	1	
09/11/2020	NR	9	Stonechat	-	
09/11/2020	NR	9	Woodcock	-	
09/11/2020	NR	9	Wren	-	
10/11/2020	NR	9	Buzzard	-	
10/11/2020	NR	9	Carrion crow	-	
10/11/2020	NR	9	Fieldfare	-	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Hen harrier	1	
10/11/2020	NR	9	Kestrel	-	

Date	Observer	Survey visit	Species	Number recorded	Notes
10/11/2020	NR	9	Meadow pipit	-	
10/11/2020	NR	9	Raptor species	3	Couldn't identify due to poor light.
10/11/2020	NR	9	Raven	-	
10/11/2020	NR	9	Stonechat	-	
15/12/2020	NR	10	Buzzard	-	
15/12/2020	NR	10	Carrion crow	-	
15/12/2020	NR	10	Fieldfare	-	
15/12/2020	NR	10	Hen harrier	1	
15/12/2020	NR	10	Hen harrier	1	
15/12/2020	NR	10	Jackdaw	-	
15/12/2020	NR	10	Kestrel	-	
15/12/2020	NR	10	Raven	20	
15/12/2020	NR	10	Stonechat	2	
15/12/2020	NR	10	Woodcock	1	
16/12/2020	NR	10	Barn owl	1	
16/12/2020	NR	10	Buzzard	-	
16/12/2020	NR	10	Goldeneye	2	
16/12/2020	NR	10	Grey goose	50	
16/12/2020	NR	10	Grey goose	28	
16/12/2020	NR	10	Grey goose	40	
16/12/2020	NR	10	Raven	-	
16/12/2020	NR	10	Red grouse	-	
16/12/2020	NR	10	Snipe	1	
16/12/2020	NR	10	Stonechat	-	
17/12/2020	NR	10	Buzzard	-	
17/12/2020	NR	10	Grey heron	1	
17/12/2020	NR	10	Hen harrier	1	
17/12/2020	NR	10	Hen harrier	1	
17/12/2020	NR	10	Lapwing	70	
17/12/2020	NR	10	Red grouse	-	
17/12/2020	NR	10	Sparrowhawk	1	
17/12/2020	NR	10	Stonechat	5	
17/12/2020	NR	10	Woodcock	1	
12/01/2021	NR	11	Buzzard	2	
12/01/2021	NR	11	Goldfinch	2	
12/01/2021	NR	11	Hen harrier	1	
12/01/2021	NR	11	Hen harrier	1	
12/01/2021	NR	11	Hen harrier	1	
12/01/2021	NR	11	Hen harrier	1	
12/01/2021	NR	11	Hen harrier	1	
12/01/2021	NR	11	Jackdaw	40	
12/01/2021	NR	11	Kestrel	2	
12/01/2021	NR	11	Red grouse	1	
12/01/2021	NR	11	Snipe	2	
12/01/2021	NR	11	Stonechat	3	
12/01/2021	NR	11	Wren		
18/01/2021	NR	11	Grey heron	1	
18/01/2021	NR	11	Hen harrier	1	Hunting.
18/01/2021	NR	11	Hen harrier	1	Hunting.
18/01/2021	NR	11	Hen harrier	1	Hunting.
18/01/2021	NR	11	Hen harrier	1	Hunting.
18/01/2021	NR	11	Raven	3	

Date	Observer	Survey visit	Species	Number recorded	Notes
18/01/2021	NR	11	Reed bunting	1	
26/01/2021	NR	11	Black-headed gull	1	
26/01/2021	NR	11	Buzzard	2	
26/01/2021	NR	11	Hen harrier	1	
26/01/2021	NR	11	Hen harrier	1	
26/01/2021	NR	11	Hen harrier	1	
26/01/2021	NR	11	Hen harrier	1	
26/01/2021	NR	11	Jack snipe	1	
26/01/2021	NR	11	Red grouse	3	
26/01/2021	NR	11	Reed bunting	3	
26/01/2021	NR	11	Stonechat	-	
26/01/2021	NR	11	Woodcock	1	
26/01/2021	NR	11	Woodcock	1	
26/01/2021	NR	11	Wren	-	
10/02/2021	NR	12	Barn owl	1	
10/02/2021	NR	12	Buzzard	1	
10/02/2021	NR	12	Greylag goose	16	
10/02/2021	NR	12	Kestrel	1	
10/02/2021	NR	12	Short-eared owl	1	Hunting.
10/02/2021	NR	12	Short-eared owl	1	
10/02/2021	NR	12	Stonechat	1	
10/02/2021	NR	12	Woodcock	1	
11/02/2021	NR	12	Buzzard	1	
11/02/2021	NR	12	Buzzard	1	
11/02/2021	NR	12	Merlin	1	
11/02/2021	NR	12	Pellets	-	Barn owl pellets.
11/02/2021	NR	12	Reed bunting	1	
11/02/2021	NR	12	Short-eared owl	1	
11/02/2021	NR	12	Short-eared owl	2	
11/02/2021	NR	12	Short-eared owl	1	
11/02/2021	NR	12	Short-eared owl	1	
12/02/2021	NR	12	Buzzard	1	
12/02/2021	NR	12	Buzzard	1	In flight, Burn of Acharole.
12/02/2021	NR	12	Dunnock	1	
12/02/2021	NR	12	Kestrel	2	
12/02/2021	NR	12	Kestrel	1	
05/03/2021	PS	13	Barn owl	1	
05/03/2021	PS	13	Buzzard	1	
05/03/2021	PS	13	Buzzard	1	
05/03/2021	PS	13	Buzzard	1	In flight, Blar an t-Siomain.
05/03/2021	PS	13	Buzzard	2	In flight, West Watten Holdings
05/03/2021	PS	13	Buzzard	1	
05/03/2021	PS	13	Greylag goose	25	
05/03/2021	PS	13	Greylag goose	250	
05/03/2021	PS	13	Greylag goose	15	
05/03/2021	PS	13	Hen harrier	1	
05/03/2021	PS	13	Herring gull	5	
05/03/2021	PS	13	Herring gull	1	
05/03/2021	PS	13	Kestrel	1	Female.
05/03/2021	PS	13	Kestrel	1	Female.

D.5 Scarce Breeding Bird Records

Table D-5 details all records of raptors, divers and owls recorded during surveys, however only Annex 1¹ or Schedule 1² species are considered to be scarce breeding birds (i.e. target species). Refer to **Annex B** for survey methodology, **Annex C** for weather data and **Confidential Technical Appendix A8.2** for confidential data relating to barn owl, hen harrier, merlin and osprey.

Table D-5 Raptor, owl and diver records: 2013, 2014, 2019, 2020 and 2022 breeding seasons

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
24/03/2013	Buzzard	2	-	-	-	
24/03/2013	Buzzard	6	-	-	-	
24/03/2013	Buzzard	2	-	-	-	
24/03/2013	Buzzard	1	-	-	-	
26/03/2013	Buzzard	1	-	-	-	Displaying.
26/03/2013	Buzzard	1	-	-	-	
26/03/2013	Buzzard	2	-	-	-	
26/03/2013	Buzzard	2	-	-	-	
26/03/2013	Buzzard	1	-	-	-	
26/03/2013	Buzzard	1	-	-	-	
26/03/2013	Hen harrier	1	-	-	-	Heard only.
26/03/2013	Buzzard	1	-	-	-	Pair.
26/03/2013	Buzzard	1	-	-	-	
10/04/2013	Buzzard	1	-	-	-	Hunting.
10/04/2013	Buzzard	1	-	-	-	Pair.
10/04/2013	Buzzard	1	-	-	-	Pair.
10/04/2013	Buzzard	1	-	-	-	
10/04/2013	Buzzard	1	-	-	-	
16/04/2013	Buzzard	1	-	-	-	
16/04/2013	Buzzard	1	-	-	-	
16/04/2013	Buzzard	1	-	-	-	
16/04/2013	Buzzard	1	-	-	-	
19/04/2013	Buzzard	1	-	-	-	
19/04/2013	Buzzard	1	-	-	-	
21/04/2013	Buzzard	3	-	-	-	
23/04/2013	Buzzard	1	-	-	-	
23/04/2013	Buzzard	1	-	-	-	
23/04/2013	Buzzard	1	-	-	-	
23/04/2013	Buzzard	1	-	-	-	
24/04/2013	Red-throated diver	1	-	Adult	-	
24/04/2013	Red-throated diver	1	-	Adult	-	
25/04/2013	Buzzard	1	-	-	-	
25/04/2013	Buzzard	1	-	-	-	
25/04/2013	Buzzard	2	-	-	-	
26/04/2013	Red-throated diver	1	-	Adult	-	
29/04/2013	Buzzard	1	-	-	-	
29/04/2013	Buzzard	1	-	-	-	
29/04/2013	Buzzard	1	-	-	-	
30/04/2013	Buzzard	1	-	-	-	
30/04/2013	Buzzard	1	-	-	-	
30/04/2013	Buzzard	1	-	-	-	

¹ Annex 1 of the EU Bird Directive

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
30/04/2013	Buzzard	1	-	-	-	
01/05/2013	Buzzard	1	-	-	-	
01/05/2013	Buzzard	1	-	-	-	
04/05/2013	Buzzard	1	-	-	-	
05/05/2013	Buzzard	1	-	-	-	
05/05/2013	Buzzard	1	-	-	-	
05/05/2013	Buzzard	1	-	-	-	
05/05/2013	Buzzard	1	-	-	-	
07/05/2013	Buzzard	1	-	-	-	
07/05/2013	Buzzard	1	-	-	-	
08/05/2013	Buzzard	1	-	-	-	
08/05/2013	Buzzard	1	-	-	-	Calling.
08/05/2013	Buzzard	1	-	-	-	Calling.
09/05/2013	Osprey	1	-	Adult	-	
10/05/2013	Buzzard	1	-	-	-	
11/05/2013	Osprey	1	-	Adult	-	
11/05/2013	Buzzard	1	-	-	-	
11/05/2013	Buzzard	1	-	-	-	
13/05/2013	Buzzard	1	-	-	-	
14/05/2013	Osprey	1	-	Adult	-	
14/05/2013	Osprey	1	-	Adult	-	
14/05/2013	Osprey	1	-	Adult	-	
14/05/2013	Osprey	1	-	Adult	-	
14/05/2013	Red-throated diver	1	-	Adult	-	
15/05/2013	Buzzard	1	-	-	-	
15/05/2013	Buzzard	1	-	-	-	
15/05/2013	Buzzard	2	-	-	-	
16/05/2013	Red-throated diver	1	-	Adult	-	
05/06/2013	Red-throated diver	1	-	Adult	-	
06/06/2013	Buzzard	1	-	-	-	
11/06/2013	Osprey	1	-	-	-	
18/06/2013	Black-throated diver	1	-	Adult	-	
18/06/2013	Black-throated diver	1	-	Adult	-	
18/06/2013	Black-throated diver	5	-	Adult	-	
18/06/2013	Great northern diver	1	-	Adult	-	
18/06/2013	Red-throated diver	1	-	Adult	-	
22/06/2013	Black-throated diver	1	-	Adult	-	
22/06/2013	Osprey	1	-	Adult	-	
22/06/2013	Osprey	1	-	Adult	-	
22/06/2013	Osprey	1	-	Adult	-	
22/06/2013	Osprey	1	-	Adult	-	
25/06/2013	Buzzard	3	-	-	-	
25/06/2013	Red-throated diver	2	Pair	Adult	-	
25/06/2013	Red-throated diver	1	-	Adult	-	
27/06/2013	Osprey	1	-	Adult	-	
27/06/2013	Red-throated diver	1	-	Adult	-	
01/07/2013	Buzzard	1	-	-	-	
09/07/2013	Black-throated diver	1	-	Adult	-	
09/07/2013	Black-throated diver	1	-	Adult	-	

² Schedule 1 of the Wildlife and Countryside Act 1981, as amended by the Nature Conservation Act (Scotland) 2004

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
09/07/2013	Hen harrier	1	Male	Adult	-	
09/07/2013	Hen harrier	1	Male	Adult	-	
10/07/2013	Black-throated diver	1	-	Adult	-	
14/07/2013	Osprey	1	-	Adult	-	
14/07/2013	Osprey	1	-	Adult	-	
14/07/2013	Red-throated diver	1	-	Adult	-	
14/07/2013	Red-throated diver	1	-	Adult	-	
14/07/2013	Red-throated diver	1	-	Adult	-	
14/07/2013	Red-throated diver	1	-	Adult	-	
17/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	1	-	-	-	Hunting.
20/07/2013	Buzzard	2	-	-	-	Hunting.
20/07/2013	Buzzard	1	-	-	-	Hunting.
20/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	2	-	-	-	
20/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	1	-	-	-	
20/07/2013	Buzzard	1	-	-	-	
23/07/2013	Red-throated diver	2	Male/female	Adult	-	
24/07/2013	Barn owl	1	-	Adult	-	
27/07/2013	Red kite	1	-	Adult	-	
03/08/2013	Osprey	1	-	Adult	-	Carrying fish.
03/08/2013	Red-throated diver	1	-	Adult	-	
03/08/2013	Sparrowhawk	2	-	-	-	Pair.
06/08/2013	Red-throated diver	1	-	Adult	-	Heard only.
06/08/2013	Red-throated diver	1	-	Adult	-	
06/08/2013	Red-throated diver	1	-	Adult	-	
06/08/2013	Red-throated diver	1	-	Adult	-	
06/08/2013	Red-throated diver	1	-	Adult	-	
06/08/2013	Red-throated diver	2	-	Adult	-	Pair; displaying.
06/08/2013	Red-throated diver	1	-	Adult	-	
06/08/2013	Red-throated diver	1	-	Adult	-	
06/08/2013	Red-throated diver	2	-	Adult	-	Adult with 1 large chick.
06/08/2013	Barn owl	1	-	Adult	-	
06/08/2013	Merlin	1	-	Adult	-	
07/08/2013	Red-throated diver	1	-	Adult	-	Heard only.
07/08/2013	Red-throated diver	1	-	Adult	-	Heard only.
07/08/2013	Red-throated diver	1	-	Adult	-	
07/08/2013	Red-throated diver	1	-	Adult	-	Calling.
07/08/2013	Red-throated diver	1	-	Adult	-	Calling.
07/08/2013	Merlin	1	-	Adult	-	
09/08/2013	Red-throated diver	1	-	Adult	-	
09/08/2013	Red-throated diver	1	-	Adult	-	
09/08/2013	Hen harrier	1	-	Adult	-	
09/08/2013	Merlin	1	-	Adult	-	Calling.
09/08/2013	Osprey	1	-	Adult	-	
10/08/2013	Red-throated diver	1	-	Adult	-	
10/08/2013	Red-throated diver	1	-	Adult	-	Heard only.

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
10/08/2013	Red-throated diver	1	-	Adult	-	
10/08/2013	Red-throated diver	1	-	Adult	-	
10/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	1	-	Adult	-	
12/08/2013	Red-throated diver	2	-	Adult	-	Adult with chick.
12/08/2013	Buzzard	1	-	-	-	Calling.
13/08/2013	Red-throated diver	1	-	Adult	-	Heard only.
13/08/2013	Red-throated diver	1	-	Adult	-	Roosting.
13/08/2013	Red-throated diver	1	-	Adult	-	
13/08/2013	Red-throated diver	1	-	Adult	-	
13/08/2013	Red-throated diver	1	-	Adult	-	
13/08/2013	Red-throated diver	1	-	Adult	-	
13/08/2013	Red-throated diver	4	-	Adult	-	
16/08/2013	Buzzard	1	-	-	-	
16/08/2013	Buzzard	1	-	-	-	
17/08/2013	Buzzard	1	-	-	-	
17/08/2013	Buzzard	1	-	-	-	
17/08/2013	Buzzard	1	-	-	-	Hunting.
17/08/2013	Buzzard	1	-	-	-	Juvenile.
17/08/2013	Buzzard	1	-	-	-	
04/04/2014	Buzzard	1	-	-	-	
05/04/2014	Buzzard	1	-	-	-	
05/04/2014	Buzzard	2	-	-	-	
05/04/2014	Buzzard	1	-	-	-	
05/04/2014	Buzzard	1	-	-	-	
05/04/2014	Buzzard	2	-	-	-	
09/04/2014	Merlin	1	Male	Adult	-	Hunting.
09/04/2014	Red-throated diver	1	-	Adult	-	
11/04/2014	Buzzard	2	-	-	-	
11/04/2014	Buzzard	1	-	-	-	
16/04/2014	Buzzard	1	-	-	-	
18/04/2014	Buzzard	2	-	-	-	
18/04/2014	Buzzard	1	-	-	-	Hunting.
18/04/2014	Buzzard	1	-	-	-	
18/04/2014	Buzzard	1	-	-	-	
18/04/2014	Merlin	1	-	-	-	Juvenile/female; hunting and caught prey.
18/04/2014	Red-throated diver	-	-	Adult	-	Heard only.
18/04/2014	Red-throated diver	1	-	Adult	-	
18/04/2014	Red-throated diver	2	-	Adult	-	
18/04/2014	Red-throated diver	2	-	Adult	-	
18/04/2014	Buzzard	1	-	-	-	Calling.

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
18/04/2014	Buzzard	1	-	-	-	
18/04/2014	Buzzard	1	-	-	-	
28/04/2014	Buzzard	2	-	-	-	
06/05/2014	Buzzard	2	-	-	-	
07/05/2014	Hen harrier	1	Female	Adult	-	Hunting
07/05/2014	Hen harrier	1	Female	Adult	-	Hunting
07/05/2014	Merlin	1	Male	Adult	-	Displaying and calling.
07/05/2014	Red-throated diver	1	-	Adult	-	
07/05/2014	Red-throated diver	1	-	Adult	-	
07/05/2014	Buzzard	1	-	-	-	
08/05/2014	Red-throated diver	1	-	Adult	-	
08/05/2014	Buzzard	1	-	-	-	
08/05/2014	Buzzard	1	-	-	-	
10/05/2014	Buzzard	1	-	-	-	
11/05/2014	Red-throated diver	1	-	Adult	-	
17/06/2014	Osprey	1	-	Adult	-	Hunting.
19/07/2014	Red-throated diver	2	-	Adult	-	
20/07/2014	Hen harrier	1	Female	Adult	-	Hunting.
20/07/2014	Hen harrier	1	Male	Adult	-	Hunting.
11/08/2014	Hen harrier	1	Male	Adult	-	Hunting.
11/08/2014	Red-throated diver	1	-	Adult	-	
18/08/2014	Buzzard	2	-	-	-	Hunting.
18/08/2014	Buzzard	1	-	-	-	Hunting.
18/08/2014	Buzzard	1	-	-	-	Hunting.
07/03/2015	Buzzard	1	-	-	-	
07/03/2015	Buzzard	1	-	-	-	
13/03/2015	Hen harrier	1	Male	Adult	-	Landed.
13/03/2015	Hen harrier	1	Male	Adult	-	Hunting then landed.
18/04/2019	Buzzard	1	-	-	-	
18/04/2019	Buzzard	1	-	-	-	
18/04/2019	Buzzard	1	-	-	-	
18/04/2019	Buzzard	1	-	-	-	
18/04/2019	Buzzard	1	-	-	-	
18/04/2019	Buzzard	1	-	-	-	
18/04/2019	Buzzard	1	-	-	-	
18/04/2019	Buzzard	1	-	-	-	
27/04/2019	Osprey	2	Pair	Adult	OP_1	Pair; mating.
28/04/2019	Osprey	1	-	Adult	OP_1	
28/04/2019	Red-throated diver	2	-	Adult	-	Feeding.
29/04/2019	Buzzard	1	-	-	-	Calling.
29/04/2019	Buzzard	1	-	-	-	Calling.
29/04/2019	Sparrowhawk	1	-	-	-	
30/04/2019	Buzzard	-	-	-	-	
30/04/2019	Hen harrier	1	Male	Adult	-	
30/04/2019	Merlin	1	Male	Adult	-	
30/04/2019	Osprey	1	-	Adult	OP_1	
01/05/2019	Golden eagle	1	-	Adult	-	Perched.
01/05/2019	Osprey	1	-	Adult	OP_1	Calling.
01/05/2019	Red-throated diver	2	-	Adult	-	
02/05/2019	Buzzard	1	-	-	-	
02/05/2019	Buzzard	2	-	-	-	

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
02/05/2019	Buzzard	2	-	-	-	
02/05/2019	Buzzard	1	-	-	-	
03/05/2019	Osprey	1	-	Adult	OP_1	
03/05/2019	Osprey	1	-	Adult	OP_1	
03/05/2019	Osprey	1	-	Adult	OP_1	
13/05/2019	Buzzard	1	-	-	-	
13/05/2019	Golden eagle	1	-	Adult	-	Mobbed by three buzzards.
13/05/2019	Hen harrier	1	Male	Adult	-	
13/05/2019	Osprey	1	-	Adult	OP_1	
13/05/2019	Osprey	1	-	Adult	OP_1	
13/05/2019	Peregrine falcon	1	Female	Adult	-	
14/05/2019	Sparrowhawk	1	-	-	-	
31/05/2019	Osprey	1	-	Adult	OP_1	
05/06/2019	Buzzard	1	-	-	-	Calling.
05/06/2019	Buzzard	2	-	-	-	
05/06/2019	Buzzard	1	-	-	-	
05/06/2019	Buzzard	1	-	-	-	Hunting.
05/06/2019	Buzzard	1	-	-	-	Hunting.
05/06/2019	Osprey	1	-	Adult	OP_1	
05/06/2019	Short-eared owl	1	-	Adult	-	Hunting.
05/06/2019	Osprey	1	-	Adult	OP_1	Hunting.
05/06/2019	Osprey	1	-	Adult	OP_1	
05/06/2019	Osprey	1	-	Adult	OP_1	Hunting.
05/06/2019	Osprey	1	-	Adult	OP_1	
05/06/2019	Osprey	1	-	Adult	OP_1	
17/06/2019	Osprey	1	-	Adult	OP_1	Carrying fish.
17/06/2019	Osprey	1	-	Adult	OP_1	
19/06/2019	Buzzard	1	-	-	-	
20/06/2019	Buzzard	1	-	-	-	
20/06/2019	Buzzard	1	-	-	-	Hunting.
20/06/2019	Buzzard	1	-	-	-	
20/06/2019	Buzzard	1	-	-	-	
20/06/2019	Kestrel	1	Female	Adult	-	
20/06/2019	Merlin	1	Female	Adult	-	
20/06/2019	Buzzard	2	-	-	-	
21/06/2019	Buzzard	1	-	-	-	
21/06/2019	Buzzard	1	-	-	-	
21/06/2019	Kestrel	1	Male	Adult	-	Carrying prey.
28/06/2019	Hen harrier	1	Female	Adult	-	
28/06/2019	Osprey	1	-	Adult	OP_1	
02/07/2019	Buzzard	1	-	-	-	
02/07/2019	Buzzard	2	-	-	-	Hunting.
02/07/2019	Osprey	1	-	Adult	OP_1	Hunting.
02/07/2019	Osprey	1	-	Adult	OP_1	
02/07/2019	Osprey	1	-	Adult	OP_1	Hunting.
11/07/2019	Buzzard	1	-	-	-	Calling.
11/07/2019	Buzzard	1	-	-	-	Calling.
11/07/2019	Osprey	1	-	Adult	OP_1	
11/07/2019	Sparrowhawk	1	Female	Adult	-	
12/07/2019	Buzzard	1	-	-	-	
12/07/2019	Hen harrier	1	Male	Adult	-	Hunting.

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
12/07/2019	Osprey	1	-	Adult	OP_1	
12/07/2019	Osprey	1	-	Adult	OP_1	
12/07/2019	Buzzard	2	-	-	-	
12/07/2019	Buzzard	1	-	-	-	
15/07/2019	Osprey	1	-	Adult	OP_1	
15/07/2019	Red-throated diver	1	-	Adult	-	Hunting.
17/07/2019	Buzzard	1	-	-	-	
17/07/2019	Osprey	1	-	Adult	OP_1	Hunting.
17/07/2019	Osprey	1	-	Adult	OP_1	Hunting.
17/07/2019	Osprey	1	-	Adult	OP_1	Hunting.
17/07/2019	Osprey	1	-	Adult	OP_1	Hunting.
17/07/2019	Buzzard	4	-	-	-	
07/08/2019	Osprey	1	-	Adult	-	
07/08/2019	Osprey	1	-	Adult	-	Hunting.
07/08/2019	Osprey	1	-	Adult	-	
09/08/2019	Merlin	1	Female	Adult	-	
23/08/2019	Kestrel	1	-	-	-	
23/08/2019	Buzzard	1	-	-	-	
05/03/2020	Buzzard	2	-	-	-	
05/03/2020	Buzzard	1	-	-	-	
05/03/2020	Buzzard	1	-	-	-	
07/03/2020	Buzzard	1	-	-	-	Calling.
08/03/2020	Buzzard	1	-	-	-	
07/04/2020	Buzzard	1	-	-	-	
07/04/2020	Buzzard	1	-	-	-	
07/04/2020	Hen harrier	1	Female	Adult	HH_1	
07/04/2020	Hen harrier	1	Female	Adult	HH_1	Hunting.
07/04/2020	Kestrel	1	-	-	-	
07/04/2020	Sparrowhawk	1	-	-	-	Male; hunting.
07/04/2020	Sparrowhawk	2	-	-	-	Pair; displaying.
08/04/2020	Buzzard	1	-	-	-	
08/04/2020	Buzzard	1	-	-	-	
08/04/2020	Buzzard	1	-	-	-	
08/04/2020	Buzzard	1	-	-	-	
08/04/2020	Hen harrier	1	Female	Adult	HH_1	
08/04/2020	Hen harrier	1	Female	Adult	HH_1	
08/04/2020	Hen harrier	2	Male/Female	Adult	HH_1	Displaying.
09/04/2020	Kestrel	1	-	-	-	Nesting in old crow's nest.
09/04/2020	Merlin	1	-	-	ML_1	
09/04/2020	Peregrine falcon	1	-	Adult	-	
09/04/2020	Red-throated diver	2	Male/Female	Adult	-	
22/04/2020	Kestrel	1	-	-	-	
22/04/2020	Kestrel	1	-	-	-	
22/04/2020	Kestrel	2	-	-	-	Pair; mating.
22/04/2020	Merlin	1	Male	Adult	ML_1	
22/04/2020	Osprey	1	-	Adult	OP_1	
22/04/2020	Osprey	1	-	Adult	OP_1	
03/05/2020	Osprey	1	-	Adult	-	
03/05/2020	Red-throated diver	1	-	Adult	-	
05/05/2020	Osprey	1	-	Adult	OP_1	
05/05/2020	Osprey	2	-	Adult	OP_1	

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
13/05/2020	Osprey	1	-	Adult	-	
14/05/2020	Hen harrier	1	Female	Adult	HH_1	
14/05/2020	Hen harrier	1	Male	Adult	HH_1	Displaying.
18/05/2020	Kestrel	1	-	-	-	
18/05/2020	Kestrel	1	-	-	-	
18/05/2020	Kestrel	1	-	-	-	
20/05/2020	Osprey	1	-	Adult	-	
20/05/2020	Kestrel	1	-	-	-	
20/05/2020	Kestrel	1	-	-	-	
20/05/2020	Kestrel	1	-	-	-	
20/05/2020	Kestrel	1	-	-	-	
20/05/2020	Kestrel	1	-	-	-	
20/05/2020	Kestrel	1	-	-	-	
20/05/2020	Kestrel	1	-	-	-	
20/05/2020	Kestrel	1	-	-	-	
20/05/2020	Kestrel	1	-	-	-	
20/05/2020	Kestrel	1	-	-	-	
25/05/2020	Osprey	1	-	-	-	
03/06/2020	Osprey	1	-	-	-	
03/06/2020	Osprey	1	-	Adult	OP_1	
03/06/2020	Osprey	2	Male/Female	Adult	OP_1	
03/06/2020	Kestrel	1	-	-	-	
03/06/2020	Kestrel	1	-	-	-	
10/06/2020	Hen harrier	1	Female	Adult	-	Hunting.
10/06/2020	Hen harrier	1	Female	Adult	-	Hunting.
10/06/2020	Merlin	1	Female	-	-	Hunting.
10/06/2020	Osprey	1	-	Adult	OP_1	Carrying fish.
10/06/2020	Peregrine falcon	1	-	Adult	-	Hunting; caught a starling.
13/06/2020	Osprey	1	-	Adult	-	
13/06/2020	Osprey	1	-	Adult	-	
13/06/2020	Barn owl	1	Female	Adult	BO_1	
13/06/2020	Barn owl	1	-	Adult	BO_1	
13/06/2020	Barn owl	1	-	Adult	BO_1	
13/06/2020	Barn owl	1	-	Adult	BO_1	Carrying food.
13/06/2020	Barn owl	1	-	Adult	BO_1	
14/06/2020	Hen harrier	1	Male	Adult	HH_1	Carrying food.
22/06/2020	Kestrel	1	-	-	-	
22/06/2020	Kestrel	1	-	-	-	
22/06/2020	Kestrel	1	-	-	-	
22/06/2020	Kestrel	1	-	-	-	
22/06/2020	Kestrel	1	-	-	-	
22/06/2020	Kestrel	1	-	-	-	
22/06/2020	Kestrel	2	-	-	-	
26/06/2020	Osprey	1	-	Adult	-	
26/06/2020	Osprey	1	-	Adult	-	
02/07/2020	Kestrel	2	-	-	-	
02/07/2020	Merlin	1	Female	Adult	ML_1	Mobbing crow.
06/07/2020	Merlin	1	Female	Adult	-	
06/07/2020	Osprey	1	-	Adult	-	Caught fish then mobbed by female merlin.
06/07/2020	Red-throated diver	2	Male/Female	Adult	-	
09/07/2020	Merlin	1	-	Adult	ML_1	

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
09/07/2020	Merlin	2	-	Adult	ML_1	
09/07/2020	Osprey	1	-	Adult	OP_1	
09/07/2020	Osprey	1	-	Adult	OP_1	Mobbing buzzard.
10/07/2020	Osprey	1	-	Adult	-	
10/07/2020	Red-throated diver	1	-	Adult	-	
14/07/2020	Merlin	1	-	Adult	ML_1	
14/07/2020	White-tailed eagle	1	-	Adult	-	Flushed from carcass.
14/07/2020	Hobby	1	-	Juvenile	-	
15/07/2020	Kestrel	1	-	-	-	
10/08/2020	Kestrel	1	-	-	-	
10/08/2020	Kestrel	1	-	-	-	
10/08/2020	Kestrel	1	-	-	-	Male; hunting.
11/08/2020	Osprey	1	-	Adult	-	
11/08/2020	Osprey	1	-	Adult	-	
11/08/2020	Sparrowhawk	2	-	-	-	Juvenile.
15/03/2022	Buzzard	1	-	-	-	
15/03/2022	Kestrel	1	-	-	-	
16/03/2022	Buzzard	2	-	-	-	Pair.
16/03/2022	Buzzard	2	-	-	-	Alarm calling.
16/03/2022	Hen harrier	1	Ringtail	Ringtail	-	
22/04/2022	Buzzard	1	-	-	-	
22/04/2022	Goshawk	2	Male/female	Adult	-	
22/04/2022	Osprey	1	-	Adult	OP_1	
22/04/2022	Red-throated diver	2	Male/female	Adult	RH_1	
22/04/2022	Red-throated diver	2	-	Adult	RH_1	
22/04/2022	Goshawk	2	Male/female	Adult	-	
22/04/2022	Osprey	1	-	Adult	OP_1	Aggressive interaction with raven.
22/04/2022	Red-throated diver	1	-	Adult	-	
14/05/2022	Buzzard	1	-	-	-	In flight, Moss of Toftingall.
14/05/2022	Buzzard	1	-	-	-	Perched at Blackisle; calling.
14/05/2022	Buzzard	1	-	-	-	In flight; Hill of Acharole; landed in plantation.
14/05/2022	Kestrel	1	-	-	-	Took off from plantation on Hill of Acharole.
13/06/2022	Buzzard	1	-	-	-	In flight, Backlass.
13/06/2022	Hen harrier	1	Female	Adult	-	
13/06/2022	Osprey	1	-	Adult	-	
14/06/2022	Buzzard	1	-	-	-	In flight, Acharole.
14/06/2022	Buzzard	1	-	-	-	In flight, Arachole.
14/06/2022	Buzzard	1	-	-	-	In flight, Acharole.
14/06/2022	Buzzard	1	-	-	-	In flight; Backlass Moss; carrying food.
14/06/2022	Hen harrier	1	Male	Immature	-	Second calendar year.
14/06/2022	Kestrel	1	-	-	-	In flight, Loch of Toftingall.
14/06/2022	Osprey	1	-	Adult	-	
15/06/2022	Buzzard	1	-	-	-	In flight, Acharole.
15/06/2022	Kestrel	1	-	-	-	In flight, Millton.
05/07/2022	Buzzard	1	-	-	-	In flight, Acharole.
05/07/2022	Buzzard	1	-	-	-	In flight, Wester Watten Moss.
05/07/2022	Buzzard	1	-	-	-	In flight, Shielton.

Date	Species	Number recorded	Sex	Age	Nest ID	Notes
05/07/2022	Buzzard	1	-	-	-	In flight, Backlass.
05/07/2022	Hen harrier	1	Male	Adult	-	Hunting.
05/07/2022	Kestrel	1	-	-	-	In flight, Wester Watten Moss.
05/07/2022	Osprey	1	-	Adult	-	
05/07/2022	Osprey	1	-	Adult	OP_1	
05/07/2022	Osprey	2	-	Adult	OP_1	
28/08/2022	Buzzard	1	-	-	-	In flight, Wester Watten Moss.
28/08/2022	Hen harrier	1	Ringtail	Ringtail	-	
28/08/2022	Kestrel	1	-	-	-	In flight, Acharole.

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D.6 Hen Harrier Roost Records

Hen harrier roost surveys were undertaken during the 2013/2014 and 2014/2015 non-breeding seasons. **Table D-6** details hen harrier activity recorded during these surveys.

Table D-6 Hen harrier roost records: 2013/2014 and 2014/2015 non-breeding seasons

Date	Species	Number recorded	Sex	Age	Notes
27/11/2013	Hen harrier	1	Male	Adult	
18/12/2013	Hen harrier	1	Ringtail	Ringtail	Flew directly to roost.
26/02/2014	Hen harrier	1	Female	Adult	
17/09/2014	Hen harrier	1	Male	Adult	Landed on site.
17/09/2014	Hen harrier	1	Ringtail	Ringtail	Could not age bird due to low light.
18/09/2014	Hen harrier	1	-	Adult	
18/09/2014	Hen harrier	1	Male	Adult	Emerged from rushes; lost sight.
28/10/2014	Hen harrier	1	Male	Adult	Hunting then roosting.
28/10/2014	Hen harrier	1	Female	Adult	Hunting then roosting.
06/11/2014	Hen harrier	1	Male	Adult	Took flight.
06/11/2014	Hen harrier	1	Female	Adult	
06/11/2014	Hen harrier	2	Male/Female	Adult	Landed on post.
23/11/2014	Hen harrier	1	Female	Adult	Landed.
23/11/2014	Hen harrier	1	Female	Adult	Hunting; lost sight over trees.
23/11/2014	Hen harrier	1	Female	Adult	Hunting.
23/11/2014	Hen harrier	1	Male	Adult	Hunting.
03/12/2014	Hen harrier	1	Male	Adult	Settled on ground; not seen to fly again; possibly roosting.
05/01/2015	Hen harrier	1	Female	Adult	
05/01/2015	Hen harrier	1	Female	Adult	Hunting then landed.
25/01/2015	Hen harrier	1	Female	Adult	Hunting.
25/01/2015	Hen harrier	1	Male	Adult	Hunting.
25/01/2015	Hen harrier	1	Male	Adult	Hunting.
13/03/2015	Hen harrier	1	Male	Adult	Landed.
13/03/2015	Hen harrier	1	Male	Adult	Hunting then landed.

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D.7 Diver Flight Activity Records

Targeted diver flight activity surveys were undertaken during the 2013 and 2020 breeding seasons. **Table D-7** details diver activity recorded during these surveys.

Table D-7 Diver flight activity records: 2013 and 2020 breeding seasons

Date	Species	Number recorded	Notes
23/07/2013	Red-throated diver	2	Pair.
06/08/2013	Red-throated diver	1	First member of pair flew in from the north-east carrying fish.
06/08/2013	Red-throated diver	1	Second member of pair flew in carrying fish.
06/08/2013	Red-throated diver	1	Flew out towards Toftingall.
06/08/2013	Red-throated diver	1	Flew in to Kensary.
06/08/2013	Red-throated diver	2	Pair; flew to Shileton and landed.
06/08/2013	Red-throated diver	1	Flew in to Kensary; calling.
06/08/2013	Red-throated diver	1	Took flight from Kensary; headed north-east.
07/08/2013	Red-throated diver	1	Flew in; carrying fish.
07/08/2013	Red-throated diver	1	Flew out towards Toftingall; calling.
07/08/2013	Red-throated diver	1	Flew out towards Toftingall; calling.
09/08/2013	Red-throated diver	1	
09/08/2013	Red-throated diver	1	Flew towards sea over Wind Farm.
10/08/2013	Red-throated diver	1	Flew in from north-east.
10/08/2013	Red-throated diver	1	Flew out north-east towards Toftingall.
10/08/2013	Red-throated diver	1	
12/08/2013	Red-throated diver	1	Flew in from the east.
12/08/2013	Red-throated diver	1	Flew in from the south-east.
12/08/2013	Red-throated diver	1	Flew towards Toftingall.
12/08/2013	Red-throated diver	1	Flew towards Toftingall.
12/08/2013	Red-throated diver	1	Flew in from north-west.
12/08/2013	Red-throated diver	1	Flew in from north-west.
12/08/2013	Red-throated diver	1	Flew towards Toftingall.
12/08/2013	Red-throated diver	1	Flew towards Toftingall.
12/08/2013	Red-throated diver	1	
12/08/2013	Red-throated diver	1	Flew in from north-west.
13/08/2013	Red-throated diver	1	Flew towards Toftingall.
13/08/2013	Red-throated diver	1	Flew in from south-east.
13/08/2013	Red-throated diver	1	Flew towards Toftingall.
13/08/2013	Red-throated diver	1	Flew into Kensary from the north-west; displaying.
13/08/2013	Red-throated diver	1	Flew into Shielton from the east.
13/08/2013	Red-throated diver	4	Flew out from Shielton towards Toftingall and beyond.

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D.8 Bird Species Index

A total of 97 bird species or signs was recorded at, or adjacent, to the Proposed Development during the ornithological surveys.

Table D-8 comprises a list of all these species along with their conservation status.

Table D-8 All bird species recorded at the Proposed Development (March 2013 to August 2022)

Species	Conservation status	Species	Conservation status
Arctic skua	BoCC Red	Mallard	BoCC Amber
Barn owl	Schedule 1, BoCC Green	Meadow pipit	BoCC Amber
Blackbird	BoCC Green	Merlin	Annex 1, Schedule 1, BoCC Red
Black-headed gull	BoCC Amber	Mistle thrush	BoCC Red
Black-throated diver	Annex 1, Schedule 1, BoCC Amber	Mute swan	BoCC Green
Blue tit	BoCC Green	Osprey	Annex 1, Schedule 1, BoCC Amber
Buzzard	BoCC Green	Oystercatcher	BoCC Amber
Carrion crow	BoCC Green	Peregrine falcon	Annex 1, Schedule 1, BoCC Green
Chaffinch	BoCC Green	Pheasant	No status
Coal tit	BoCC Green	Pied wagtail	BoCC Green
Collared dove	BoCC Green	Pink-footed goose	BoCC Amber
Common crossbill	Schedule 1, BoCC Green	Pochard	BoCC Red
Common gull	BoCC Amber	Raven	BoCC Green
Common sandpiper	BoCC Amber	Red grouse	BoCC Green
Cormorant	BoCC Green	Red kite	Annex 1, Schedule 1, BoCC Green
Cuckoo	BoCC Red	Redshank	BoCC Amber
Curlew	BoCC Red	Red-throated diver	Annex 1, Schedule 1, BoCC Green
Dunlin	BoCC Red	Redwing	Schedule 1, BoCC Amber
Dunnock	BoCC Amber	Reed bunting	BoCC Amber
Fieldfare	Schedule 1, BoCC Red	Robin	BoCC Green
Goldcrest	BoCC Green	Rock dove	BoCC Green
Golden eagle	Annex 1, Schedule 1, BoCC Green	Rook	BoCC Amber
Golden pheasant	No status	Sand martin	BoCC Green
Golden plover	Annex 1, BoCC Green	Sandwich tern	Annex 1, BoCC Amber
Goldeneye	BoCC Red	Sedge warbler	BoCC Amber
Goldfinch	BoCC Green	Short-eared owl	Annex 1, BoCC Amber
Goshawk	Schedule 1, BoCC Green	Siskin	BoCC Green
Grasshopper warbler	BoCC Red	Skylark	BoCC Red
Great black-backed gull	BoCC Amber	Snipe	BoCC Amber
Great northern diver	Annex 1, Schedule 1, BoCC Amber	Snow bunting	Schedule 1, BoCC Amber
Great skua	BoCC Amber	Song thrush	BoCC Amber
Great tit	BoCC Green	Sparrowhawk	BoCC Amber
Greenfinch	BoCC Red	Starling	BoCC Red
Greenshank	Schedule 1, BoCC Amber	Stonechat	BoCC Green
Grey heron	BoCC Green	Swallow	BoCC Green
Greylag goose	BoCC Amber	Swift	BoCC Red
Hen harrier	Annex 1, Schedule 1, BoCC Red	Tawny owl	BoCC Amber
Herring gull	BoCC Red	Teal	BoCC Amber
Hobby	Schedule 1, BoCC Green	Tufted duck	BoCC Green
Hooded crow	BoCC Green	Wheatear	BoCC Amber
Jack snipe	BoCC Green	Whimbrel	Schedule 1, BoCC Red
Jackdaw	BoCC Green	Whinchat	BoCC Red

Species	Conservation status	Species	Conservation status
Jay	BoCC Green	White-tailed eagle	Annex 1, Schedule 1, BoCC Amber
Kestrel	BoCC Amber	Whooper swan	Annex 1, Schedule 1, BoCC Amber
Lapwing	BoCC Red	Willow warbler	BoCC Amber
Lesser black-backed gull	BoCC Amber	Woodcock	BoCC Red
Lesser redpoll	BoCC Red	Woodpigeon	BoCC Green
Linnet	BoCC Red	Wren	BoCC Green
Little grebe	BoCC Green		

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ANNEX E. COLLISION RISK ASSESSMENTS

The Collision Risk Analysis Area (CRAA) was created using a 500 metre (m) buffer (**Figure 8.3**) from the turbine locations. Using the larger 500 m area around the turbines accounts for possible inaccuracies in the recording of flightlines and ensures the assessment is precautionary.

The ultimate aim is to have 100 % coverage of the turbines and associated CRAA by the viewsheds, however in practice this is often unachievable as a result of the topography of the Proposed Development, presence of mature forestry and limited to no access outwith the Proposed Development Area. For the Proposed Development, all the turbine locations are covered by the viewsheds, however some small areas of the CRAA remain 'invisible' at 20 m above ground level (**Figure 8.3**). The habitat within these areas is of sufficient similarity such that the survey data collected and subsequently assessed are considered to be representative of the whole CRAA. In addition, there were no records made during any of the surveys which would suggest that this area was of any particular importance to target species. Furthermore, the flying time at risk height (secsHahr⁻¹) for each species is calculated as a single mean activity rate within the entirety of the CRAA.

Table E-1, Table E-2 and Table E-3 present the parameters which apply to each Collision Risk Model (CRM).

Table E-1 Wind farm parameters

Size of wind farm envelope	402.07	hectares (ha)
Number of turbines	7	turbines
Rotor diameter	162	metres (m)
Hub height	139	m
Max. rotor depth	1.30	m (at 15° pitch angle)
Max. chord	4.3	m
Pitch	15	degrees (°)
Rotation period	4.96	seconds (secs)
Turbine operation time	85	percent (%)
Risk height: highest	220	m
Risk height: lowest	58	m
Flight risk volume	651359424	m ³

Table E-2 CRM parameters per species

Species	Length (m)	Wingspan (m)	Assumed flight speed, v (ms ⁻¹)	Avoidance rate	Probability of collision	Bird transit time (secs)
Arctic skua	0.46	1.25	13.8	0.995	0.0586	0.1273
Curlew	0.60	1.00	13.0	0.980	0.0661	0.1459
Golden plover	0.28	0.72	17.9	0.980	0.0440	0.0881
Great black-backed gull	0.78	1.65	13.7	0.980	0.0728	0.1516
Greylag goose	0.825	1.635	17.1	0.998	0.0649	0.1241
Hen harrier	0.48	1.1	12	0.99	0.0644	0.1480
Herring gull	0.64	1.5	12.8	0.98	0.0698	0.151
Lapwing	0.31	0.87	11.9	0.98	0.0563	0.1350
Merlin	0.28	0.56	13	0.98	0.0510	0.1213
Osprey	0.58	1.7	11.4	0.98	0.0734	0.1646
Peregrine falcon	0.48	1.1	12.1	0.98	0.0641	0.1468
Pink-footed goose	0.675	1.525	17.3	0.998	0.0595	0.1140
Red kite	0.66	1.95	12	0.99	0.0753	0.1630
Red-throated diver	0.73	1.3	17	0.995	0.0611	0.1192
Sandwich tern	0.41	1.05	14.3	0.98	0.0548	0.1193
Whimbrel	0.42	0.89	16.3	0.98	0.0509	0.1053
Whooper swan	1.525	2.305	17.3	0.995	0.0888	0.1631

Table E-3 Visible area within the CRAA per vantage point

VP	Area (ha)
1	288.00
2	314.24

Birds are assumed to be active during all the daylight hours and this is estimated by calculating the number of hours per day between sunrise and sunset (adjusting for correct latitude) for the survey seasons as defined in **Table E-4** below.

Table E-4 Season definitions per species/species group

Species	Breeding season			Non-breeding season		
	Start date	End date	Hours presumed present	Start date	End date	Hours presumed present
Divers	15 th April	31 st August	2327	1 st September	14 th April	2184
Geese and swans	15 th May	31 st August	1861	1 st September	14 th May	2650
Raptors	15 th March	31 st August	2729	1 st September	14 th March	1782
Waders and terns	1 st April	31 st July	2518	1 st August	31 st March	1992
Gulls and skuas	15 th March	31 st August	2729	1 st September	14 th March	1782

Outputs for the CRM for the following species are presented in the following order below:

- Arctic skua;
- Curlew;
- Golden plover;
- Great black-backed gull;
- Osprey;
- Peregrine falcon;
- Pink-footed goose;
- Red kite;

- Greylag goose;
- Hen harrier;
- Herring gull;
- Lapwing;
- Merlin;
- Red-throated diver;
- Sandwich tern;
- Whimbrel; and
- Whooper swan.

E.1 Arctic Skua

Breeding Season 2013

Table E-5 Arctic skua flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0	20592.24	0
2	25.82	22625.58	0.0000017

Table E-6 Arctic mortality estimates

Mean activity in wind farm at rotor height	0.000067	hr ⁻¹
Total Combined rotor swept volume	253443	m ³
Bird occupancy	0.1821	hrs/season
Bird occupancy of rotor swept volume	0.2550	bird-sec
No. of transits through rotors	2.0037	per season
Estimated collisions	0.1173	per season
Estimated collisions after correction for operation	0.0997	per season
Estimated collisions after avoidance factor	0.0005	per season
Equivalent to 1 bird every	2005.58	seasons

E.2 Curlew

Breeding Season 2013

Table E-7 Curlew flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	985.46	18864.22	0.0000069
2	380.84	20740.12	0.0000027

Table E-8 Curlew mortality estimates

Mean activity in wind farm at rotor height	0.00385	hr ⁻¹
Total Combined rotor swept volume	273643	m ³
Bird occupancy	9.7036	hrs/season
Bird occupancy of rotor swept volume	14.6757	bird-sec
No. of transits through rotors	100.5947	per season
Estimated collisions	6.6464	per season
Estimated collisions after correction for operation	5.6494	per season
Estimated collisions after avoidance factor	0.1130	per season
Equivalent to 1 bird every	8.85	seasons

Breeding Season 2014**Table E-9 Curlew flight activity**

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	10.45	15552.17785	0.000000089
2	64.44	16969.18816	0.000000055

Table E-10 Curlew mortality estimates

Mean activity in wind farm at rotor height	0.00026	hr ⁻¹
Total Combined rotor swept volume	273643	m ³
Bird occupancy	0.6477	hrs/season
Bird occupancy of rotor swept volume	0.9797	bird-sec
No. of transits through rotors	6.7151	per season
Estimated collisions	0.4437	per season
Estimated collisions after correction for operation	0.3771	per season
Estimated collisions after avoidance factor	0.0075	per season
Equivalent to 1 bird every	132.58	seasons

Breeding Season 2020**Table E-11 Curlew flight activity**

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	81.57	13198.25746	0.00000017

Table E-12 Curlew mortality estimates

Mean activity in wind farm at rotor height	0.00069	hr ⁻¹
Total Combined rotor swept volume	273643	m ³
Bird occupancy	1.7384	hrs/season
Bird occupancy of rotor swept volume	2.6291	bird-sec
No. of transits through rotors	18.0215	per season
Estimated collisions	1.1907	per season
Estimated collisions after correction for operation	1.0121	per season
Estimated collisions after avoidance factor	0.0202	per season
Equivalent to 1 bird every	49.4	seasons

E.3 Golden Plover

Breeding Season 2013

Table E-13 Golden plover flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	61.01	18864.2157	0.00000043
2	0	20740.1189	0

Table E-14 Golden plover mortality estimates

Mean activity in wind farm at rotor height	0.000172	hr ⁻¹
Total Combined rotor swept volume	227472	m ³
Bird occupancy	0.4333	hrs/season
Bird occupancy of rotor swept volume	0.5448	bird-sec
No. of transits through rotors	6.1850	per season
Estimated collisions	0.2724	per season
Estimated collisions after correction for operation	0.2316	per season
Estimated collisions after avoidance factor	0.0046	per season
Equivalent to 1 bird every	215.93	seasons

Non-Breeding Season 2013/2014

Table E-15 Golden plover flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	114.86	16560.1894	0.00000092
2	0.00	18226.1651	0

Table E-16 Golden plover mortality estimates

Mean activity in wind farm at rotor height	0.00037	hr ⁻¹
Total Combined rotor swept volume	227472	m ³
Bird occupancy	0.7347	hrs/season
Bird occupancy of rotor swept volume	0.9237	bird-sec
No. of transits through rotors	10.4876	per season
Estimated collisions	0.4619	per season
Estimated collisions after correction for operation	0.3926	per season
Estimated collisions after avoidance factor	0.0079	per season
Equivalent to 1 bird every	127.34	seasons

Non-Breeding Season 2014/2015

Table E-17 Golden plover flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	114.86	16560.1894	0.00000092
2	0	18226.1651	0

Table E-18 Golden plover mortality estimates

Mean activity in wind farm at rotor height	0.0044	hr ⁻¹
Total Combined rotor swept volume	227472	m ³
Bird occupancy	8.8581	hrs/season
Bird occupancy of rotor swept volume	11.1366	bird-sec
No. of transits through rotors	126.4428	per season
Estimated collisions	5.5691	per season
Estimated collisions after correction for operation	4.7338	per season
Estimated collisions after avoidance factor	0.0947	per season
Equivalent to 1 bird every	10.56	seasons

Non-Breeding Season 2020/2021

Table E-19 Golden plover flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	285.47	18854.6535	0.0000042

Table E-20 Golden plover mortality estimates

Mean activity in wind farm at rotor height	0.0017	hr ⁻¹
Total Combined rotor swept volume	227472	m ³
Bird occupancy	3.3691	hrs/season
Bird occupancy of rotor swept volume	4.2357	bird-sec
No. of transits through rotors	48.0920	per season
Estimated collisions	2.1182	per season
Estimated collisions after correction for operation	1.8005	per season
Estimated collisions after avoidance factor	0.0360	per season
Equivalent to 1 bird every	27.77	seasons

E.4 Great Black-Backed Gull

Breeding Season 2013

Table E-21 Great black-backed gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	55.53	20592.2355	0.0000036
2	748.58	22625.5842	0.0000048

Table E-22 Great black-backed gull mortality estimates

Mean activity in wind farm at rotor height	0.0021	hr ⁻¹
Total Combined rotor swept volume	299614	m ³
Bird occupancy	5.6702	hrs/season
Bird occupancy of rotor swept volume	9.3895	bird-sec
No. of transits through rotors	61.9471	per season
Estimated collisions	4.5078	per season
Estimated collisions after correction for operation	3.8316	per season
Estimated collisions after avoidance factor	0.0766	per season
Equivalent to 1 bird every	13.05	seasons

Non-Breeding Season 2013/2014

Table E-23 Great black-backed gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0.00	16560.19	0
2	9.57	18226.17	0.00000076

Table E-24 Great black-backed gull mortality estimates

Mean activity in wind farm at rotor height	0.000031	hr ⁻¹
Total Combined rotor swept volume	299614	m ³
Bird occupancy	0.0548	hrs/season
Bird occupancy of rotor swept volume	0.0907	bird-sec
No. of transits through rotors	0.5983	per season
Estimated collisions	0.0435	per season
Estimated collisions after correction for operation	0.0370	per season
Estimated collisions after avoidance factor	0.0007	per season
Equivalent to 1 bird every	1351.06	seasons

Breeding Season 2014

Table E-25 Great black-backed gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	257.64	15552.1779	0.0000022
2	111.54	16969.1882	0.000001

Table E-26 Great black-backed gull mortality estimates

Mean activity in wind farm at rotor height	0.0013	hr ⁻¹
Total Combined rotor swept volume	299614	m ³
Bird occupancy	3.4596	hrs/season
Bird occupancy of rotor swept volume	5.7289	bird-sec
No. of transits through rotors	37.7960	per season
Estimated collisions	2.7503	per season
Estimated collisions after correction for operation	2.3378	per season
Estimated collisions after avoidance factor	0.0468	per season
Equivalent to 1 bird every	21.39	seasons

Breeding Season 2019

Table E-27 Great black-backed gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	167.15	13198.2575	0.0000035

Table E-28 Great black-backed gull mortality estimates

Mean activity in wind farm at rotor height	0.0014	hr ⁻¹
Total Combined rotor swept volume	299614	m ³
Bird occupancy	3.8596	hrs/season
Bird occupancy of rotor swept volume	6.3913	bird-sec
No. of transits through rotors	42.1661	per season
Estimated collisions	3.0683	per season
Estimated collisions after correction for operation	2.6081	per season
Estimated collisions after avoidance factor	0.0522	per season
Equivalent to 1 bird every	19.17	seasons

E.5 Greylag Goose

Non-Breeding Season 2013/2014

Table E-29 Greylag goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	8442.07	26352.3014	0.000043
2	17501.08	28596.2245	0.000088

Table E-30 Greylag goose mortality estimates

Mean activity in wind farm at rotor height	0.053	hr ⁻¹
Total Combined rotor swept volume	306107	m ³
Bird occupancy	139.7165	hrs/season
Bird occupancy of rotor swept volume	236.3755	bird-sec
No. of transits through rotors	1905.2131	per season
Estimated collisions	123.6911	per season
Estimated collisions after correction for operation	105.1375	per season
Estimated collisions after avoidance factor	0.2103	per season
Equivalent to 1 bird every	4.76	seasons

Non-Breeding Season 2014/2015

Table E-31 Greylag goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	6960.63	16416.1877	0.000056
2	83223.31	17911.9208	0.00067

Table E-32 Greylag goose mortality estimates

Mean activity in wind farm at rotor height	0.29	hr ⁻¹
Total Combined rotor swept volume	306107	m ³
Bird occupancy	777.4284	hrs/season
Bird occupancy of rotor swept volume	1315.2709	bird-sec
No. of transits through rotors	10601.2297	per season
Estimated collisions	688.2580	per season
Estimated collisions after correction for operation	585.0193	per season
Estimated collisions after avoidance factor	1.1700	per season
Equivalent to 1 bird every	0.85	seasons

Breeding Season 2019

Table E-33 Greylag goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	103.96	7541.8614	0.000038

Table E-34 Greylag goose mortality estimates

Mean activity in wind farm at rotor height	0.0015	hr ⁻¹
Total Combined rotor swept volume	306107	m ³
Bird occupancy	2.8653	hrs/season
Bird occupancy of rotor swept volume	4.8476	bird-sec
No. of transits through rotors	39.0719	per season
Estimated collisions	2.5366	per season
Estimated collisions after correction for operation	2.1561	per season
Estimated collisions after avoidance factor	0.0043	per season
Equivalent to 1 bird every	231.90	seasons

Non-Breeding Season 2019/2020

Table E-35 Greylag goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	4350.96	28281.9803	0.000043

Table E-36 Greylag goose mortality estimates

Mean activity in wind farm at rotor height	0.017	hr ⁻¹
Total Combined rotor swept volume	306107	m ³
Bird occupancy	45.5257	hrs/season
Bird occupancy of rotor swept volume	77.0213	bird-sec
No. of transits through rotors	620.8005	per season
Estimated collisions	40.3039	per season
Estimated collisions after correction for operation	34.2583	per season
Estimated collisions after avoidance factor	0.0685	per season
Equivalent to 1 bird every	14.59	seasons

Non-Breeding Season 2020/2021

Table E-37 Greylag goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	7901.58	18854.6535	0.00012

Table E-38 Greylag goose mortality estimates

Mean activity in wind farm at rotor height	0.047	hr ⁻¹
Total Combined rotor swept volume	306107	m ³
Bird occupancy	124.0156	hrs/season
Bird occupancy of rotor swept volume	209.8125	bird-sec
No. of transits through rotors	1691.1118	per season
Estimated collisions	109.7912	per season
Estimated collisions after correction for operation	93.3225	per season
Estimated collisions after avoidance factor	0.1866	per season
Equivalent to 1 bird every	5.36	seasons

E.6 Hen Harrier

Breeding Season 2013

Table E-39 Hen harrier flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	218.23	20592.2355	0.0000014
2	9.57	22625.5842	0.000000062

Table E-40 Hen harrier mortality estimates

Mean activity in wind farm at rotor height	0.00059	hr ⁻¹
Total Combined rotor swept volume	256329	m ³
Bird occupancy	1.6063	hrs/season
Bird occupancy of rotor swept volume	2.2757	bird-sec
No. of transits through rotors	15.3716	per season
Estimated collisions	0.9906	per season
Estimated collisions after correction for operation	0.8420	per season
Estimated collisions after avoidance factor	0.0084	per season
Equivalent to 1 bird every	118.76	seasons

Non-Breeding Season 2013/2014

Table E-41 Hen harrier flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	69.02	16560.1894	0.00000055
2	184.54	18226.1651	0.0000015

Table E-42 Hen harrier mortality estimates

Mean activity in wind farm at rotor height	0.00081	hr ⁻¹
Total Combined rotor swept volume	256329	m ³
Bird occupancy	1.4508	hrs/season
Bird occupancy of rotor swept volume	2.0554	bird-sec
No. of transits through rotors	13.8836	per season
Estimated collisions	0.8947	per season
Estimated collisions after correction for operation	0.7605	per season
Estimated collisions after avoidance factor	0.0076	per season
Equivalent to 1 bird every	131.49	seasons

Breeding Season 2014

Table E-43 Hen harrier flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	5.59	15552.1779	0.000000048
2	73.71	16969.1882	0.00000063

Table E-44 Hen harrier mortality estimates

Mean activity in wind farm at rotor height	0.00027	hr ⁻¹
Total Combined rotor swept volume	256329	m ³
Bird occupancy	0.7431	hrs/season
Bird occupancy of rotor swept volume	1.0527	bird-sec
No. of transits through rotors	7.1109	per season
Estimated collisions	0.4583	per season
Estimated collisions after correction for operation	0.3895	per season
Estimated collisions after avoidance factor	0.0039	per season
Equivalent to 1 bird every	256.73	seasons

Breeding Season 2020

Table E-45 Hen harrier flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	258.00	15083.7228	0.0000048

Table E-46 Hen harrier mortality estimates

Mean activity in wind farm at rotor height	0.0019	hr ⁻¹
Total Combined rotor swept volume	256329	m ³
Bird occupancy	5.2126	hrs/season
Bird occupancy of rotor swept volume	7.3848	bird-sec
No. of transits through rotors	49.8814	per season
Estimated collisions	3.2146	per season
Estimated collisions after correction for operation	2.7324	per season
Estimated collisions after avoidance factor	0.0273	per season
Equivalent to 1 bird every	36.60	seasons

Non-Breeding Season 2020/2021

Table E-47 Hen harrier flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	27.54	18854.6535	0.0000041

Table E-48 Hen harrier mortality estimates

Mean activity in wind farm at rotor height	0.00016	hr ⁻¹
Total Combined rotor swept volume	256329	m ³
Bird occupancy	0.2907	hrs/season
Bird occupancy of rotor swept volume	0.4118	bird-sec
No. of transits through rotors	2.7817	per season
Estimated collisions	0.1793	per season
Estimated collisions after correction for operation	0.1524	per season
Estimated collisions after avoidance factor	0.0015	per season
Equivalent to 1 bird every	656.26	seasons

E.7 Herring Gull

Breeding Season 2013

Table E-49 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	4145.77	20592.2355	0.000027
2	20928.72	22625.5842	0.00013

Table E-50 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.065	hr ⁻¹
Total Combined rotor swept volume	279414.3079	m ³
Bird occupancy	176.8136	hrs/season
Bird occupancy of rotor swept volume	273.0525	bird-sec
No. of transits through rotors	1804.7847	per season
Estimated collisions	125.8971	per season
Estimated collisions after correction for operation	107.0125	per season
Estimated collisions after avoidance factor	2.1403	per season
Equivalent to 1 bird every	0.47	seasons

Non-Breeding Season 2013/2014

Table E-51 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	971.23	16560.1894	0.0000078
2	276.94	18226.1651	0.0000022

Table E-52 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.0040	hr ⁻¹
Total Combined rotor swept volume	279414	m ³
Bird occupancy	7.1419	hrs/season
Bird occupancy of rotor swept volume	11.0292	bird-sec
No. of transits through rotors	72.8995	per season
Estimated collisions	5.0853	per season
Estimated collisions after correction for operation	4.3225	per season
Estimated collisions after avoidance factor	0.0864	per season
Equivalent to 1 bird every	11.57	seasons

Breeding Season 2014

Table E-53 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	1995.07	15552.1779	0.000017
2	5501.60	16969.1882	0.000047

Table E-54 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.026	hr ⁻¹
Total Combined rotor swept volume	279414	m ³
Bird occupancy	70.2499	hrs/season
Bird occupancy of rotor swept volume	108.4866	bird-sec
No. of transits through rotors	717.0597	per season
Estimated collisions	50.0202	per season
Estimated collisions after correction for operation	42.5172	per season
Estimated collisions after avoidance factor	0.8503	per season
Equivalent to 1 bird every	1.18	seasons

Non-Breeding Season 2014/2015

Table E-55 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	65.02	16416.1877	0.00000053
2	0	17911.9208	0

Table E-56 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.00021	hr ⁻¹
Total Combined rotor swept volume	279414	m ³
Bird occupancy	0.3770	hrs/season
Bird occupancy of rotor swept volume	0.5822	bird-sec
No. of transits through rotors	3.8484	per season
Estimated collisions	0.2685	per season
Estimated collisions after correction for operation	0.2282	per season
Estimated collisions after avoidance factor	0.0045	per season
Equivalent to 1 bird every	219.12	seasons

Breeding Season 2019

Table E-57 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	2713.32	13198.2575	0.000057

Table E-58 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.023	hr ⁻¹
Total Combined rotor swept volume	279414	m ³
Bird occupancy	62.6514	hrs/season
Bird occupancy of rotor swept volume	96.7524	bird-sec
No. of transits through rotors	639.5004	per season
Estimated collisions	44.6099	per season
Estimated collisions after correction for operation	37.9184	per season
Estimated collisions after avoidance factor	0.7584	per season
Equivalent to 1 bird every	1.32	seasons

Non-Breeding Season 2019/2020

Table E-59 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	2197.32	20740.1189	0.000029

Table E-60 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.012	hr ⁻¹
Total Combined rotor swept volume	279414	m ³
Bird occupancy	21.0878	hrs/season
Bird occupancy of rotor swept volume	32.5657	bird-sec
No. of transits through rotors	215.2485	per season
Estimated collisions	15.0152	per season
Estimated collisions after correction for operation	12.7629	per season
Estimated collisions after avoidance factor	0.2553	per season
Equivalent to 1 bird every	3.92	seasons

Breeding Season 2020

Table E-61 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	14646.55	15083.7228	0.00027

Table E-62 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.11	hr ⁻¹
Total Combined rotor swept volume	279414	m ³
Bird occupancy	295.9192	hrs/season
Bird occupancy of rotor swept volume	456.9868	bird-sec
No. of transits through rotors	3020.5284	per season
Estimated collisions	210.7042	per season
Estimated collisions after correction for operation	179.0985	per season
Estimated collisions after avoidance factor	3.5820	per season
Equivalent to 1 bird every	0.28	seasons

Non-Breeding Season 2020/2021

Table E-63 Herring gull flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	957.42	18854.6535	0.000014

Table E-64 Herring gull mortality estimates

Mean activity in wind farm at rotor height	0.0057	hr ⁻¹
Total Combined rotor swept volume	279414	m ³
Bird occupancy	10.1073	hrs/season
Bird occupancy of rotor swept volume	15.6086	bird-sec
No. of transits through rotors	103.1678	per season
Estimated collisions	7.1967	per season
Estimated collisions after correction for operation	6.1172	per season
Estimated collisions after avoidance factor	0.1223	per season
Equivalent to 1 bird every	8.17	seasons

E.8 Lapwing

Breeding Season 2013

Table E-65 Lapwing flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	4209.42	18864.2157	0.000030
2	0	20740.1189	0

Table E-66 Lapwing mortality estimates

Mean activity in wind farm at rotor height	0.012	hr ⁻¹
Total Combined rotor swept volume	231801	m ³
Bird occupancy	29.8956	hrs/season
Bird occupancy of rotor swept volume	38.3005	bird-sec
No. of transits through rotors	283.6968	per season
Estimated collisions	15.9587	per season
Estimated collisions after correction for operation	13.5649	per season
Estimated collisions after avoidance factor	0.2713	per season
Equivalent to 1 bird every	3.69	seasons

Non-Breeding Season 2013/2014

Table E-67 Lapwing flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	1066.21	16560.1894	0.0000085
2	239.73	18226.1651	0.0000019

Table E-68 Lapwing mortality estimates

Mean activity in wind farm at rotor height	0.0042	hr ⁻¹
Total Combined rotor swept volume	231801	m ³
Bird occupancy	8.3538	hrs/season
Bird occupancy of rotor swept volume	10.7024	bird-sec
No. of transits through rotors	79.2744	per season
Estimated collisions	4.4594	per season
Estimated collisions after correction for operation	3.7905	per season
Estimated collisions after avoidance factor	0.0758	per season
Equivalent to 1 bird every	13.19	seasons

Breeding Season 2014

Table E-69 Lapwing flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	36.60	15552.1779	0.00000031
2	174.01	16969.1882	0.0000015

Table E-70 Lapwing mortality estimates

Mean activity in wind farm at rotor height	0.00072	hr ⁻¹
Total Combined rotor swept volume	231801	m ³
Bird occupancy	1.8215	hrs/season
Bird occupancy of rotor swept volume	2.3336	bird-sec
No. of transits through rotors	17.2852	per season
Estimated collisions	0.9723	per season
Estimated collisions after correction for operation	0.8265	per season
Estimated collisions after avoidance factor	0.0165	per season
Equivalent to 1 bird every	60.50	seasons

Non-Breeding Season 2014/2015

Table E-71 Lapwing flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	455.95	16416.1877	0.0000037
2	663.43	17911.9208	0.0000054

Table E-72 Lapwing mortality estimates

Mean activity in wind farm at rotor height	0.0036	hr ⁻¹
Total Combined rotor swept volume	231801	m ³
Bird occupancy	7.2561	hrs/season
Bird occupancy of rotor swept volume	9.2961	bird-sec
No. of transits through rotors	68.8574	per season
Estimated collisions	3.8734	per season
Estimated collisions after correction for operation	3.2924	per season
Estimated collisions after avoidance factor	0.0658	per season
Equivalent to 1 bird every	15.19	seasons

E.9 Merlin

Breeding Season 2020

Table E-73 Merlin flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	35.58	15083.7228	0.00000066

Table E-74 Merlin mortality estimates

Mean activity in wind farm at rotor height	0.00026	hr ⁻¹
Total Combined rotor swept volume	227472	m ³
Bird occupancy	0.7188	hrs/season
Bird occupancy of rotor swept volume	0.9037	bird-sec
No. of transits through rotors	7.4519	per season
Estimated collisions	0.3803	per season
Estimated collisions after correction for operation	0.3232	per season
Estimated collisions after avoidance factor	0.0065	per season
Equivalent to 1 bird every	154.68	seasons

E.10 Osprey

Breeding Season 2013

Table E-75 Osprey flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	42.89	20592.2355	0.00000028
2	357.70	22625.5842	0.0000023

Table E-76 Osprey mortality estimates

Mean activity in wind farm at rotor height	0.0010	hr ⁻¹
Total Combined rotor swept volume	270757	m ³
Bird occupancy	2.8247	hrs/season
Bird occupancy of rotor swept volume	4.2271	bird-sec
No. of transits through rotors	25.6792	per season
Estimated collisions	1.8843	per season
Estimated collisions after correction for operation	1.6016	per season
Estimated collisions after avoidance factor	0.032	per season
Equivalent to 1 bird every	31.22	seasons

Breeding Season 2020

Table E-77 Osprey flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	234.37	15083.7228	0.0000043

Table E-78 Osprey mortality estimates

Mean activity in wind farm at rotor height	0.0017	hr ⁻¹
Total Combined rotor swept volume	270757	m ³
Bird occupancy	4.7353	hrs/season
Bird occupancy of rotor swept volume	7.0861	bird-sec
No. of transits through rotors	43.0478	per season
Estimated collisions	3.1587	per season
Estimated collisions after correction for operation	2.6849	per season
Estimated collisions after avoidance factor	0.0537	per season
Equivalent to 1 bird every	18.62	seasons

E.11 Peregrine Falcon

Non-Breeding Season 2019/2020

Table E-79 Peregrine falcon flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	43.68	20740.1189	0.0000058

Table E-80 Peregrine falcon mortality estimates

Mean activity in wind farm at rotor height	0.00024	hr ⁻¹
Total Combined rotor swept volume	256329	m ³
Bird occupancy	0.4192	hrs/season
Bird occupancy of rotor swept volume	0.5938	bird-sec
No. of transits through rotors	4.0444	per season
Estimated collisions	0.2592	per season
Estimated collisions after correction for operation	0.2203	per season
Estimated collisions after avoidance factor	0.0044	per season
Equivalent to 1 bird every	226.98	seasons

E.12 Pink-Footed Goose

Non-Breeding Season 2013/2014

Table E-81 Pink-footed goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	2088.40	26352.3014	0.000011
2	9587.30	28596.2245	0.000048

Table E-82 Pink-footed goose mortality estimates

Mean activity in wind farm at rotor height	0.024	hr ⁻¹
Total Combined rotor swept volume	284464	m ³
Bird occupancy	62.8793	hrs/season
Bird occupancy of rotor swept volume	98.8593	bird-sec
No. of transits through rotors	867.4689	per season
Estimated collisions	51.6425	per season
Estimated collisions after correction for operation	43.8961	per season
Estimated collisions after avoidance factor	0.0878	per season
Equivalent to 1 bird every	11.39	seasons

Non-Breeding Season 2014/2015

Table E-83 Pink-footed goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	16431.53	16416.1877	0.00013
2	35781.74	17911.9208	0.00029

Table E-84 Pink-footed goose mortality estimates

Mean activity in wind farm at rotor height	0.17	hr ⁻¹
Total Combined rotor swept volume	284464	m ³
Bird occupancy	450.1032	hrs/season
Bird occupancy of rotor swept volume	707.6550	bird-sec
No. of transits through rotors	6209.5184	per season
Estimated collisions	369.6672	per season
Estimated collisions after correction for operation	314.2171	per season
Estimated collisions after avoidance factor	0.6284	per season
Equivalent to 1 bird every	1.59	seasons

Non-Breeding Season 2019/2020

Table E-85 Pink-footed goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	4878.60	28281.9803	0.000048

Table E-86 Pink-footed goose mortality estimates

Mean activity in wind farm at rotor height	0.019	hr ⁻¹
Total Combined rotor swept volume	284464	m ³
Bird occupancy	51.0465	hrs/season
Bird occupancy of rotor swept volume	80.2557	bird-sec
No. of transits through rotors	704.2259	per season
Estimated collisions	41.9242	per season
Estimated collisions after correction for operation	35.6356	per season
Estimated collisions after avoidance factor	0.0713	per season
Equivalent to 1 bird every	14.03	seasons

Non-Breeding Season 2020/2021

Table E-87 Pink-footed goose flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
2	6432.68	18854.6535	0.000095

Table E-88 Pink-footed goose mortality estimates

Mean activity in wind farm at rotor height	0.038	hr ⁻¹
Total Combined rotor swept volume	284464	m ³
Bird occupancy	100.9612	hrs/season
Bird occupancy of rotor swept volume	158.7319	bird-sec
No. of transits through rotors	1392.8378	per season
Estimated collisions	82.9189	per season
Estimated collisions after correction for operation	70.4811	per season
Estimated collisions after avoidance factor	0.1410	per season
Equivalent to 1 bird every	7.09	seasons

E.13 Red Kite

Breeding Season 2014

Table E-89 Red kite flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0	15552.1779	0
2	65.54	16969.1882	0.0000056

Table E-90 Red kite mortality estimates

Mean activity in wind farm at rotor height	0.00023	hr ⁻¹
Total Combined rotor swept volume	282300	m ³
Bird occupancy	0.6142	hrs/season
Bird occupancy of rotor swept volume	0.9583	bird-sec
No. of transits through rotors	5.8774	per season
Estimated collisions	0.4423	per season
Estimated collisions after correction for operation	0.3760	per season
Estimated collisions after avoidance factor	0.0038	per season
Equivalent to 1 bird every	265.97	seasons

E.14 Red-Throated Diver

Breeding Season 2013

Table E-91 Red-throated diver flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0	18000.20585	0
2	3.76	20740.1189	0.00000027

Table E-92 Red-throated diver mortality estimates

Mean activity in wind farm at rotor height	0.000011	hr ⁻¹
Total Combined rotor swept volume	292400	m ³
Bird occupancy	0.0252	hrs/season
Bird occupancy of rotor swept volume	0.0407	bird-sec
No. of transits through rotors	0.3416	per season
Estimated collisions	0.0209	per season
Estimated collisions after correction for operation	0.0177	per season
Estimated collisions after avoidance factor	0.00009	per season
Equivalent to 1 bird every	11278.88	seasons

E.15 Sandwich Tern

Breeding Season 2014

Table E-93 Sandwich tern flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0	15552.1779	0
2	33.32	16969.1882	0.00000028

Table E-94 Sandwich tern mortality estimates

Mean activity in wind farm at rotor height	0.00011	hr ⁻¹
Total Combined rotor swept volume	246229	m ³
Bird occupancy	0.2882	hrs/season
Bird occupancy of rotor swept volume	0.3922	bird-sec
No. of transits through rotors	3.2867	per season
Estimated collisions	0.1800	per season
Estimated collisions after correction for operation	0.1530	per season
Estimated collisions after avoidance factor	0.0031	per season
Equivalent to 1 bird every	326.76	seasons

E.16 Whimbrel

Breeding Season 2014

Table E-95 Whimbrel flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0	15552.17785	0
2	6.43	16969.1882	0.000000055

Table E-96 Whimbrel mortality estimates

Mean activity in wind farm at rotor height	0.000022	hr ⁻¹
Total Combined rotor swept volume	247672	m ³
Bird occupancy	0.0556	hrs/season
Bird occupancy of rotor swept volume	0.0762	bird-sec
No. of transits through rotors	0.7233	per season
Estimated collisions	0.0368	per season
Estimated collisions after correction for operation	0.0313	per season
Estimated collisions after avoidance factor	0.0006	per season
Equivalent to 1 bird every	1598.14	seasons

E.17 Whooper Swan

Non-Breeding Season 2013/2014

Table E-97 Whooper swan flight activity

VP	Seconds at risk height	Observation effort (HaHr)	Flying time at risk height (secsHahr ⁻¹)
1	0	26352.3014	0
2	102.87	28596.2245	0.00000052

Table E-98 Whooper swan mortality estimates

Mean activity in wind farm at rotor height	0.00021	hr ⁻¹
Total Combined rotor swept volume	407106	m ³
Bird occupancy	0.5540	hrs/season
Bird occupancy of rotor swept volume	1.2465	bird-sec
No. of transits through rotors	7.6428	per season
Estimated collisions	0.6790	per season
Estimated collisions after correction for operation	0.5772	per season
Estimated collisions after avoidance factor	0.0029	per season
Equivalent to 1 bird every	346.52	seasons

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Watten Wind Farm Ornithology Technical Appendix A8.1

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1 INTRODUCTION

MacArthur Green was commissioned by EDF Energy Renewables Limited (the ‘Applicant’) to complete ornithological surveys at the proposed Watten Wind Farm, Watten in Highland (hereafter referred to as ‘the Proposed Development’). The surveys were conducted between March 2013 and August 2022 to inform an assessment of the potential ornithological effects of the Proposed Development on the species assemblage present.

This technical report summarises the methods employed and the results of the field surveys and is supported by the following Annexes.

Annex A	Ornithological Legal Protection
Annex B	Ornithological Survey Methodologies
Annex C	Ornithological Survey Effort & General Information
Annex D	Ornithological Survey Results
Annex E	Collision Risk Assessments

Confidential information relating to species listed on Annex 1 of the EU Birds Directive or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) is detailed in **Confidential Technical Appendix A8.2**.

A range of surveys were employed to accurately record baseline conditions within the Proposed Development Area and appropriate survey areas (detailed in **Annex B**). In this Technical Appendix, associated **Annexes A – E**, **Confidential Technical Appendix A8.2** and **Chapter 8: Ornithology** of the Environmental Impact Assessment Report. Terms referred to are as follows:

- ‘the Proposed Development Area’ refers to the area within the red line boundary, e.g. **Figure 8.2**;
- ‘survey area’ is defined as the area covered by each survey type for the Proposed Development; and
- ‘study area’ is defined as the area of consideration of effects on each species at the time of assessment (**Figure 8.2**).

2 LEGAL PROTECTION

With limited exceptions, all wild birds and their eggs are protected by law. Specific levels of protection are determined by a species’ inclusion on certain lists. **Annex A** to this report details the various levels of legal protection afforded to UK bird species.

3 FIELD SURVEY METHODS

The following surveys were undertaken for the Proposed Development between March 2013 and August 2022:

- Flight activity surveys – March 2013 to March 2015 and April 2019 to March 2021;
- Breeding bird surveys (500 m survey area) – spring/summer 2013, 2019 and 2020;
- Winter walkover surveys (500 m survey area) – autumn/winter 2013/2014, 2019/2020 and 2020/2021;
- Scarce breeding bird surveys (2 km survey area) – spring/summer 2013, 2014, 2019, 2020 and 2022;

- Hen harrier roost surveys – autumn/winter 2013/2014 and 2014/2015; and
- Diver flight activity surveys – July 2013 to August 2013 and May 2020 to August 2020.

Survey methods followed the recommended NatureScot guidance available at the time and methods are described in detail within **Annex B**. Where possible, each survey was carried out beyond the Proposed Development Area within a buffer distance specific to that method (e.g., 2 km buffer for the scarce breeding bird surveys) and these are detailed within **Annex B**.

The relative importance of the data collected was determined by the specific level of protection assigned to those species recorded, coupled with their perceived susceptibility to potential effects resulting from the Proposed Development. The resulting ‘target species’ and ‘secondary species’ lists are a standard assessment tool for wind farm ornithological studies (see **Annex B**).

4 FIELD SURVEY RESULTS

All valid surveys were undertaken during suitable weather conditions (as described within **Annex B**). Where weather conditions deteriorated below acceptable conditions (see definitions in **Annex B**), surveys were either suspended or additional surveys were undertaken. In the case of flight activity surveys, any time where the visibility was <1 km was excluded from total survey effort and subsequent analysis (further detail in **section 4.1**). Schedule 1/Annex 1 surveys were carried out by appropriately licensed surveyors. All survey data were reviewed, inputted, and analysed by MacArthur Green.

A total 97 bird species were recorded within, or adjacent to, the Proposed Development Area during the various ornithological surveys conducted. Survey effort and results of the field surveys are detailed within **Annex C** and **Annex D**. The following sections summarise the results from each survey undertaken.

4.1 Flight Activity

The flight activity surveys recorded all target species’ flight activity within the Proposed Development Area and beyond. These data have been used in the collision risk modelling. The flights used included those within the ‘Collision Risk Analysis Area’ (CRAA) (i.e., the area to be occupied by operational turbines, together with a 500 m buffer).

Flight activity surveys across the 2013, 2014, 2019 and 2020 breeding seasons and 2013/2014, 2014/2015, 2019/2020 and 2020/2021 non-breeding seasons were undertaken across two or one Vantage Points (VPs) depending on the season. Valid survey effort¹ is detailed in **Table 4-1** and full details of flight activity surveys are contained in **Annex C** with methodology in **Annex B**.

¹ Hours where visibility was >1 km are not considered valid for use in collision risk modelling as less than half the 2 km viewshed can be seen.

Table 4-1 Summary of total hours of valid survey per VP in each season

Period	VP1	VP2
2013 breeding season	71.5	72
2013/2014 non-breeding season	57.5	58
2014 breeding season	54	54
2014/2015 non-breeding season	57	57
2019 breeding season	-	42
2019/2020 non-breeding season	-	66
2020 breeding season	-	48
2020/2021 non-breeding season	-	60

A total of 23 target species were recorded during the flight activity surveys (further details are provided in **Annex D**). For each species across the whole flight activity survey period, **Table 4-2** shows the total number of flights recorded and the total number of birds recorded². The bird seconds are calculated for each observation as the product of flight duration and number of individuals. This is then summed per species to give the total bird seconds recorded across the entire surveyed period.

Table 4-2 Target species recorded and total number of flights recorded during flight activity surveys, 2013-2021

Species	Total number of flightlines recorded	Total number of birds recorded	Total bird seconds recorded
Arctic skua	1	1	49
Barn owl	1	1	117
Curlew	173	213	9,327
Golden plover	17	935	43,070
Great black-backed gull	28	40	4,767
Greylag goose	61	3,527	451,304
Hen harrier	150	152	25,292
Herring gull	462	1,983	218,002
Lapwing	102	675	62,984
Merlin	9	9	471
Osprey	16	17	3,027
Peregrine falcon	1	1	192
Pink-footed goose	36	2,844	311,723
Red-throated diver	3	3	219
Red kite	1	1	174
Sandwich tern	1	2	120
Short-eared owl	2	2	50
Whimbrel	1	1	45
White-tailed eagle	1	1	43
Whooper swan	3	31	2,798

² This includes flights that would not technically be ‘at-risk’ of collision (e.g., recorded outwith the CRAA and/or not at rotor height).

³ In some cases, only part of a total flight duration was recorded at PCH, and it is assumed that this proportion is applicable for that part of the flight within the CRAA and 2 km viewshed area.

4.1.1 Flightlines Used in Collision Risk Modelling

Only flightlines identified to be within the CRAA and recorded within the 2 km viewshed of the associated VP were considered in the collision risk modelling and **Annex E** provides details of the bird seconds from flights identified to be ‘at-risk’.

- ‘At-risk’ is defined as – a flight having at least part of its duration (i) at Potential Collision Height (PCH)³; (ii) within the CRAA; and (iii) recorded within the 2 km viewshed of the associated VP.
- PCH is defined as – the altitude between the minimum and maximum blade height⁴ (taken to be from 58 m to 220 m for the Proposed Development).

Barn owl, redshank, short-eared owl and white-tailed eagle were recorded during flight activity surveys but no flights were considered to be ‘at-risk’⁵. Full survey results detailing the findings from each survey visit (including target species’ flightlines considered not ‘at-risk’ and secondary species information) can be found within **Annex D**. Only bird seconds for observations identified as within the CRAA and associated viewshed are considered in the following discussions. Full target species results are detailed within **Annex D** and the collision risk calculations are detailed in **Annex E**.

4.1.2 Collision Risk Model Outputs

The bird seconds for target species flights within the CRAA at PCH were then input into a Collision Risk Model (CRM) to calculate the predicted collision rates per season. The CRM calculations for each species can be found in **Annex E**. **Table 4-3** and **Table 4-4** provide the estimated collision rates and number of seasons per collision for each species.

⁴ Where the actual rotor blade altitude differs from the pre-defined survey height bands, the collision risk model accounts for this difference on the assumption of an even flight distribution within each particular survey height band, and an adjustment can be made to estimate total flight duration at actual rotor blade altitude.

⁵ i.e., the flights were either not within the CRAA and associated viewshed or were only recorded flying above 150 m.

Table 4-3 Estimated collision rates

Species	2013 breeding season	2013/2014 non-breeding season	2014 breeding season	2014/2015 non-breeding season	2019 breeding season	2019/2020 non-breeding season	2020 breeding season	2020/2021 non-breeding season	Mean breeding season	Mean non-breeding season	Mean annual
Arctic skua	0.0005	-	-	-	-	-	-	-	0.0001	-	0.0001
Curlew	0.1130	-	0.0075	-	-	-	0.0202	-	0.0352	-	0.0352
Golden plover	0.0046	0.0079	-	0.0947	-	-	-	0.0360	0.0012	0.0346	0.0358
Great black-backed gull	0.0766	0.0007	0.0468	-	0.0522	-	-	-	0.0439	0.0002	0.0441
Greylag goose	-	0.2103	-	1.1700	0.0043	0.0685	-	0.1866	0.0011	0.4089	0.4099
Hen harrier	0.0084	0.0076	0.0039	-	-	-	0.0273	0.0015	0.0099	0.0023	0.0122
Herring gull	2.1403	0.0864	0.8503	0.0046	0.7584	0.2553	3.5820	0.1223	1.8327	0.1172	1.9499
Lapwing	0.2713	0.0758	0.0165	0.0658	-	-	-	-	0.0720	0.0354	0.1074
Merlin	-	-	-	-	-	-	0.0065	-	0.0016	-	0.0016
Osprey	0.0320	-	-	-	-	-	0.0537	-	0.0214	-	0.0214
Peregrine falcon	-	-	-	-	-	0.0044	-	-	-	0.0011	0.0011
Pink-footed goose	-	0.0878	-	0.6284	-	0.0713	-	0.1410	-	0.2321	0.2321
Red kite	-	-	0.0038	-	-	-	-	-	0.0009	-	0.0009
Red-throated diver	0.00009	-	-	-	-	-	-	-	0.00002	-	0.00002
Sandwich tern	-	-	0.0031	-	-	-	-	-	0.0008	-	0.0008
Whimbrel	-	-	0.0006	-	-	-	-	-	0.0002	-	0.0002
Whooper swan	-	0.0029	-	-	-	-	-	-	-	0.0007	0.0007

Table 4-4 Estimated number of seasons per collision

Species	2013 breeding season	2013/2014 non-breeding season	2014 breeding season	2014/2015 non-breeding season	2019 breeding season	2019/2020 non-breeding season	2020 breeding season	2020/2021 non-breeding season	Mean breeding season	Mean non-breeding season	Mean annual
Arctic skua	2006	-	-	-	-	-	-	-	8022	-	8022
Curlew	8.85	-	133	-	-	-	49	-	28	-	28
Golden plover	216	127	-	10.56	-	-	-	28	864	29	28
Great black-backed gull	13.05	1351	21.39	-	19.17	-	-	-	23	5404	23
Greylag goose	-	4.76	-	0.85	232	14.59	-	5.36	928	2.45	2.44
Hen harrier	119	131	257	-	-	-	37	656	101	438	82
Herring gull	0.47	11.57	1.18	219	1.32	3.92	0.28	8.17	0.55	8.54	0.51
Lapwing	3.69	13.19	60	15.19	-	-	-	-	13.90	28	9.31
Merlin	-	-	-	-	-	-	155	-	619	-	619
Osprey	31	-	-	-	-	-	18.62	-	47	-	47
Peregrine falcon	-	-	-	-	-	227	-	-	-	908	908
Pink-footed goose	-	11.39	-	2	-	14.03	-	7.09	-	4.31	4.31
Red kite	11279	-	-	-	-	-	-	-	45116	-	45116
Red-throated diver	-	-	266	-	-	-	-	-	1064	-	1064
Sandwich tern	-	-	327	-	-	-	-	-	1307	-	1307
Whimbrel	76	84	32	-	-	1564	55	15.95	64	53	29
Whooper swan	-	-	1598	-	-	-	-	-	6393	-	6393

4.2 Breeding Birds

Breeding bird surveys were undertaken in 2013 (May to July), 2019 (monthly from April to July) and 2020 (monthly from April to July). Surveys recorded 11 wader species, of which eight were considered to be breeding (**Table 4-5**). Full details of the breeding bird surveys are provided within Annexes C and D and survey methodology is provided within **Annex B**.

Table 4-5 Breeding wader territories per year (minimum-maximum number of territories)

Species	2013	2019	2020	2022
Common sandpiper	0-1	-	0-1	0-1
Curlew	0-4	5-8	8-9	2-4
Dunlin	0-1	-	0-1	-
Golden plover	0-2	-	1	-
Greenshank	0-1	-	2	1-1
Lapwing	Not recorded	0-4	0-4	0-1
Oystercatcher	0-3	0-1	0-1	-
Snipe	Not recorded	5-5	8-11	4-4

4.3 Winter Walkover

Winter walkover surveys were conducted during the 2013/2014, 2019/2020 and 2020/2021 non-breeding seasons. Surveys recorded 46 species of which 12 are considered to be target species (barn owl, curlew, golden eagle, greylag goose, hen harrier, herring gull, lapwing, merlin, pink-footed goose, short-eared owl, whooper swan and woodcock). Full details of the winter walkover surveys are provided within **Annex C** and **Annex D** and survey methodology is provided within **Annex B**.

4.4 Scarce Breeding Birds

Scarce breeding bird surveys were conducted during the 2013 (March to August), 2014 (April to August), 2019 (April to August), 2020 (April to July) and 2022 (April to August) breeding seasons. Winter checks for roosting hen harrier were also conducted during the 2013/2014 and 2014/2015 non-breeding seasons.

Barn owl, hen harrier, merlin and osprey were identified to be breeding within the survey area. Breeding and roosting activity are summarised in **Table 4-6**. Hen harrier were also identified to be roosting within the survey area during the 2013/2014 (single bird) and 2020/2021 (four birds) non-breeding seasons. **Confidential Technical Appendix A8.2** contains the full details of all breeding and roosting activity.

Table 4-6 Scarce breeding bird summary

Species	2019	2020	2022
Barn owl	One roosting and/or possible breeding location.	One confirmed territory, breeding success unknown. Two roosting/and or possible breeding locations.	Three roosting/and or possible breeding locations.
Hen harrier	N/A	One probable territory, success unknown.	N/A
Merlin	N/A	One territory, success unknown.	N/A
Osprey	One territory, fledging unknown.	One territory, fledging unknown.	One pair occasionally recorded but no breeding evidence.

Black-throated diver, golden eagle, goshawk, hobby, peregrine falcon, red kite, red-throated diver, short-eared owl and white-tailed eagle (target species) were also recorded during surveys but were not considered to be breeding/no breeding attempts were located.

Buzzard, kestrel, sparrowhawk and tawny owl (secondary species) were also recorded across the survey area and are likely to have bred within the wider area.

Full details of the scarce breeding bird surveys are provided within **Annex C** and **Annex D** and **Confidential Technical Appendix A8.2** and survey methodology is provided within **Annex B**.