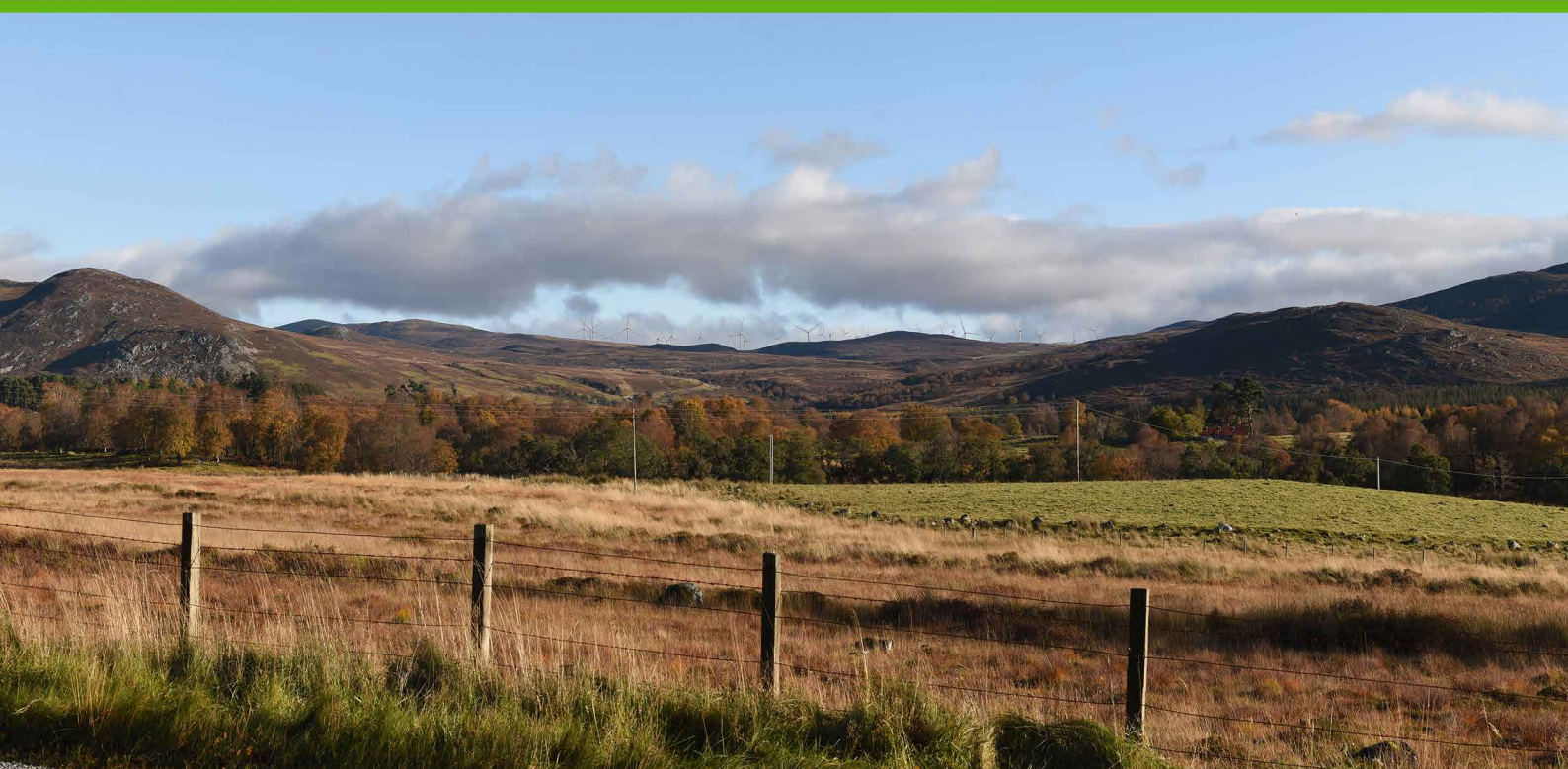


Corriegarth 2 Wind Farm

Environmental Impact Assessment Report

Volume 1 - Text

January 2021



CORRIEGARTH 2 WIND FARM

EIA Report – Volume 1 – EIA Report text

- Chapter 1** Introduction
- Chapter 2** Energy and Planning Policy
- Chapter 3** Site Selection and Design
- Chapter 4** Development Description
- Chapter 5** EIA Methodology
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- Chapter 17** Summary of Mitigation



1 INTRODUCTION

1.1 PURPOSE OF THE EIA REPORT

This Environmental Impact Assessment Report (EIA Report) has been prepared to accompany the application by Corriegarth 2 Windfarm Limited (the Applicant), for consent to install and operate Corriegarth 2 Wind Farm (the Development). The Development comprises 16 wind turbines and associated infrastructure, with a generation capacity exceeding 50 megawatts (MW), and is located adjacent to the Operational Corriegarth Wind Farm, within the Corriegarth Estate approximately 15 kilometres (km) north-east of Fort Augustus and 10 km south-east of Foyers (Figure 1.1).

As the Development exceeds 50 MW, the Applicant is seeking consent from the Scottish Ministers under Section 36 of the Electricity Act 1989 (as amended)¹, with deemed planning permission under Section 57(2) of the Town and Country Planning (Scotland) Act 1997².

Given that the Development qualifies as a Section 36 application, the EIA will be undertaken in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017³, referred to as the EIA Regulations.

As required by the EIA Regulations, this EIA Report presents information on the likely significant environmental effects which may occur as a result of the Development. The EIA Report also informs the reader of the nature of the Development and the measures proposed to protect the environment during site preparation, construction, operation and decommissioning.

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a EIA Report Figures:

- Figure 1.1: Site Location; and
- Figure 1.2: Site Boundary.

1.2 SITE CONTEXT AND OPERATIONAL CORRIEGARTH WIND FARM

The Site Location is shown on Figure 1.1. The Site is situated within the Corriegarth Estate, covering an area of approximately 1,694 ha, centred on National Grid Reference (NGR) 257500, 813100 (Figure 1.2). The Site includes the Operational Corriegarth Wind Farm consisting of 23 turbines with a tip height of 120 metres (m) and associated infrastructure including 25 km of existing track. The Operational Corriegarth Wind Farm has a combined installed capacity of up to 69 MW.

As shown on Figure 1.2, the Development will encircle, and extend, the Operational Corriegarth wind turbines. Existing access tracks will be utilised to minimise the environmental impact of the Development, with new access tracks branching off existing access tracks to new turbine locations. Full details of the final Development layout are provided in **Chapter 4: Development Description** of this EIA Report.

In addition to the Operational Corriegarth Wind Farm, the Site and immediate vicinity consists of rural upland farmland used for grazing and grouse shooting. The Site itself varies significantly in elevation ranging from approximately 550 - 810 m Above Ordnance Datum (AOD) with elevations reducing to approximately 200 m AOD along the access

¹ UK Government, 1989, Electricity Act 1989 [Online] Available at:

<http://www.legislation.gov.uk/ukpga/1989/29/contents> (Accessed 11/08/2020)

² UK Government (1997) Town and Country Planning (Scotland) Act 1997 [Online] Available at:

<http://www.legislation.gov.uk/ukpga/1997/8/section/57> (Accessed 08/08/2020)

³ The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 [Online] Available at: <https://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 11/08/2020)

track as it slopes down towards the B862. The Operational Corriegarth Wind Farm lies within the central part of the Site, which in turn is situated within a bowl surrounded by higher hilltops. Carn na Saobhaidhe is a summit (603 m AOD) located in the north-west of the Site and there are several other summits which are located along the Site Boundary, including:

- Doire Meurach (788 m AOD);
- Càrn na Làraiche Maoile (800 m AOD);
- Càrn a Choire Sheilich (790 m AOD); and
- Carn na Saobhaidhe (810 m AOD).

There are a number of watercourses within the Site. The River E and associated tributaries flow east to west towards Loch Mhor. Allt Bad Fionnaich and Allt a' Ghille Charaich run through the north and centre of the Site, respectively, flowing westwards into the River E. There are no waterbodies within the Site.

The Site contains one public road (the U1221), which forms part of the Site Access from the B862. There is one residential property within the Site located along the existing access track, at NGR 251692, 816733, approximately 5.3 km north-west from the closest turbine.

Further details on the Site and surrounding areas are outlined in **Chapter 3: Site Selection and Design** of this EIA Report.

1.3 OVERVIEW OF THE DEVELOPMENT

The main components of the Development are as follows:

- Up to 16 wind turbines, each with a maximum tip height of 149.9 m;
- Associated foundations and crane hardstandings at each wind turbine location;
- Access tracks linking the turbine locations comprising of a combination of new (~10 km in length) and upgraded existing tracks (~13 km of 25 km existing access track);
- Temporary construction compound located at the same location as for the Operational Corriegarth Wind Farm construction;
- Two temporary laydown areas located within existing hardstanding;
- Up to two borrow pits for aggregate extraction;
- Network of underground cabling; and
- New substation building and a new control building in close proximity to existing substation and control building compound.

The Development will make use of the existing Site access and junction off the B862 for the Operational Corriegarth Wind Farm. Additionally, the Operational Corriegarth Wind Farm includes three Meteorological Masts which may be used for the Development.

The layout of the Development has evolved via the iterative EIA Process with details of the final Development layout provided in **Chapter 4: Development Description** of this EIA Report.

The purpose of the Development is to generate electricity from a renewable source of energy, offsetting the need for power generation from the combustion of fossil fuels. Consequently, the electricity that will be produced results in a saving in emissions of Carbon Dioxide (CO₂) with associated environmental benefits, which is discussed in **Chapter 15: Climate Change and Carbon Balance** of this EIA Report.

1.4 THE APPLICANT

The Applicant is Corriegarth 2 Windfarm Limited, a wholly owned subsidiary of BayWa r.e. UK Limited.

BayWa r.e. UK Ltd is a leading international renewable energy project developer and service provider with offices in Glasgow, Edinburgh, Milton Keynes and Dublin. In the UK and Ireland, BayWa r.e. has installed over 650 Megawatts (MW) of wind and solar renewable energy projects; including delivering over 150 MW of wind energy and is currently developing over 300 MW of onshore wind including the construction of 43 MW in Scotland. BayWa r.e. UK also provides technical and commercial services, and manages more than 1.5 Gigawatts (GW) of operational solar and wind assets for its clients.

The UK and Ireland are one of BayWa r.e.'s core markets, and its internationally trained and qualified teams cover the entire range of activities required for the production of renewable energy, from site development, through turnkey construction, project financing to electricity sales.

BayWa r.e. UK Ltd is part of the leading global renewable energy company BayWa r.e. Established in 2009 BayWa r.e. is a leading global renewable energy developer, service supplier, wholesaler and energy solutions provider. Globally, BayWa r.e. has brought over 2.5 GW of energy online, while managing over 5 GW of assets.

1.5 PROJECT TEAM

This EIA Report has been compiled by Arcus Consultancy Services Limited (Arcus) on behalf of the Applicant. The full project team is listed in Table 1.1. below.

For each topic, the detailed assessment of likely significant effects has been undertaken by organisations with relevant specialist skills, drawing on their qualifications, experience of working on other development projects, good practice in EIA and on relevant published information.

Table 1.1: Project Team

Chapter Number	Title	Organisation Responsible ⁴
1	Introduction	Arcus
2	Energy and Planning Policy	David Bell Planning Ltd
3	Site Selection and Design	Arcus
4	Development Description	Arcus
5	EIA Methodology	Arcus
6	Landscape and Visual Amenity	LUC Consultancy Ltd
7	Ecology	Arcus
8	Ornithology	MacArthur Green Ltd
9	Archaeology and Cultural Heritage	Arcus
10	Noise	Arcus
11	Traffic and Transportation	Arcus
12	Hydrology and Hydrogeology	Arcus
13	Geology & Peat	Arcus

⁴ Specialist Assessor Detailed within Technical Chapter

Chapter Number	Title	Organisation Responsible ⁴
14	Socio-Economics, Recreation and Tourism	Arcus
15	Climate Change and Carbon Balance	Arcus
16	Other Issues (Health and Safety, Infrastructure, Telecommunications, Aviation and Shadow Flicker)	Arcus
17	Summary of Mitigation	Arcus

1.6 STRUCTURE OF THE EIA REPORT

The EIA Report contains the findings of the assessment of likely environmental effects of the Development and comprises of the following volumes:

- **Volume 1** – EIA Report Text;
- **Volume 2** – EIA Report Figures;
 - **Volume 2a** – Figures excluding LVIA;
 - **Volume 2b** – LVIA Figures;
 - **Volume 2c** – NatureScot Visualisations;
 - **Volume 2d** – The Highland Council (THC) Visualisations;
- **Volume 3** – EIA Report Technical Appendices; and
- **Volume 4** – EIA Report Non-Technical Summary.

An outline of Volume 1 of the EIA Report which is split into 18 separate chapters is presented below:

- **Chapter 1: Introduction** – Provides background information about the Applicant and an overview of the Development;
- **Chapter 2: Energy and Planning Policy** – Identifies the energy and land use policy and outlines the need for the Development and its benefits within the context of international climate change agreements and European, UK and Scottish renewable energy policy;
- **Chapter 3: Site Selection and Design** – Provides details of the site selection exercise and alternative layouts that were considered within the design evolution process;
- **Chapter 4: Development Description** – Provides a detailed description of the Development including details of the construction, operational and decommissioning arrangements;
- **Chapter 5: EIA Methodology** – Provides an overview of the EIA process, its regulatory context and an outline of the methodology used to assess environmental effects and ensure a consistent and transparent approach to assessment. It describes the scoping and consultation process that assisted in the identification of likely significant environmental effects to be given further consideration;
- **Chapters 6 – 16: Technical EIA Chapters** – Each technical chapter as shown in Table 1.1 will provide a description of the baseline environmental conditions specific to the relevant topic and will assess the potential environmental impacts (positive or negative) due to the Development in line with the EIA methodology. This will include a description of any proposed mitigation or enhancement measures and a statement of predicted residual impacts; and
- **Chapter 17: Summary of Mitigation**: Provides a summary of the findings of the EIA, including a tabular summary of all residual effects and proposed mitigation.

1.7 ADDITIONAL DOCUMENTS

1.7.1 Planning Statement

A Planning Statement has been prepared to accompany the application. The Planning Statement sets out an assessment of the Development in the context of the local development plan as well as national planning, energy policy, and emerging planning policies. It also considers the potential benefits and harm which may arise and concludes as to the overall acceptability of the proposal in relation to the planning context. This does not form part of the EIA Report.

1.8 OBTAINING FURTHER INFORMATION

The EIA Report will be publicised in accordance with Part 5 of the EIA Regulations and the Electricity (Applications for Consent) Regulations 1990⁵ and the Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020⁶ (the Coronavirus Regulations).

Part 5 of the EIA Regulations requires the EIA Report to be available for public viewing; however, as a result of the ongoing COVID-19 pandemic, this would not be in line with current public health guidance from the Scottish Government. Consequently, the Coronavirus Regulations introduces a temporary relaxation of Part 5 of the EIA Regulations during the emergency period; the amended regulations therefore require that the Applicant must:

"state that the EIA report is available for inspection free of charge and the means by which, the EIA report is available for inspection;".

The EIA Report and supporting documentation can be viewed on the Corriegarth 2 Wind Farm project website: www.baywa-re.co.uk/en/wind/corriegarth-2-windfarm/

CD copies of the complete application submission are available free of charge. Hard copies of the application submission may be obtained for a fee of £1,000.

To request a copy of the application submission please contact:

Corriegarth Windfarm Ltd.
c/o: BayWa r.e. UK Limited
3/1
58 Waterloo Street
Glasgow
G2 7DA
info@corriegarth2windfarm.co.uk

⁵ The Electricity (Applications for Consent) Regulations 1990 [Online] Available at: <http://www.legislation.gov.uk/ukxi/1990/455/regulation/4/made> (Accessed 11/08/2020)

⁶ The Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 [Online] Available at: <https://www.legislation.gov.uk/ssi/2020/123/made> (Accessed 11/08/2020)

2 ENERGY AND PLANNING POLICY

2.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIA Report) describes the legislative and policy background relevant to the proposed Corriegarth 2 Wind Farm (the Development). It refers to national energy and planning policy at a national and local level. This Chapter does not include an assessment of the accordance of the Development with reference to planning policy: a separate Planning Statement has been prepared to support the planning application and should be referred to for a detailed planning policy appraisal.

This Chapter has been written by David Bell BSc (Hons) DipUD MCIHT MRTPI a Chartered Town Planner and Managing Director of David Bell Planning Ltd. Mr Bell has 30 years' experience of planning and development matters and is a specialist in renewables and onshore wind planning.

2.2 The Legislative Framework

2.2.1 *The Electricity Act 1989*

The Development will have an overall installed capacity over 50 Megawatts (MW). In Scotland, onshore renewable energy developments that have capacity to generate over 50 MW require consent from the Scottish Ministers under the Electricity Act 1989¹ (the Electricity Act). In such cases the Planning Authority is a statutory consultee in the development management process and procedures. The Planning Authority for the Development is The Highland Council (the Council).

In the case of an application under Section 36 of the Electricity Act 1989 (the Electricity Act) the Development Plan does not have primacy in the decision making process. Furthermore, the provisions of Schedule 9 of the Electricity Act are relevant to the assessment of the Development.

Schedule 9 sub-paragraph 3 (1) of the Electricity Act advises that a license holder (or person authorised by exemption):

"(a) shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and

(b) shall do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."

Under sub-paragraph 3(2), in considering proposals, the Scottish Ministers are to have regard to:

"(a) the desirability of the matters mentioned in paragraph (a) of sub-paragraph (1) above; and

(b) the extent to which the person by whom the proposals were formulated has complied with his duty under paragraph (b) of the sub-paragraph."

At sub-paragraph 3(3), it indicates that, without prejudice to the above provisions, a licence holder and the Scottish Ministers *"shall avoid, so far as possible, causing injury to fisheries or to the stock of fish in any waters."*

¹ UK Government. (1989). Electricity Act 1989 [Online]. Available at: <http://www.legislation.gov.uk/ukpga/1989/29/contents> (Accessed 04/09/2020).

The provisions of Schedule 9 of the Electricity Act set out a number of features to which regard must be had and such features have been addressed in the EIA process.

2.2.2 The Town and Country Planning (Scotland) Act 1997

The principal planning statute in Scotland is the Town and Country Planning Act (Scotland) 1997² (the Planning Act) as amended by The Planning etc. (Scotland) Act 2006³. The provisions of the Planning (Scotland) Act 2019 will also start to come into force later in 2020.

Section 57(2) of the Planning Act provides:

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

Section 25 of the Planning Act states that:

"Where, in making any determination under the planning Acts, regard is to be had to the development plan, the determination shall be made in accordance with the plan unless material considerations indicate otherwise".

Section 57(2) of the Planning Act makes no reference to the provisions of section 25 which requires regard to be had to the provisions of the Development Plan and the courts have confirmed that section 57(3) does not operate so as to apply section 25 to a decision to make a direction to grant deemed planning permission pursuant to section 57(2).

The Scottish Ministers will determine the application having regard to the statutory duties in Schedules 8 and 9 of the Electricity Act, so far as relevant, and any other relevant material considerations, one of which will be relevant aspects of the statutory Development Plan.

The Development plan will form a basis for the Council's consultation response to the Development.

2.3 Renewable Energy Policy: Summary

In recent years, European, United Kingdom (UK) and Scottish Government policies have focussed increasingly on concerns about climate change. Each tier of Government has developed targets, policies and actions to achieve these targets.

The Renewable Energy Directive 2009/28/EC⁴ on the promotion of the use of energy from renewable sources established an overall policy for the production and promotion of energy from renewable sources in the European Union (EU). It requires the EU to fulfil at least 20% of its total energy needs with renewables by 2020 – to be achieved through the attainment of individual national targets. All EU countries must also ensure that at least 10% of their transport fuels come from renewable sources by 2020.

In December 2018, the new revised Renewables Energy Directive (2018/2001)⁵ entered into force – establishing a new binding renewable energy target for the EU for 2030 of at least 32%, with a clause for a possible upwards revision by 2023.

² Scottish Government (1997). Town and Country Planning (Scotland) Act 1997. [Online] Available at: <https://www.legislation.gov.uk/ukpga/1997/8/contents> (Accessed 04/09/2020).

³ UK Government (2006). Planning etc. (Scotland) Act 2006. [Online] Available at: <http://www.legislation.gov.uk/asp/2006/17/contents> (Accessed 04/09/2020).

⁴ Official Journal of the European Union (2009). Directive 2009/28/EC of the European Parliament and of the Council [Online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0028> (Accessed 04/09/2020).

⁵ Official Journal of the European Union (2018). Directive (EU) 2018/2001 of the European Parliament and of the Council [Online]. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG&toc=OJ:L:2018:328:TOC (Accessed 04/05/20).

On 29 March 2017, the UK formally notified of its intention to leave the EU under Article 50 of the Treaty of the EU. The European Union (Withdrawal Agreement) Act 2020⁶ received Royal Assent on 23 January 2020 and converts all EU laws, rules and targets into domestic UK governance. The existing EU renewable energy targets for the UK, such as the requirements of the Renewable Energy Directives, remain applicable despite the UK's intention to formally leave the EU.

The UK Government retains responsibility for the overall direction of energy policy, although some elements are devolved to the Scottish Government. The UK Government has published a series of policy documents setting out how the European targets can be achieved. Onshore wind generation, located in Scotland, is identified as an important component to achieve these various goals.

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

- The Letter from Chief Planner to all Heads of Planning in relation to energy targets and SPP (November 2015)⁷;
- Scottish Energy Strategy (December 2017)⁸;
- Onshore Wind Policy Statement (December 2017)⁹;
- The Scottish Climate Change Plan (2018)¹⁰;
- The Scottish Government's declaration of a Climate Emergency (April 2019)¹¹;
- The Scottish Government's 'Programme for Government' (September 2019)¹²;
- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019¹³ and the legally binding net zero target for 2045 and interim targets for 2030 and 2040.

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 requires that "*The Scottish Ministers must ensure that the net Scottish emissions account for the net-zero emissions target year is at least 100% lower than the baseline (the target is known as the "net-zero emissions target").*" The target year is 2045 and the Act also sets out challenging interim targets. It requires that:

"The Scottish Ministers must ensure that the net Scottish emissions account for the year—
(a) 2020 is at least 56% lower than the baseline,
(b) 2030 is at least 75% lower than the baseline, and
(c) 2040 is at least 90% lower than the baseline."

⁶ Official Journal of the European Union (2009). Directive 2009/28/EC of the European Parliament and of the Council [Online] Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0028> (Accessed 04/09/2020).

⁷ Scottish Government (2015) Energy Targets and Scottish Planning Policy: Chief Planner Letter [Online] Available at: <https://www.gov.scot/publications/energy-targets-and-scottish-planning-policy-chief-planner-letter/> (Accessed 10/09/20)

⁸ Scottish Government (2017) The Future of Energy in Scotland: Scottish Energy Strategy [Online] Available at: <https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/> (Accessed 10/09/20)

⁹ Scottish Government (2017) Onshore Wind: Policy Statement [Online] Available at: <https://www.gov.scot/publications/onshore-wind-policy-statement-9781788515283/> (Accessed 10/09/20)

¹⁰ Scottish Government (2018) Climate Change Plan: Third Report on Proposals and Policies 2018-2032 [Online] Available at: <https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018-9781788516488/> (Accessed 10/09/20)

¹¹ Climate Emergency Declaration [Online] the Scottish Government's declaration of a Climate Emergency [Online] Available at: <https://climateemergencydeclaration.org/scotland-worlds-first-government-to-declare-a-climate-emergency/> (Accessed 10/09/20)

¹² Scottish Government (2019) Protecting Scotland's Future: the Government's Programme for Scotland 2019-2020 [Online] Available at: <https://www.gov.scot/publications/protecting-scotland-s-future-governments-programme-scotland-2019-20/> (Accessed 10/09/20)

¹³ Scottish Government (2019) Climate Change (Emissions Reduction Targets)(Scotland) Act 2019 [Online] Available at: <http://www.legislation.gov.uk/asp/2019/15/enacted> (Accessed 10/09/20)

It is important to note that these targets are minimum targets, they are not maximums or aspirations. The targets legally bind the Scottish Ministers and have largely been legislated to set the framework for Scotland's response to the Climate Emergency.

The Development relates to the generation of electricity from renewable energy sources and comes as a direct response to national planning and energy policy objectives.

The Development would make a contribution to the attainment of renewable energy and electricity targets at both the Scottish and UK levels. Detailed reference to the renewable energy policy context is provided in the Planning Statement.

2.4 National Planning Policy and Guidance

2.4.1 The National Planning Policy Framework (NPF3)

NPF3 (2014)¹⁴ is a long-term strategy for Scotland. It is the spatial expression of the Scottish Government's Economic Strategy, and of plans for development and investment in infrastructure.

Part of the vision is of Scotland as a low carbon place, where the opportunities arising from the ambition to be a world leader in low carbon energy generation have been seized. NPF3 is informed by, and aims to help achieve, the Scottish Government's climate change and renewable energy targets.

NPF3 acknowledges that the energy sector accounts for a significant share of the country's greenhouse gas emissions, and that addressing this requires capitalising on Scotland's outstanding natural advantages, including its significant wind resource. NPF3 makes it clear that onshore wind will continue to play a significant role in de-carbonising the energy sector and diversifying energy supply.

National Planning Policy Framework 4 (NPF4) is under preparation and will include all aspects of national planning policy as per the provisions of the Planning (Scotland) Act 2019, which was passed by the Scottish Parliament in June 2019. It is anticipated that a consultation draft NPF4 will be issued in 2021. The 2019 Act includes a broad range of changes to be made across the planning system.

2.4.2 Scottish Planning Policy (SPP)

SPP (2014) is Scottish Government policy on how nationally important land use planning matters should be addressed.

SPP contains a number of principal policies, one of which crucially expresses "a presumption in favour of development that contributes to sustainable development" (page 9). Paragraph 28 goes on to state that, *"the planning system should support economically, environmentally and socially sustainable places by enabling development that balances the costs and benefits of a proposal over the longer term. The aim is to achieve the right development in the right place; it is not to allow development"*.

Paragraph 29 highlights a series of criteria which should guide decision-making in this regard and the following provisions are considered relevant to the Development:

- Net economic benefit;
- Economic issues, challenges and opportunities;
- Good design and qualities of successful places;
- Delivery of infrastructure;
- Climate change mitigation and adaptation;
- Principles of sustainable land use as set out in the land use strategy;

¹⁴ Scottish Government (2014). National Planning Framework 3 Online], Available at: <https://www.gov.scot/publications/national-planning-framework-3/> (Accessed 04/09/2020).

- Protecting, enhancing and promoting cultural heritage;
- Protecting, enhancing and promoting natural heritage and landscape;
- Reducing waste; and,
- Over-development, amenity and effects on water, soil and air.

In support of the outcome of making Scotland a low carbon place, the planning system should support the change to a low carbon economy, including deriving the equivalent of 100% of electricity demand from renewable sources by 2020. It should support the development of electricity generation from a diverse range of renewable sources. It should guide development to appropriate locations and advise on the issues that would be taken into account when specific proposals are being assessed.

Onshore wind is referred to specifically in paragraphs 161 to 166 (development planning considerations) and paragraphs 169 to 174 (development management considerations) of SPP within the 'Low Carbon Place' outcome. Development planning guidance for onshore wind includes reference to the need for planning authorities to set out in their development plans a Spatial Framework identifying those areas that are likely to be most appropriate for onshore wind farms. Table 1 in SPP provides guidance on how spatial frameworks should be set out. They should identify three types of areas including:

- Group 1: Areas where wind farms will not be acceptable (National Parks and National Scenic Areas);
- Group 2: Areas of significant protection (i.e. national and international designations, nationally important environmental interests, community separation for considering visual impact); and
- Group 3: Areas with potential for wind farm development (where wind farms are likely to be acceptable subject to consideration of details).

With reference to the Spatial Framework within the Council's Onshore Wind Energy Supplementary Guidance (2016)¹⁵, most of the Site lies within Group 2 (and some in Group 3) by virtue of the 'Carbon Rich Soils, Deep Peat and Priority Peatland Habitat'.

More generally, SPP advises that the siting and design of development should take account of local landscape character. Decisions should take account of potential effects on landscapes and the natural and water environment, including cumulative effects. Applicants should seek to minimise adverse impacts through careful planning and design. Planning permission should be refused where the nature or scale of a development would have an unacceptable impact on the natural environment.

Beyond the Spatial Framework for wind farms the following considerations, outlined in paragraph 169, should be taken into account (where applicable) when determining development proposals:

- Net economic impact;
- Scale of contribution to renewable energy generation targets;
- Effect on greenhouse gas emissions;
- Cumulative impacts;
- Impact on communities and dwellings (including visual impact, residential amenity, noise and shadow flicker);
- Landscape and visual impacts (including wild land);
- Effect on natural heritage (including birds);
- Impacts on carbon rich soils (using carbon calculator);
- Impact on public access (including long distance walking and cycling routes and scenic routes);

¹⁵ The Highland Council (2016). Onshore wind energy: supplementary guidance. [Online]. Available at: https://www.highland.gov.uk/downloads/file/18793/onshore_wind_energy_supplementary_guidance_november_2016 (accessed 04/09/2020).

- Impacts on the historic environment (including scheduled monuments, listed buildings and their setting);
- Impacts on tourism and recreation;
- Impacts on aviation and defence interests and seismological recording;
- Impacts on telecommunications and broadcasting installations;
- Impacts on transportation (road traffic and adjacent trunk roads);
- Effects on hydrology (water environment and flood risk);
- Opportunities for energy storage; and
- Conditions relating to decommissioning of development, including ancillary infrastructure and site restoration.

2.4.3 Planning Advice Notes and Specific Advice Sheets

Planning Advice Notes (PANs) and Specific Advice Sheets set out detailed advice from the Scottish Government in relation to a number of planning issues. Relevant PANs and Specific Advice Sheets relevant to the Development are summarised in Table 2.1 below.

Table 2.1: Relevant PANs and Specific Advice Notes

Title	Summary of Document
PAN 1/2013 Environmental Impact Assessment ¹⁶	Provides information on the role local authorities and consultees play as part of the EIA process, and how the EIA can inform development management.
PAN 60 (2000) Planning for Natural Heritage ¹⁷	Advises developers on the importance of discussing their proposals with the planning authority and NatureScot (formerly Scottish Natural Heritage, SNH) and use of the EIA process to identify the environmental effects of development proposals and seek to prevent, reduce and offset any adverse effects in ecology and biodiversity.
PAN 61 (2001) Sustainable Urban Drainage Systems ¹⁸	Good practice drainage guidance.
PAN 68 (2003) Design Statements ¹⁹	This PAN covers the importance of design statements, and provides flexible guidance on their preparation, structure, and content. The PAN also outlines the principles underpinning the production of design statements, as expected by the Scottish Government.
PAN 75 (2005) Planning for Transport ²⁰	The objective of PAN 75 is to integrate development plans and transport strategies to optimise opportunities for sustainable development and create successful transport outcomes.
PAN 3/2010 Community Engagement ²¹	This document provides advice on how to engage with local communities through the planning process.

¹⁶ Scottish Government (2013) PAN 1/2013: Environmental Impact Assessment [Online] Available at: <https://www.gov.scot/publications/planning-advice-note-1-2013-environmental-impact-assessment/> (Accessed 10/04/20)

¹⁷ Scottish Government (2000) Planning for Natural Heritage: PAN 60 [Online] Available at: <https://www2.gov.scot/Publications/2000/08/pan60-root/pan60> (Accessed 10/04/20)

¹⁸ Scottish Government (2001) PAN 61: Planning and Sustainable Urban Drainage [Online] Available at: <https://www2.gov.scot/Publications/2001/07/pan61> (Accessed 10/04/20)

¹⁹ Scottish Government (2003) PAN 68: Design Statement [Online] Available at: <https://www.gov.scot/publications/planning-advice-note-68-design-statements/> (Accessed 10/04/20)

²⁰ Scottish Government (2005) PAN 75: Planning for Transport [Online] Available at: <https://www.gov.scot/publications/planning-advice-note-pan-75-planning-transport/> (Accessed 10/04/20)

²¹ Scottish Government (2010) PAN 3/2010: Community Engagement [Online] Available at: <https://www.gov.scot/publications/planning-advice-note-3-2010-community-engagement/> (Accessed 10/04/20)

Title	Summary of Document
PAN 1/2011 Planning and Noise ²²	This PAN provides advice on the role of the planning system in helping to prevent and/ or mitigate any potential adverse effects of noise. It promotes the principles of good acoustic design and promotes a sensitive approach to the location of new development.
PAN 2/2011 Planning and Archaeology ²³	The PAN is intended to inform local authorities and other organisations of how to process any archaeological scope of works within the planning process.
Online Renewables Planning Advice - On Shore Wind Turbines (updated 2014) ²⁴	This Specific Advice Sheet provides an overview of the use of the carbon calculator in estimating the carbon savings resulting from wind farm developments. NB: Please note that this Specific Advice Sheet pre-dates SPP, so the areas covered therein in relation to 'spatial framework', 'spatial planning' and 'areas of search' are no longer relevant.
PAN 51 Planning, Environmental Protection and Regulation (Revised 2006) ²⁵	Details the role of the planning system in relation to the environmental protection regimes.
Online Planning Advice on Flood Risk (2015) ²⁶	Provides advice on the role of the planning system and the assessment and management of flood risk.

2.5 The Development Plan and Relevant Policies

The statutory Development Plan covering the Site comprises the following:

- The Highland Wide Local Development Plan²⁷ (HwLDP) (2012);
- The Inner Moray Firth Local Development Plan²⁸ (IMFLDP) (adopted 2015); and
- Relevant supplementary guidance, particularly the Onshore Wind Energy Supplementary Guidance (2016).

There are no development management policies of relevance to the Development in the IMFLDP. The IMFLDP is under review and the process is at a very early stage.

The Council has also progressed consultation on a new HwLDP: the consultation period ended on 24th December 2015 and was progressed by way of a Main Issues Report (MIR) which included a series of questions on the main issues affecting people across Highland. The Council suspended progress on a new Highland wide LDP until there is clarity on a new development planning approach as a result of the Planning Act 2019.

²² Scottish Government (2011) PAN 1/2011: Planning and Noise [Online] Available at: <https://www.gov.scot/publications/planning-advice-note-1-2011-planning-noise/> (Accessed 10/09/20)

²³ Scottish Government (2011) PAN 2/2011: Planning and Archaeology [Online] Available at: <https://www.gov.scot/publications/pan-2-2011-planning-archaeology/> (Accessed 10/09/20)

²⁴ Scottish Government (2014) Onshore Wind Turbines: Planning Advice [Online] Available at: <https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/> (Accessed 10/09/20)

²⁵ Scottish Government (2006) PAN 51: Planning, Environmental Protection and Regulation [Online] Available at: <https://www.gov.scot/publications/planning-advice-note-pan-51-revised-2006-planning-environmental-protection/> (Accessed 04/09/20)

²⁶ Scottish Government (2015) Flood Risk: Planning Advice [Online] Available at: <https://www.gov.scot/publications/flood-risk-planning-advice/> (Accessed 10/09/20)

²⁷ The Highland Council. (2012) Highland-wide Local Development Plan. [Online]. Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan (Accessed 04/09/2020).

²⁸ The Highland Council (2015). Inner Moray Firth Local Development Plan [Online]. Available at: https://www.highland.gov.uk/downloads/file/15008/adopted_inner_moray_firth_local_development_plan (Accessed 04/09/2020).

2.5.1 Development Plan Policies of Relevance

The policies of most relevance in the HwLDP are as follows:

- Policy 67 – Renewable Energy Developments;
- Policy 57 – Natural, Built, and Cultural Heritage;
- Policy 61 – Landscape;
- Policy 55 – Peat and Soils;
- Policy 58 – Protected Species;
- Policy 59 – Other Important Species; and
- Policy 60 – Other Important Habitats.

These most relevant policies are set out in full below.

Other relevant HwLDP policies which need to be taken into consideration include the following:

- Policy 28 – Sustainable Design;
- Policy 30 – Physical Constraints;
- Policy 31 – Developer Contributions;
- Policy 56 – Travel;
- Policy 63 – Water Environment;
- Policy 66 – Surface Water Drainage;
- Policy 69 – Electricity Transmission Infrastructure; and
- Policy 70 – Public Access.

2.5.1.1 Policy 67 – ‘Renewable Energy Developments’ states:

“Renewable energy development proposals should be well related to the source of the primary renewable resources that are needed for their operation. The Council will also consider:

- *the contribution of the proposed development towards meeting renewable energy generation targets; and*
- *any positive or negative effects it is likely to have on the local and national economy;*

and will assess proposals against other policies of the development plan, the Highland Renewable Energy Strategy and Planning Guidelines and have regard to any other material considerations, including proposals able to demonstrate significant benefits including by making effective use of existing and proposed infrastructure or facilities.

Subject to balancing with these considerations and taking into account any mitigation measures to be included, the Council will support proposals where it is satisfied that they are located, sited and designed such that they will not be significantly detrimental overall, either individually or cumulatively with other developments (see Glossary), having regard in particular to any significant effects on the following:

- *natural, built and cultural heritage features;*
- *species and habitats;*
- *visual impact and impact on the landscape character of the surrounding area (the design and location of the proposal should reflect the scale and character of the landscape and seek to minimise landscape and visual impact, subject to any other considerations);*
- *amenity at sensitive locations, including residential properties, workplaces and recognised visitor sites (in or out with a settlement boundary);*
- *the safety and amenity of any regularly occupied buildings and the grounds that they occupy- having regard to visual intrusion or the likely effect of noise generation and, in the case of wind energy proposals, ice throw in winter conditions, shadow flicker or shadow throw;*

- *ground water, surface water (including water supply), aquatic ecosystems and fisheries;*
- *the safe use of airport, defence or emergency service operations, including flight activity, navigation and surveillance systems and associated infrastructure, or on aircraft flight paths or MoD low-flying areas;*
- *other communications installations or the quality of radio or TV reception;*
- *the amenity of users of any Core Path or other established public access for walking, cycling or horse riding;*
- *tourism and recreation interests; and*

land and water-based traffic and transport interests.

Proposals for the extension of existing renewable energy facilities will be assessed against the same criteria and material considerations as apply to proposals for new facilities.

In all cases, if consent is granted, the Council will approve appropriate conditions (along with a legal agreement/obligation under section 75 of the Town and Country Planning (Scotland) Act 1997, as amended, where necessary), relating to the removal of the development and associated equipment and to the restoration of the site, whenever the consent expires, other than in circumstances where fresh consent has been secured to extend the life of the project, or the project ceases to operate for a specific period.

The Onshore Wind Energy Supplementary Guidance will replace parts of the Highland Renewable Energy Strategy. It will identify: areas to be afforded protection from wind farms; other areas with constraints; and broad areas of search for wind farms. It will set out criteria for the consideration of proposals. It will ensure that developers are aware of the key constraints to such development and encourage them to take those constraints into account at the outset of the preparation of proposals. It will seek to steer proposals, especially those for larger wind farms, away from the most constrained areas and ideally towards the least constrained areas and areas of particular opportunity. It will also set out criteria which will apply to the consideration of proposals irrespective of size and where they are located, enabling proposals to be considered on their merits. It will seek submission as part of the planning application of key information required for the assessment of proposals and provide certainty for all concerned about how applications will be considered by the Council."

2.5.1.2 Policy 57 – 'Natural, Built and Cultural Heritage' states:

"All development proposals will be assessed taking into account the level of importance and type of heritage features, the form and scale of the development, and any impact on the feature and its setting, in the context of the policy framework detailed in Appendix 2. The following criteria will also apply:

- 1. For features of local/regional importance we will allow developments if it can be satisfactorily demonstrated that they will not have an unacceptable impact on the natural environment, amenity and heritage resource.*
- 2. For features of national importance we will allow developments that can be shown not to compromise the natural environment, amenity and heritage resource. Where there may be any significant adverse effects, these must be clearly outweighed by social or economic benefits of national importance. It must also be shown that the development will support communities in fragile areas who are having difficulties in keeping their population and services.*
- 3. For features of international importance developments likely to have a significant effect on a site, either alone or in combination with other plans or projects, and which are not directly connected with or necessary to the management of the site for nature conservation will be subject to an appropriate assessment. Where we are unable to ascertain that a proposal will not adversely affect the integrity of a site, we will only allow*

development if there is no alternative solution and there are imperative reasons of overriding public interest, including those of a social or economic nature. Where a priority habitat or species (as defined in Annex 1 of the Habitats Directive) would be affected, development in such circumstances will only be allowed if the reasons for overriding public interest relate to human health, public safety, beneficial consequences of primary importance for the environment, or other reasons subject to the opinion of the European Commission (via Scottish Ministers). Where we are unable to ascertain that a proposal will not adversely affect the integrity of a site, the proposal will not be in accordance with the development plan within the meaning of Section 25(1) of the Town and Country Planning (Scotland) Act 1997.

Note: Whilst Appendix 2 groups features under the headings international, national and local/regional importance, this does not suggest that the relevant policy framework will be any less rigorously applied. This policy should also be read in conjunction with the Proposal map.

The Council intends to adopt the Supplementary Guidance on Wild Areas in due course. The main principles of this guidance will be:

- to provide mapping of wild areas;*
- to give advice on how best to accommodate change within wild areas whilst safeguarding their qualities;*
- to give advice on what an unacceptable impact is; and*
- to give guidance on how wild areas could be adversely affected by development close to but not within the wild area itself.*

In due course the Council also intends to adopt the Supplementary Guidance on the Highland Historic Environment Strategy. The main principles of this guidance will ensure that:

- Future developments take account of the historic environment and that they are of a design and quality to enhance the historic environment bringing both economic and social benefits.*
- It sets a proactive, consistent approach to the protection of the historic environment."*

2.5.1.3 Policy 61 – 'Landscape' states:

"New developments should be designed to reflect the landscape characteristics and special qualities identified in the Landscape Character Assessment of the area in which they are proposed. This will include consideration of the appropriate scale, form, pattern and construction materials, as well as the potential cumulative effect of developments where this may be an issue. The Council would wish to encourage those undertaking development to include measures to enhance the landscape characteristics of the area. This will apply particularly where the condition of the landscape characteristics has deteriorated to such an extent that there has been a loss of landscape quality or distinctive sense of place. In the assessment of new developments, the Council will take account of Landscape Character Assessments, Landscape Capacity Studies and its supplementary guidance on Siting and Design and Sustainable Design, together with any other relevant design guidance."

2.5.1.4 Policy 55 – 'Peat and Soils' states:

"Development proposals should demonstrate how they have avoided unnecessary disturbance, degradation or erosion of peat and soils.

Unacceptable disturbance of peat will not be permitted unless it is shown that the adverse effects of such disturbance are clearly outweighed by social, environmental or economic benefits arising from the development proposal.

Where development on peat is clearly demonstrated to be unavoidable then The Council may ask for a peatland management plan to be submitted which clearly demonstrates how impacts have been minimised and mitigated.

New areas of commercial peat extraction will not be supported unless it can be shown that it is an area of degraded peatland which is clearly demonstrated to have been significantly damaged by human activity and has low conservation value and as a result restoration is not possible.

Proposals must also demonstrate to the Council's satisfaction that extraction would not adversely affect the integrity of nearby Natura sites containing areas of peatland."

2.5.1.5 Policy 58 – 'Protected Species' states:

"Where there is good reason to believe that a protected species may be present on site or may be affected by a proposed development, we will require a survey to be carried out to establish any such presence and if necessary a mitigation plan to avoid or minimise any impacts on the species, before determining the application.

Development that is likely to have an adverse effect, individually and/or cumulatively, on European Protected Species (see Glossary) will only be permitted where:

- *There is no satisfactory alternative; and*
- *The development is required for preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment; and*
- *The development will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.*

Development that is likely to have an adverse effect, individually and/or cumulatively, on protected bird species (see Glossary) will only be permitted where:

- *There is no other satisfactory solution; and*
- *The development is required in the interests of public health or public safety.*

This will include but is not limited to avoiding adverse effects, individually and/or cumulatively, on the populations of the following priority protected bird species:

- *Species listed in Annex 1 of the EC Birds Directive;*
- *Regularly occurring migratory species listed in Annex II of the Birds Directive;*
- *Species listed in Schedule 1 of the Wildlife and Countryside Act 1981 as amended;*
and
- *Birds of conservation concern.*

Development that is likely to have an adverse effect, individually and/or cumulatively (see glossary), on other protected animals and plants (see Glossary) will only be permitted where the development is required for preserving public health or public safety.

Development proposals should avoid adverse disturbance, including cumulatively, to badgers and badger setts, protected under the Protection of Badgers Act 1992 (as amended by the Nature Conservation (Scotland) Act 2004."

2.5.1.6 Policy 59 – 'Other Important Species' states:

"The Council will have regard to the presence of and any adverse effects of development proposals, either individually and/or cumulatively, on the Other Important Species which are included in the lists below, if these are not already protected by other legislation or by nature conservation site designations:

- *Species listed in Annexes II and V of the EC Habitats Directive;*

- *Priority species listed in the UK and Local Biodiversity Action Plans; and*
- *Species included on the Scottish Biodiversity List."*

2.5.1.7 Policy 60 – 'Other Important Habitats and Article 10 Features' states:

"The Council will seek to safeguard the integrity of features of the landscape which are of major importance because of their linear and continuous structure or combination as habitat "stepping stones" for the movement of wild fauna and flora (Article 10 Features). The Council will also seek to create new habitats which are supportive of this concept. The Council will have regard to the value of the following Other Important Habitats, where not protected by nature conservation site designations (such as natural water courses), in the assessment of any development proposals which may affect them either individually and/or cumulatively:

- *Habitats listed in Annex I of the EC Habitats Directive;*
- *Habitats of priority and protected bird species (see Glossary);*
- *Priority habitats listed in the UK and Local Biodiversity Action Plans; and*
- *Habitats included on the Scottish Biodiversity List.*

The Council will use conditions and agreements to ensure that significant harm to the ecological function and integrity of Article 10 Features and Other Important Habitats is avoided. Where it is judged that the reasons in favour of a development clearly outweigh the desirability of retaining those important habitats, the Council will seek to put in place satisfactory mitigation measures, including where appropriate consideration of compensatory habitat creation."

2.6 Onshore Wind Supplementary Guidance

The Council adopted its Supplementary Guidance (SG)²⁹ on wind energy in November 2016 and this now forms part of the statutory Development Plan.

Section 1 'Introduction' states: *"The advice that follows provides a fuller interpretation of HwLDP policies as they relate to onshore wind energy development. The Council will balance these considerations with wider strategic and environmental and economic objectives including sustainable economic growth in the Highlands, and our contribution to renewable energy targets and tackling climate change...."*

Section 2 of the SG includes a Spatial Framework, following the approach of Table 1 in SPP.

Section 4 of the SG sets out *"key development plan considerations"* and the topic headings broadly follow those as set out within policy 67 of the HwLDP. The topic headings, to which additional guidance is provided, broadly follow those as set out within HwLDP Policy 67 and are summarised as follows:

- Landscape and Visual Effects;
- Safety and Amenity at Sensitive Locations;
- Safety of Airport, Defence and Emergency Service Operations;
- Operational Efficiency of Other Communications;
- Operational Efficiency of Wind Energy Developments;
- The Natural and Historic Environment;
- The Water Environment;
- Peat;
- Trees and Woodland;
- Tourism and Recreation;
- Public Access;

²⁹ The Highland Council (2016) Onshore Wind Energy: Supplementary Guidance [Online] Available at: https://www.highland.gov.uk/downloads/file/18793/onshore_wind_energy_supplementary_guidance_november_2016 (Accessed 10/04/20)

- Traffic and Transport Interests;
- Electricity and Gas Infrastructure;
- Noise Assessment;
- Borrow Pits;
- Mitigation;
- Construction Environmental Management Plans;
- Restoration Bonds;
- Repowering.

At paragraph 4.16, the SG sets out that “*the following criteria set out key landscape and visual aspects that the Council will use as a framework and focus for assessing proposals, including discussions with applicants*”. The criteria together with the ‘measures’ for development are set down in Table 2.2 below:

Table 2.2: Criteria & Framework of ‘Landscape and Visual Aspects’ in the Onshore Wind SG

Criterion 1: Relationship between Settlements/Key locations and wider landscape respected	
Measure	• The extent to which the proposal contributes to perception of settlements or key locations being encircled by wind energy development. • Development should seek to achieve a threshold where: Turbines are not visually prominent in the majority of views within or from settlements/Key Locations or from the majority of its access routes.
Criterion 2: Key Gateway locations and routes are respected	
Measure	• The extent to which the proposal reduces or detracts from the transitional experience of key Gateway Locations and routes. • Development should seek to achieve a threshold where: Wind Turbines or other infrastructure do not overwhelm or otherwise detract from landscape characteristics which contribute the distinctive transitional experience found at key gateway locations and routes.
Criterion 3: Valued natural and cultural landmarks are respected	
Measure	• The extent to which the proposal affects the fabric and setting of valued natural and cultural landmarks. • Development should seek to achieve a threshold where: The development does not, by its presence, diminish the prominence of the landmark or disrupt its relationship to its setting.
Criterion 4: The amenity of key recreational routes and ways is respected	
Measure	• The extent to which the proposal affects the amenity of key recreational routes and ways (e.g. Core Paths, Munros and Corbetts, Long Distance Routes etc.) • Development should seek to achieve a threshold where: Wind Turbines or other infrastructure do not overwhelm or otherwise significantly detract from the visual appeal of key routes and ways.
Criterion 5: The amenity of transport routes is respected	
Measure	• The extent to which the proposal affects the amenity of transport routes (tourist routes as well as rail, ferry routes and local road access). • Development should seek to achieve a threshold where: Wind Turbines or other infrastructure do not overwhelm or otherwise significantly detract from the visual appeal of transport routes.
Criterion 6: The existing pattern of Wind Energy Development is respected	
Measure	The degree to which the proposal fits with the existing pattern of nearby wind energy development, considerations include:

	• Turbine height and proportions, • density and spacing of turbines within developments, • density and spacing of developments, • typical relationship of development to the landscape. • previously instituted mitigation measures • Planning Authority stated aims for development of area Development should seek to achieve a threshold where: The proposal contributes positively to existing pattern or objectives for development in the area.
Criterion 7: The need for separation between developments and/ or clusters is respected	
Measure	• The extent to which the proposal maintains or affects the spaces between existing developments and/ or clusters • Development should seek to achieve a threshold where: The proposal maintains appropriate and effective separation between developments and/ or clusters
Criterion 8: The perception of landscape scale and distance is respected	
Measure	• The extent to which the proposal maintains or affects receptors' existing perception of landscape scale and distance. • Development should seek to achieve a threshold where: The proposal maintains the apparent landscape scale and/or distance in the receptors' perception.
Criterion 9: Landscape setting of nearby wind energy developments is respected	
Measure	• The extent to which the landscape setting of nearby wind energy developments is affected by the proposal. • Development should seek to achieve a threshold where: The proposal relates well to the existing landscape setting and does not increase the perceived visual prominence of surrounding wind turbines.
Criterion 10: Distinctiveness of Landscape character is respected	
Measure	• The extent to which a proposal affects the distinction between neighbouring landscape character types, in areas where the variety of character is important to the appreciation of the landscape. • Development should seek to achieve a threshold where: Integrity and variety of Landscape Character Areas are maintained

The criteria are addressed in **Chapter 6: Landscape and Visual Amenity** of this EIA Report and also within the supporting Planning Statement.

Paragraph 4.17 adds that the criteria do not set absolute requirements, but rather seek to ensure developers are aware of key potential constraints to development. Following paragraph 4.17 there is a list of 10 criteria, together with associated thresholds and measures for development. An appraisal of how the Development relates to the criteria in the SG is contained within the Planning Statement.

The SG includes a Loch Ness Landscape Sensitivity Appraisal and the site lies within the landscape character area LN6 which states that there may be some scope for extensions to existing schemes.

Paragraph 5.4 adds that Applicants will be expected to "*demonstrate how their proposals align with the conclusions of the assessments, and if they do not, will be expected to demonstrate why they are still appropriate developments*". Paragraph 5.6 however states that it provides "general advice" and 5.7 makes it clear that: "*finding the balance between the benefits of a particular scheme and the impacts it may present will be the subject of careful consideration on a case by case basis at the development management stage*".

2.7 Conclusions

This Chapter has set out the legislative background, a summary of the renewable energy policy framework, and the national and local planning policies and guidance relevant to the consideration of the Development. It provides an objective summary of the energy and planning policy considerations that have been taken into account in the preparation of the EIA Report in order to ensure that it provides the appropriate information for the consideration of the planning application.

As noted, the policy appraisal for the Development is contained in a separate Planning Statement.

3 SITE SELECTION AND DESIGN

3.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) contains a description of the land within the site boundary (the Site), the consideration of alternatives and site selection process, and the design process and scheme evolution that led to the final design of the Corriegarth 2 Wind Farm (the Development).

The Electricity Works (Environmental Impact Assessment) (Scotland)¹ Regulations 2017 state in Schedule 4 paragraph 2 that an EIA report must include:

'A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.'

This chapter explains why the Site has been selected and summarises the layout options that were considered by the Applicant during the evolution of the Development.

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a Figures excluding LVIA:

- Figure 3.1: Site Design Evolution;
- Figure 3.2a-e: Viewpoint 3: B862 West of Corriegarth Lodge;
- Figure 3.3a-e: Viewpoint 5: Errogie;
- Figure 3.4a-e: Viewpoint 7: General Wade's Military Road;
- Figure 3.5a-e: Viewpoint 8: Great Glen Way, East of Creag Dhearg;
- Figure 3.6a-e: Viewpoint 9: Carn Sgùil;
- Figure 3.7a-e: Viewpoint 11: Meall Fuar-Mhonaidh; and
- Figure 3.8: Final Development Site Layout Design.

3.2 SITE DESCRIPTION

The Site which covers an area of 1,694 ha, is located approximately 15 kilometres (km) north-east of Fort Augustus and 9 km south-east of Foyers, centred on National Grid Reference (NGR) 257500, 813100 (Figure 1.2), lies wholly within the administrative boundary of The Highland Council (the Council). There are no designated sites within the Site or within 5 km of the Site.

The central part of the Site contains the Operational Corriegarth Wind Farm, consisting of 23 turbines of 120 m to turbine blade tip (total output capacity of 69 MW) located at elevations of between 589 m AOD and 703 m Above Ordnance Datum (AOD), and which has been operational since 2017. The Operational Corriegarth Wind Farm turbines area surrounded by open moorland largely used for upland rough grazing and grouse shooting. There are small pockets of improved grassland along the route of the existing access track which descends from the turbines, running north-west to the public road (the U1221) then to the B862.

The topography of the Site and immediate vicinity is relatively simple, with the proposed wind farm located within a broad bowl like landform at the western edge of the Monadhliath Mountains and contained within the Rolling Uplands - Inverness Landscape Character Type (LCT) defined by *'A series of large scale, smooth, rounded hills with summits of similar height forming broad, undulating upland plateaux containing*

¹ Scottish Government (2017) Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: http://www.legislation.gov.uk/ssi/2017/101/pdfs/ssi_20170101_en.pdf (Accessed 19/03/2020)

*occasional steep-sided straths*². Plate 1 below illustrates the regional context of the Site and the existing pattern of wind farm development found along the western fringes of the Monadhliath Mountains.

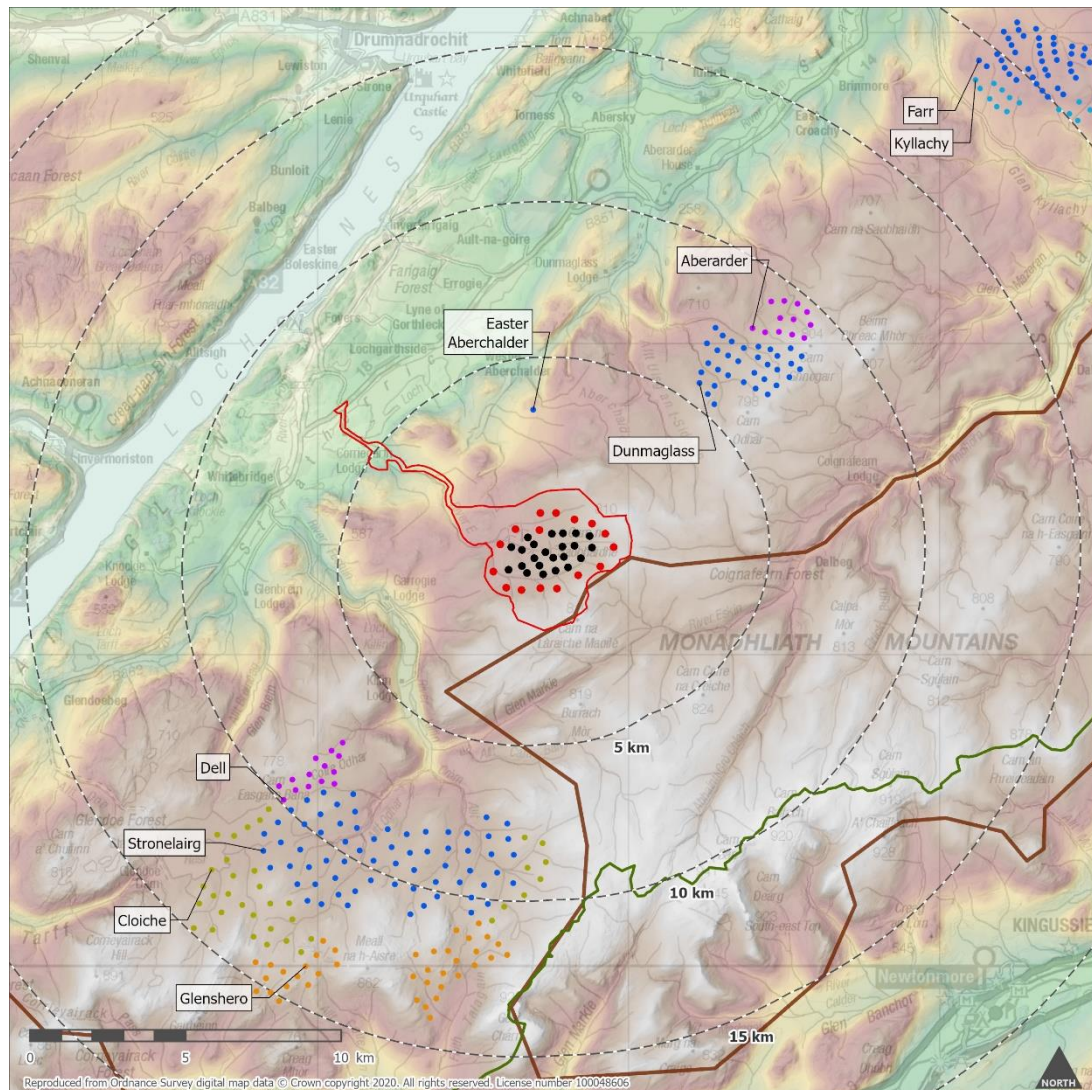


Plate 1: Regional context and existing pattern of wind farm development

The extents of the area, in which the Development turbines are sited, vary in elevation ranging from approximately 562 m AOD to 743 m AOD. Land elevation increases in the southern, eastern, and northern parts of the Site where a number of rounded hills and summits border the Site Boundary and form a natural bowl like landform, whilst the distinguishable summit Carn na Saobhaidhe (603 m AOD) is located within the western extent of the Site. Plate 2 below shows the general topography and natural 'bowl' landform of the Site and its immediate surroundings which contains the existing Corriegarth Wind Farm and the proposed Development.

² SNH (2019) Rolling Uplands - Inverness LCT 221 [Online] Available: at: <https://www.nature.scot/sites/default/files/LCA/LCT%20221%20-%20Rolling%20Uplands%20-%20Inverness%20-%20Final%20pdf.pdf> (Accessed 10/09/2020)

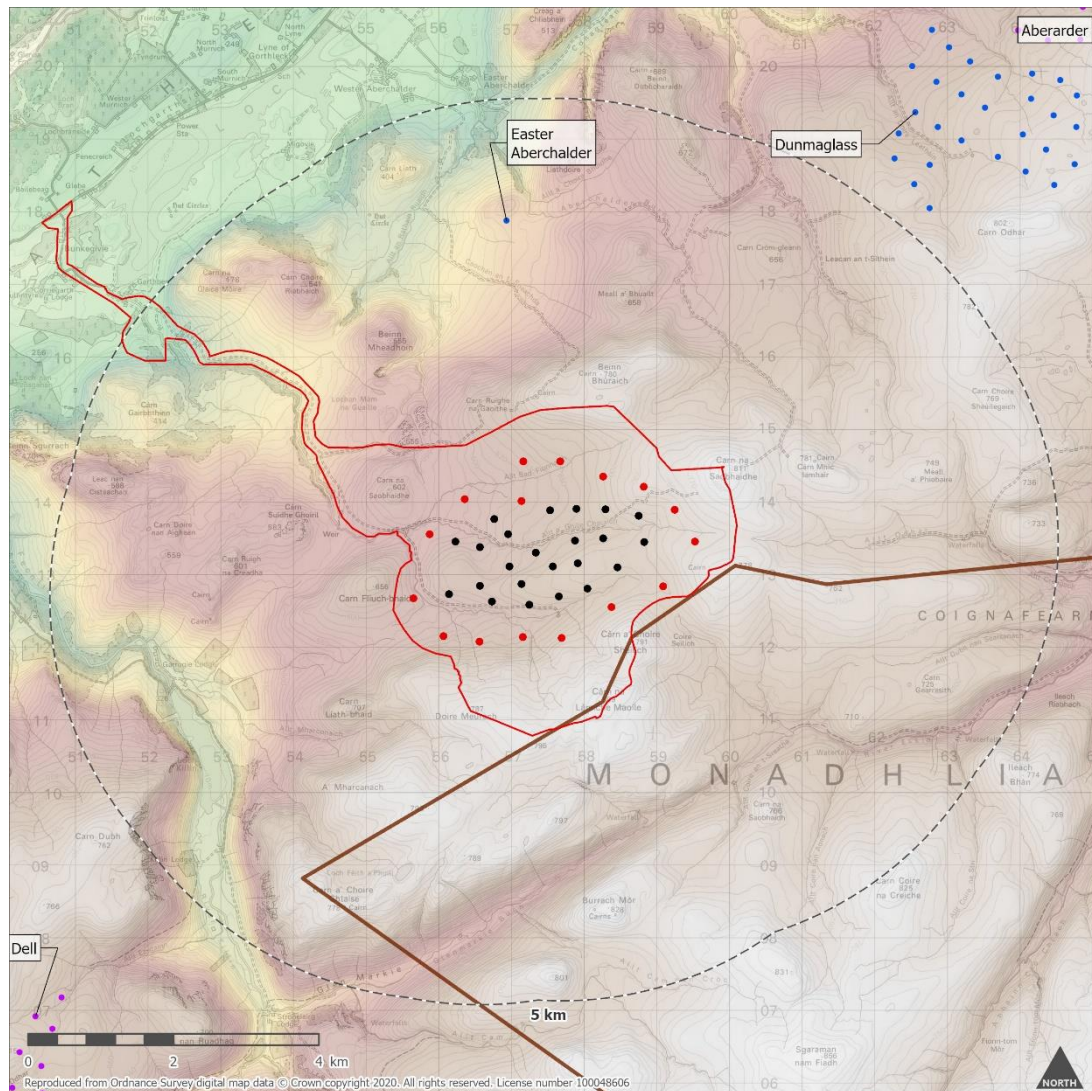


Plate 2: Site topography and surrounding context

The watercourses around the Site and in the Highland area are designated Salmonid Waters to protect or improve the quality of waters and supporting indigenous species. The Development is primarily within the catchment of the River E which has a SEPA overall condition status of 'Moderate' in line with the Water Framework Directive (WFD) (2000/60/EC)³ water quality objectives. The River E and associated tributaries flow westwards towards Loch Mhor. Allt Bad Fionnaich and Allt a' Ghille Charaich run through the north and centre of the Site, respectively, flowing westwards into the River E. There are no waterbodies within the Site.

The Development will utilise the Operational Corriegarth Wind Farm access via the U1221 and B862, the western extents of which are located within the Farmed Strath - Inverness LCT⁴. No other public roads are located within the Site.

There are several settlements located within 20 km of the Site, including:

- Gorthleck, located approximately 6.6 km north-west of the nearest turbine;
- Whitebridge, located approximately 7 km west of the nearest turbine; and

³ The Water Framework Directive (2000/60/EC) [online] Available at: http://ec.europa.eu/environment/water/water-framework/index_en.html (Accessed: 01/04/2020)

⁴ SNH (2019) Farmed Strath - Inverness LCT 227 [Online] Available at: <https://www.nature.scot/sites/default/files/LCA/LCT%20227%20-%20Farmed%20Strath%20-%20Inverness%20-%20Final%20pdf.pdf> (Accessed 10/09/2020)

- Errogie, located approximately 8 km north of the nearest turbine.
- Foyers, located approximately 9 km north-west of the nearest turbine;
- Invermoriston, located approximately 12 km west of the nearest turbine;
- Drumnadrochit, located approximately 15 km north-west of the nearest turbine; and
- Fort Augustus, located approximately 18 km south-west of the nearest turbine.

There is one residential property (Garthbeg Cottage, owned by the landowner) within the Site located along the existing access track, at NGR 251692, 816733, approximately 5.2 km north-west from the closest turbine. There are several properties located approximately 3.6 km south-west of the turbine locations near Loch Killin.

There are no Core Paths within the Site. To the north, Core Path IN25.02 runs perpendicular to the farm track that parallels the access track, crossing the bridge leading to Garthbeg Farm, as shown on Figure 14.1. The closest point of the core path is 5.3 km from T16.

3.3 SITE POLICY CONTEXT

Scottish Planning Policy (SPP) (June 2014) provides support for wind development in principle and encourages local authorities to guide developments towards appropriate locations. Paragraph 161 highlights the requirement for planning authorities to define a *'spatial framework identifying those areas that are likely to be most appropriate for onshore wind farms'* whilst stating that spatial frameworks must be based on the following criteria (set out in SPP Table 1, Page 39):

- **Group 1: Areas where wind farms will not be acceptable**
 - National Parks and National Scenic Areas.
- **Group 2: Areas of significant protection:**
 - Recognising the need for significant protection, in these areas wind farms may be appropriate in some circumstances. 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.
 - Group 2 areas include World Heritage Sites; Natura 2000 and Ramsar sites; Sites of Special Scientific Interest; National Nature Reserves; Sites identified in the Inventory of Gardens and Designed Landscapes; Sites identified in the Inventory of Historic Battlefields; areas of wild land as shown on the 2014 Nature Scot (formerly Scottish Nature Heritage, SNH) map of wild land areas; carbon rich soils, deep peat and priority peatland habitat; and an area not exceeding 2km around cities, towns and villages identified on the local development plan.
- **Group 3: Areas with potential for wind farm development:**
 - Beyond groups 1 and 2, wind farms are likely to be acceptable, subject to detailed consideration against identified policy criteria.

The Site does not lie within a 'Group 1' area and is not covered by any national or international designation in respect of ecology, ornithology or cultural heritage, and lies outside of any Wild Land Area, defined within Group 2 as a *'nationally important mapped environmental interest'*,

However, as is the case for the Operational Corriegarth Wind Farm, a proportion of the Site occupies areas identified as Carbon Rich Soil, Deep Peat and Priority Peatland Habitat (CPP) by the NatureScot Carbon and Peatland Map (2016). On this basis SPP and The Highland Council Onshore Wind Energy Supplementary Guidance (2016, and addendum

2017)⁵ defines the Site as largely consisting of Group 2: Areas of Significant Protection⁶ due to these nationally mapped indications of where carbon rich soil, deep peat, and priority peatland habitat may be found.

In 2017 the Scottish Government published the Onshore Wind Policy Statement (OWPS) (2017)⁷ and Scottish Energy Strategy (SES) (2017)⁸ which recognise that increased efficiency and power output in wind turbine technology, has resulted in increases in the size and scale of wind turbines (e.g. increased turbine blade length and resultant increases in overall tip heights). For example, paragraph 23 of the OWPS states that '*we acknowledge that onshore wind technology and equipment manufacturers in the market are moving towards larger and more powerful (i.e. higher capacity) turbines, and that these – by necessity – will mean taller towers and blade tip heights*'.

Whilst the ministerial foreword of the OWPS (page 3) and the SES (page 43) also state that '*increasingly – the extension and replacement of existing sites, where acceptable, with new and larger turbines, based on an appropriate, case by case assessment of their effects and impacts*' as onshore wind continues to play an important role in meeting Scotland's energy generation and climate change goals.

The Highland Council Onshore Wind Energy Supplementary Guidance (2016, and addendum 2017) includes a landscape and visual sensitivity appraisal of the Loch Ness area, which identifies potential strategic capacity for wind energy development of different scales within each of 20 defined landscape character areas. The majority of the Site, including the extent of which is occupied by the proposed turbines, is located within landscape character area 6 (LN6): Monadhliath ridge and tops, Rolling Uplands. LN6 is identified as being of medium landscape character sensitivity to large scale wind farm development, heightened from that of the wider Rolling Uplands LCT by the presence of existing development (including the Operational Corriegarth Wind Farm) and opportunity for cumulative effects, whilst some limited scope is identified for '*additional Large turbines within the existing pattern*'.

The Supplementary Guidance indicates that there remains some capacity for further developments within the Site, noting that: '*The study identifies that any remaining capacity for this scale of development should be focused around existing clusters that are generally found in rolling uplands, rugged massif and rocky moorland Landscape Character Types, but only where these are well designed, integrated into the existing pattern of development and do not undo the landscape and visual migration agreed for existing schemes.*'

3.4 SITE SELECTION

The selection of an appropriate site which has the potential to support a commercial wind farm development is a complex and lengthy process. It involves examining and balancing a number of environmental, technical, planning and economic issues. Only when it has been determined that a site is not subject to major known environmental, technical,

⁵ The Highland Council (2016, and addendum 2017) Onshore Wind Energy Supplementary Guidance. [Online] Available at:

http://www.highland.gov.uk/download/downloads/id/16949/onshore_wind_energy_supplementary_guidance-currently_adopted_suite.pdf (Accessed 10/09/2020)

⁶ The Highland Council (2016) Spatial Framework for Onshore Wind Energy - Inner Moray Firth LDP Area Map. [Online] http://www.highland.gov.uk/download/downloads/id/22788/framework_map_-_inner_moray_firth.pdf (Accessed 11/09/2020)

⁷ Scottish Government (2017) Onshore Wind Policy Statement. [Online] <https://www.gov.scot/publications/onshore-wind-policy-statement-9781788515283/> (Accessed 11/09/2020)

⁸ Scottish Government (2017) Scottish Energy Strategy. [Online] <https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/> (Accessed 11/09/2020)

planning or economic constraints is the decision made to invest further resources in developing the proposal and conducting an EIA.

In accordance with the EIA Regulations the design alternatives need to be studied with key reasoning, taking into account the potential environmental effects. Baywa r.e. commenced a comprehensive site search in Scotland during early 2016, taking into consideration a range of technical and environmental factors. Over 50 potential sites were identified, which were narrowed down during preliminary site investigations. The search included a review of operational windfarms to establish the potential to accommodate additional turbines. Corriegarth was selected from the remaining sites for further development because:

- The principle of wind energy development has been established at the site with the Operational Corriegarth Wind Farm;
- Available grid capacity and existing overhead connection to the national grid;
- Opportunity to use existing tracks and infrastructure associated with the Operational Corriegarth Wind Farm;
- It has an excellent predicted wind speed;
- It is possible to transport turbine components from nearby ports to the Site;
- There are no residential properties within 5 km of potential turbine locations;
- Limited theoretical visibility of wind turbines from populated areas and transport routes; and
- The Site itself does not support any international or national ecological, landscape or cultural heritage designations.

Following agreement with the landowner and owner of Corriegarth Windfarm a feasibility study was undertaken to further identify development constraints including grid and landscape capacity. Based upon analysis, a perimeter style development surrounding the Operational Corriegarth turbines was the most viable with further studies recommended to inform the design of the turbine layout.

3.5 SITE DESIGN

The purpose of a wind farm development is to harness the power in the wind to generate electricity. The optimum design is therefore to locate wind farms in areas exposed to the highest windspeeds, with turbines located in the optimum position. However, this does not take into account the potential environmental effects of a wind farm. The design of a wind farm must therefore be a balance between achieving an acceptable level of adverse environment effects and maximising energy yield. In addition to these factors, the technical limitations of constructing a wind farm must also be considered in the design stage.

The optimum layout of a wind farm is based on a range of technical criteria. A minimum distance must be maintained between wind turbines to reduce the effects of turbulence and associated increased turbine fatigue and reduction in energy yield. This separation distance is usually a function of rotor diameter and prevailing wind direction, with turbine manufacturers requiring turbines to be located typically between three and seven times the rotor diameter apart. This distance determines the minimum achievable distance between turbines when designing a site. The following additional criteria must also be considered in the design of a wind farm:

- Wind speed;
- Prevailing wind direction;
- Existing infrastructure;
- Topography;
- Ground conditions;
- Local environmental issues; and
- Landscape and visual considerations.

One of the further key factors, when designing adjacent to an operational wind farm, is consideration of how the design ties in with the existing scheme. This includes elements such as the scale of the extension turbines, the increase in the visual extent of the wind farm as a result of the extension, and how the extension turbines interact with the existing turbines from a wind turbulence and energy yield perspective.

The identification of environmental effects is an iterative process, running in tandem with the design process. As environmental effects and sensitivities have identified, the layout of the Development has undergone a series of modifications to avoid or reduce potential environmental effects through careful design. This process has resulted in the layout of the Development presented in this EIA Report. This layout represents the optimum fit within the technical and environmental parameters of this project.

In addition to the turbines, the other elements of the Development which have been designed to minimise environmental effects include the access tracks, potential borrow pits, crane hardstanding areas, temporary construction compounds and the substation compound. The effects of these have been minimised through use of existing infrastructure where possible, careful design, siting, routing and construction methods.

3.5.1 The Design Strategy

Based on a review of the site and its landscape context, consultation with stakeholders, and advice contained in good practice guidance, including NatureScot's Siting and Designing Wind Farms in the Landscape⁹ and the Onshore Wind Energy Supplementary Guidance (2016, and addendum 2017) a design strategy was established, supported by a number of design objectives which were considered throughout the design process.

The principle of the design strategy was to maximise the number of turbines and wind energy capture, whilst minimising significant adverse environmental effects. Therefore, some of these constraints were given a 'hard' constraint value in the design that was not breached and others were assigned a 'soft' constraint value that could be impinged with sufficient justification that effects were still acceptable. This led to a comprehensive process of constraints mapping with further details provided in Section 3.6: Design Strategy. This EIA Report and its conclusions constitute the outcome of the application of the design strategy and design objectives adopted for the Development.

Embedded mitigation was used to minimise any predicted environmental effects and, where applicable to a specific technical assessment, such mitigation is detailed in the relevant chapter within this EIA Report. This was particularly relevant to the avoidance of direct effects, *e.g.* on known protected species. By employing an iterative design process, undertaken in conjunction with the EIA process, a number of potential effects were avoided completely.

The design strategy has been informed by a number of general and site-specific design objectives relating to the siting and design of the turbines in the first instance, whilst acknowledging that the feasibility and appropriateness of other ancillary infrastructure locations (including access tracks) should also be considered throughout the design process.

As advocated by NatureScot guidance⁹, the extension of existing wind farm developments may lead to increased impacts in a local area but has the potential to limit the extent of additional or new impacts across the wider landscape(s). The approach to the design of the Development has considered both the design criteria and principles, and the distinct identity of the original and now Operational Corriegarth Wind Farm, and has sought to

⁹ SNH (2017) Siting and Designing Wind Farms in the Landscape Guidance – Version 3a [Online] Available at: <https://www.nature.scot/sites/default/files/2017-11/Siting%20and%20designing%20windfarms%20in%20the%20landscape%20-%20version%203a.pdf> (Accessed 10/09/2020)

respect, and wherever possible enhance the existing composition of the Development through similarity in an approach and design that includes:

- Minimising the number of watercourse crossings;
- Maximising the use of existing tracks;
- Avoiding turbine development on land outside of the natural bowl;
- Optimising the layout with respect to wind resource and environmental constraints;
- Optimising the layout with regard to topography;
- Limiting the number of turbines visible at key locations;
- Limiting the overall visibility of the wind farm as much as possible; and
- Limiting the physical extent of the wind farm.

3.5.2 Site Specific Environmental Constraints and Design

The specific environmental factors considered in the design of the Development are set out below, with their influence on the design discussed.

3.5.2.1 Landscape and Visual Amenity

Whilst the Site is not covered by any formal landscape designation; however, there are a number of designated landscapes located within 40 km of the Development, as shown on Figures 6.7a-b. In terms of nationally designated landscapes, the Cairngorms National Park (CNP) and encompassing the Cairngorm Mountains National Scenic Area (NSA) is located approximately 9.5 km south-east of the Site at its closest point, whilst the Glen Strathfarrar NSA and Glen Affric NSA are located beyond 30 km to the north-west and west of the proposed turbines respectively. The locally designated Loch Ness and Duntelchaig Special Landscape Area (SLA) is located approximately 7.7 km north-west of the proposed turbines. A number of other SLAs are located beyond 20 km from the Site including, the Drynachan, Lochindorb and Dava Moors SLA, Ben Alder, Laggan and Glen Bancher SLA, Loch Lochy and Loch Oich SLA and the Strathconon, Morar and Mullardoch SLA.

Although not designated, Wild Land Areas (WLAs) are a mapped area of interest by NatureScot and a nationally important asset. There are six WLAs located within 40 km of the Site, as shown on Figure 6.7a, and the Site and existing operational Corriegarth Wind Farm are located approximately 1 km from the western boundary of Wild Land Area (WLA) 20: Monadhliath.

The inherent nature of wind turbines as tall, modern structures means that the form of the Development as a whole is important, and a clear design strategy is necessary. Whilst significant landscape and visual effects are an unavoidable consequence of any commercial scale wind farm proposal, the design strategy considered the appearance of the Development in the landscape both independent of, and in combination with the Operational Corriegarth Wind Farm.

The Onshore Wind Energy Supplementary Guidance (2016, and addendum 2017) includes a number of design considerations for potential development located within LN6: Monadhliath ridge and tops, Rolling Uplands and which have been considered throughout the design process:

- *'not breach skyline when viewed from north side of Loch Ness.*
- *Be set back from Key Routes*
- *Preserve mitigation established by current schemes*
- *Maintain the landscape setting of each existing scheme.*
- *Avoid coalescence with current positioning*
- *respect spacing and scale of existing development pattern.'* (page 51)

This formed a key consideration in designing the turbine layout in order to avoid or minimise significant adverse effects as far as practicable. Landscape and visual

considerations have therefore influenced the design in a number of ways; however, the principal aim of the landscape and visual input was to mitigate potential adverse effects of the Development through design embedded mitigation, by incorporating a number of general and site-specific design objectives which reflect the overall design strategy, including:

General Design Objectives

- To develop a cohesive turbine layout which is appropriate in scale and extent and will be legible in key views as experienced from the surrounding landscape;
- Avoid dense clusters of overlapping turbines and arrange turbines as far as possible to form an evenly spaced group or array when seen from the surrounding landscape, including key viewpoints;
- To create a legible pattern which looks designed and organised, and avoids turbines which stand apart and appear as outliers, 'stray tips' and thus extend the horizontal spread of the Development;
- To group turbines to create a balanced and coherent image, minimising opportunity for 'stacking' or overlapping of turbine rotors in rows, instead favouring an irregular cluster;
- Select an appropriate scale of wind turbine for the Development (maximum tip height and indicative tower height and rotor diameter), which appears in scale with the landscape and other referenceable features, including other existing wind farm developments, when viewed from the host landscape or adjacent landscapes; and
- To develop a layout that relates well to other individual wind farms, or groups of wind farms in the local vicinity, as well as being coherent in its own right; and
- To develop a layout that fulfils the above objectives whilst respecting other technical and environmental constraints including ecological, hydrological and ground conditions identified during the EIA process.

Site Specific Design Objectives

- To complement the layout and design of the Operational Corriegarth Wind Farm, integrating the Development so that it creates a consistent visual image and avoids conflicting or discordant relationships between the two, so that the two developments appear as one coherent wind farm development 'cluster';
- To ensure the Development does not disproportionately increase the horizontal and vertical extents of the Operational Corriegarth Wind Farm;
- To design a turbine layout which responds to the underlying landform and is broadly contained by the peripheral topography of the broad natural 'bowl' of the Site, defined by Carn na Saobhaidhe (602 m AOD) and Carn Fliuch-bhaid (656 m AOD) to the west and Carn na Saobhaidhe (811 m AOD) to the east;
- Minimise additional effects by avoiding the highest ground and sensitive skylines formed by the surrounding hills and ridges which contain the interior of the Site, including Carn Ruighe na Gaoithe and Beinn Bhùraich (780 m AOD) to the north, and Carn a' Choire Sheilich (791 m AOD) and neighbouring summits to the south, south-east;
- Seek to avoid siting turbines such that those of the proposed extension are seen against the skyline from key viewpoints;
- To develop a layout which minimises additional visibility and potential effects on nationally and locally designated landscapes and wild land areas, including the Cairngorms National Park (CNP) and Loch Ness and Duntelchaig Special Landscape Area (SLA), and Wild Land Area (WLA) 20: Monadhliath, beyond those which currently arise from the presence of the Operational Corriegarth Wind Farm; and
- To develop a layout which avoids or minimises potential effects on views from settlements, and residential properties within close proximity, most notably those within Stratherrick to the west and north-west of the Site; and

- Utilise existing onsite infrastructure as far as possible (e.g. access tracks), and consider the siting of additional ancillary infrastructure to minimise visibility from key sensitive receptors (e.g. transformers, substation/control building).

The approach to the design of the Development has also taken cognisance of the ten key landscape and visual criteria set out within Onshore Wind Energy Supplementary Guidance (2016, and addendum 2017) which form the framework against which wind energy proposals are assessed.

Views experienced by sensitive receptors from designated landscapes and wild land, as well as from promoted viewpoints, settlements, recreational routes, transport routes and popular local hill summits across the Study Area have influenced refinement of the turbine layout and selection of the candidate turbine. Although views of the Development have been considered from each of the LVIA assessment viewpoints and other reference points across the Study Area (detailed in Table 6.5 in **Chapter 6**), a number of these viewpoints have been used to closely inform and test layouts during the iterative design process, and were selected to be representative of some of the key design objectives. These viewpoints are listed below, and accompanying wirelines have been prepared to illustrate the key iterations of the turbine layout:

- Viewpoint 3: B862 West of Corriegarth Lodge (Figure 3.2a-e);
- Viewpoint 5: Errogie (Figure 3.3a-e);
- Viewpoint 7: General Wade's Military Road (Figure 3.4a-e);
- Viewpoint 8: Great Glen Way, East of Creag Dhearg (Figure 3.5a-e);
- Viewpoint 9: Carn Sgùlian (Figure 3.2a-e); and
- Viewpoint 11: Meall Fuar-Mhonaigh (Figure 3.2a-e).

The scale of the overall wind farm and the selection of an appropriate scale of turbine (tower height and rotor diameter) for the Development was a key consideration, with regard to the existing landscape character of the Site and surrounding area, including potential indirect effects on sensitive landscape character types and designated landscapes. The design of the Development has sought to ensure that the layout and turbines do not diminish the perceived scale of the landscape when viewed from the host landscape or adjacent landscapes. Turbine rotor diameter has a direct relationship to the appropriate separation distance between turbines, and the proportions and size of the turbines can affect the relationship between a proposal and other scale indicators such as landmark hill summits, built development and man-made influences, including other wind energy developments in the landscape, and most importantly in this instance the existing Operational Corriegarth Wind Farm.

Compatibility of the Development with the composition and scale of the Operational Corriegarth Wind Farm and the pattern of existing wind energy development on the western fringes of the Monadhliath Mountains and the wider Study Area were considered during the iterative design process. The pattern of existing and consented wind energy development within the Monadhliath Mountains, defined by the Rolling Uplands - Inverness (221) LCT is indicated on Figure 6.8b (and Plate 1 above) where the pattern of wind farm development has focused on the establishment of wind farm clusters generally situated within natural bowl landforms, set back from the edge of the plateau and the transitional zone into the settled straths to the west.

The design of the Development, which will extend and consolidate the existing wind farm cluster formed by the Operational Corriegarth Wind Farm, has sought to respect the design rationale and strategy of the existing scheme as far as possible, and the selection of an appropriately scale of turbine (in respect of both turbine tip height and rotor diameter) has been considered throughout the design process. Since construction of the existing Operational Corriegarth Wind Farm (c.120 m tip height) a number of additional wind farm developments have been consented and constructed with turbines of c.125 m (Dunmaglass Wind Farm) to c.135 m (Stronelairg Wind Farm) now evident in views of

the Monadhliath Mountains from across the Study Area, whilst currently undetermined proposals (Glenshero and Cloiche Wind Farms) are proposed in relatively close proximity at c.135 m to 149.9 m tip height.

The effects on landscape and visual receptors are fully assessed in **Chapter 6: Landscape and Visual Amenity**.

3.5.22 Ecology

There are no designated sites within the Site; however, there are a number of ecological designations located within 10 km of the Development, as shown on Figure 7.1. These include:

- Loch Bran Site of Special Scientific Interest (SSSI), designated for terrestrial biological importance, located approximately 7.4 km north-west of the closest turbine (T16);
- Monadhliath Special Area of Conservation (SAC), designated for its upland characteristics and associated habitats, located 7.2 km south of the closest turbine (T5);
- Knockie Lochs SSSI and Loch Knockie and nearby Lochs Special Protected Area (SPA), both designated as suitable habitat for breeding birds, situated approximately 9.4 km west of the closest turbine (T1);
- Easter Ness Forest SSSI, located approximately 9.5 km north-west of the closest indicative turbine location; and
- Ness Woods SAC, located approximately 9.5 km north-west of the closest turbine (T16).

Both desk-based surveys and site visits were undertaken as part of the ecology baseline studies which were key to informing the final design of the site. Desk-based surveys determined the nearby ecological designations and identified historical information relating to the ecological resources within the study area and Site. Site surveys included the following:

- Extended Phase 1 habitat survey;
- National Vegetation Classification (NVC) survey;
- Otter survey;
- Bat habitat suitability survey;
- Bat activity survey;
- Wildcat survey;
- Water vole survey;
- Fisheries habitat survey;
- Red squirrel survey; and
- Badger survey.

The purpose of these surveys was to identify sensitive habitats and species within the site that should be avoided and subsequently ensure the Development could be designed sensitively to the ecological receptors located within and nearby the Site.

The final layout was informed by the aforementioned surveys, which ensured that the Development avoided the most sensitive habitats, including areas of deepest peat and highly sensitive Groundwater Dependent Terrestrial Ecosystems, as shown in Figure 7.3.

The effects on ecological receptors are fully assessed within **Chapter 7: Ecology**.

3.5.23 Ornithology

Results of baseline surveys and monitoring of the Operational Corriegarth Wind Farm determined that a number of species of higher conservation concern, primarily raptors, use the Site and wider survey area. The final layout was influenced by the requirement to avoid the locations of known Schedule 1 species' nesting sites by a minimum of 500 m

and took into consideration any spatial patterns of activity, topographical features, and potentially important foraging areas associated with key species, to minimise the likelihood of significant disturbance-displacement and collision risk effects.

The effects on ornithological features are fully assessed within **Chapter 8: Ornithology**.

3.5.24 Archaeological Features

Figure 9.3 shows there are five Scheduled Monuments within a 10 km radius; the nearest Scheduled Monument is Dell Farm Burial Mounds 350 m NE of (SM4536) located 7.5 km north-west of the nearest turbine (T16). Figure 9.3 also shows there are 29 Listed Buildings within 10 km, 11 of which fall within the Zone of Theoretical Visibility. The nearest Listed Building is Category B Garthbeg House (LB1883), located 5.3 km north-west of the nearest turbine (T16); the next closest Listed Buildings are the Grade B listed Boleskine Old Manse (LB1848) and Boleskine Parish Church (LB1846), located approximately 6.9 km north-west of the nearest turbine (T16).

There are no designated heritage features within the Site; however, there are 13 non-designated features, largely concentrated around the watercourses, as established through a desk-based assessment and site walkover survey. The design has avoided all known archaeological features within the Site, as well as considered indirect effects upon designated heritage assets in the wider area.

The effects on cultural heritage assets is fully assessed within **Chapter 9: Archaeology and Cultural Heritage**.

3.5.25 Noise Sensitive Receptors

The nearest noise sensitive receptor is approximately 5.3 km north-west of the nearest turbine location which is well over the 11 times the rotor diameter; therefore, noise sensitive receptors are not a constraint relevant to the selection or design of the Development. A noise assessment is presented in **Chapter 10: Noise**.

3.5.26 Traffic and Transport

The turbines would be delivered to the Invergordon port facility and then be delivered to the Site, from the east, using the existing road network (A9, B851, and B862), as shown in Figure 11.1. Construction material would be transported via the A9.

The access into the Site is the same as that used for the Operational Corriegarth Wind Farm. The effects on the traffic and transport are fully assessed within **Chapter 11: Traffic and Transportation**.

3.5.27 Water Environment

During the EIA process, desktop and site-based surveys were carried out to inspect and identify all water features including private water supplies within the area with potential to be affected by the Development.

The aim of the design process was to achieve a layout that avoids effects on sensitive hydrological receptors including private water supplies and source waters. All turbines and infrastructure have been located a minimum of 50 m from the banks of any watercourse or waterbody with the exception of where tracks are required to cross watercourses. Where watercourses are located within steep-sided gullies the watercourse buffer is extended 50 m from the top of the slope. The arrangement of access tracks has been designed to limit the number of watercourses crossings where possible or to re-use existing crossing points.

A total of three private water supplies have been identified as having the potential to be in hydrological connectivity with the existing access track and are not considered to be in hydrological connectivity to infrastructure associated with turbine foundations and crane hardstanding. The wind farm design is considered to avoid effects upon private

water supplies and mitigation measures will minimise the effects on private water supplies as a result of use and upgrades to the existing access tracks.

The effects on the hydrology environment are fully assessed within **Chapter 12: Hydrology and Hydrogeology**. The private water supplies are assessed in Appendix 12.1 appended to the hydrology chapter.

3.5.28 Peat

A peat depth survey was undertaken across the Site where it was established that peat was deepest in the flatter, topographically low-lying areas of the Site with depths recorded to approximately 5 m in the south-west of the Site. Peat was a key design consideration with the objective of ensuring that turbine locations were sited in 1.5 m of peat or less.

The effects of the Development on peat deposits are fully assessed within **Chapter 13: Geology and Peat**.

3.5.29 Socio-Economics, Recreation & Tourism

A desk-based study of local socio-economics, recreation and tourism receptors was undertaken at an early stage to establish the socio-economics of the local area and gain a full understanding of the recreation and tourism receptors within the wider area.

The desk-based study established that the wider area is host to many different tourism and recreation receptors, largely based around the natural environment. These receptors were considered fully within the design process. Furthermore, core paths and local recreational routes were also considered.

The effects on the socio-economic, recreation & tourism resources are fully assessed within **Chapter 14: Socio-Economics, Recreation & Tourism**. Additionally, **Chapter 6: Landscape and Visual Amenity** also assesses the visual impact of the Development on key receptors which relate to tourism and recreational assets.

3.5.3 Site Specific Technical Constraints

3.5.3.1 Wind Resource

A key element to the design process is the wind resource of the Site; the availability of wind resource is affected by various issues such as wind speed, the prevailing wind direction, and local topography. The wind resource was modelled across the Site which fed into the design process. As a rule, the more elevated areas of Site received the greatest wind resource, which required balancing against the increased landscape and visual effects at higher elevations as discussed in Section 3.4.1.1.

3.5.3.2 Turbine Spacing

The spacing of the turbines is a key consideration in wind farm layout design; turbines need to be arranged a minimum distance apart such that turbulence from a specific turbine does not unduly affect the operation of a turbine which is downwind. The spacing for turbines needs to be larger in the prevailing wind direction and will vary from site to site and between different turbine models. The spacing is directly proportional to the size of the wind turbine rotor, whereby the larger the rotor the larger the spacing between turbines, and the fewer turbines that may be accommodated within a specific area.

The spacing chosen for the Development has been selected based on modelling assumptions and is designed to maximise the energy yield from the Development and minimise effects upon the Operational Corriegarth Wind Farm whilst keeping fatigue loads, caused by turbulence, within the turbine manufacturer's design tolerances.

3.5.3.3 Topography and Ground Conditions

The suitability of ground conditions was considered during the design of the Development, which principally considered areas of steep slope and peat.

Where gradients of greater than 14% were identified, these areas were not considered suitable for the siting of wind turbines. This restricted much of the area within the north-east and south of the Site where steep slopes are present. The presence of steep slopes also presented a key element to the design of the site infrastructure including access tracks and hardstanding areas.

As noted in Section 3.4.1.8 the presence of peat has been assessed and avoided where possible both from an environmental and technical perspective.

3.6 DESIGN EVOLUTION

The final layout as presented in the EIA Report has been the subject of a number of iterations and refinements which sought to avoid or minimise predicted adverse effects as far as reasonably practicable via design embedded mitigation. The resultant proposal balances the environmental and technical constraints, whilst producing an economically viable project. Design changes made as a consequence of the key constraints are considered to be mitigation which is 'embedded' within the design of the scheme.

Whilst the Development went through numerous design iterations, a selection of the key turbine layout design iterations are described below and shown in Figure 3.1 which demonstrates how the layouts have evolved throughout the EIA process. Figure 3.2a-e to Figure 3.7a-e show the key iterations of the turbine layout design from six selected design viewpoints, chosen to represent key sensitive receptors (both landscape and visual) and illustrate some of the key design objectives (predominantly those related to landscape and visual amenity) set out above.

Each of the turbine layout iterations was devised based on the following technical parameters and constraints detailed below:

- Minimum turbine spacing/separation of approximately 6 x rotor diameter downwind and 4 x rotor diameter crosswind and a south-westerly prevailing wind direction (approximately 240 degrees).
- Avoidance of slopes of 14% or greater;
- A hard constraint of 50 m buffers around the banks of watercourses for turbine locations (Figure 12.3);
- A hard constraint to avoid all known archaeological records (Figure 9.1);
- A hard constraint of a minimum 100 m buffer around Groundwater Dependent Terrestrial Ecosystems (GWDTE) (Figure 7.3);
- A soft constraint to minimise turbine locations in deep peat (>1 m) where feasible and to ensure no turbines are located in excess of 1.5 m of peat; and
- A soft constraint to balance visual composition that respects the original design objectives and principles of the Operational Corriegarth Wind Farm.

3.6.1 Pre-Application – September 2019 – 20 Turbines – Tip Height 179.9 m

The initial layout maximised potential turbine numbers reflective of known constraints at the time - which were not necessarily subject to detailed site work. The principle constraints during pre-application included the avoidance of known designations (i.e. 50 m buffers around watercourses and avoidance of areas of steep terrain) whilst ensuring suitable separation distances between the turbines to prevent issues associated with turbulence.

At this time, initial consideration was given to the relative visibility of the turbines in comparison with the Operational Corriegarth Wind Farm. The result of taking these

constraints into account was a pre-application layout that maximised potential turbine numbers and height making use of all available, unconstrained land. This represented the largest potential wind farm viable within the Site/available land and comprised 20 turbines with a tip height of 179.9 m.

Key feedback received via the Pre-Application Advice for Major Developments process (and subsequently taken into account during the design process) is summarised below:

- Design and scale of the turbines needs to consider the design mitigation implemented for the Operational Corriegarth Wind Farm (e.g. the bowl as shown in Plate 2);
- Larger turbines are not in keeping with the existing pattern of wind developments in the area and a reduction in the scale, by virtue of height and number of turbines, should be considered; and
- Utilisation of existing infrastructure to minimise further effects.

3.6.2 Scoping Layout – February 2020 – 18 Turbines – Tip Height 149.9 m

A design workshop, attended by key technical and environmental specialists from the EIA team, was held in December 2019 following the completion of the Phase 1 peat survey and after most of the EIA baseline survey work had been completed and the identified environmental constraints digitised and analysed by the technical assessors. The Scoping Layout (shown on Figure 3.1) was formulated in February 2020 and consisted of 18 turbines with a tip height of up to 149.9 m. The layout was based on 6 x 4 rotor diameter spacing requirements, a prevailing wind of south-west (approximately 240 degrees).

The key design changes which influenced the development of the Scoping Layout are summarised below:

- Pre-application advice to reduce the tip height and number of turbines;
- Reduction in the total number of turbines from 20 to 18, included from area within superseded pre-application site boundary (Shown on Figure 3.1), reducing the overall horizontal extent of the Development in views from west, north-west across the Great Glen (VP8 and VP11);
- Reduction in turbine height from 179.9 m to 149.9 m, to avoid the necessity for visible aviation lighting, removal of visibility of turbine blades from Stratherrick to the west, north-west of the Site, and reduction in scale of turbines alongside those of the existing Corriegarth Wind Farm (VP3 and VP9); and
- Identification of appropriate areas to site turbines where peat depths were shallowest based upon Phase 1 peat survey of 100 m intervals across the Site.

The reduction in both turbine numbers and overall turbine blade tip height ensured the design of a cohesive extension to the Operational Corriegarth Wind Farm (comprising turbines of 120 m to blade tip height) including consideration of effects on key sensitive receptors, and to avoid potential additional effects arising from the necessity for visible aviation lighting¹⁰.

The Development was scoped under the EIA Regulations, and a Scoping Opinion (Appendix A3.2) was received from the Scottish Government in April 2020.

3.6.3 THC Consultation Layout – April 2020 – 17 Turbines – Tip Height 149.9 m

A video conference meeting was held with the Council's planning officer and landscape architect on 3rd April 2020. The focus of the meeting was to understand any concerns in

¹⁰ In the interests of aviation safety structures, including wind turbines, of ≥ 150 m require steady red visible aviation lighting, as set out in Civil Aviation Authority (CAA) guidance - CAA (2016) CAA Policy and Guidelines on Wind Turbines – CAP 764 [Online] Available at: <https://publicapps.caa.co.uk/docs/33/CAP764%20Issue6%20FINAL%20Feb.pdf> (Accessed 10/09/2020)

respect of landscape and visual sensitivities and obtain feedback on what would reasonably represent an acceptable scheme which the Council could support in landscape and visual terms via consultation to the Section 36 application process, with reference to relevant policy and guidance.

The refinement of the turbine layout to date was presented, including reference to comparative wireline and photomontage images to illustrate the substantial changes in turbine height and turbine layout composition from the initial pre-application phase layout, and to discuss the response of the turbine layout design to particular landscape and visual sensitivities.

A refined layout was presented, following more detailed consideration of turbine specification and wind yield (Figure 3.1), consisting of 17 turbines with a tip height of up to 149.9 m. This layout respected the same turbine spacing, prevailing wind direction and known on site constraints as earlier iterations of the turbine layout.

The key design changes which influenced the development of THC Consultation Layout are summarised below:

- Movement of turbines for the avoidance of deepest peat based on Phase 1 peat survey of 100 m intervals across the Site;
- Reduction in the number of turbines from 18 to 17, following the removal of T11 to further reduce the overall horizontal extent of the Development in views from the west (VP3) and more distant views from west, north-west across the Great Glen (VP8 and VP11);
- Improvements in layout composition to remove and reduce visibility of turbines in key views.

Comments and feedback received from the Council's planning officer and landscape officer during the meeting, including in relation to the removal or relocation of specific turbines; reducing the horizontal extent of the Development, and addressing the composition of the turbine layout when viewed from particular viewpoints were taken on board during further iterations of the turbine layout. Of particular note, comments received during the meeting in relation to the prominence of turbine 16 in particular views (from Viewpoint 3: B862 West of Corriegarth Lodge (illustrated by Figure 3.2c) and Viewpoint 5: Errogie (illustrated by Figure 3.3c)) led to the subsequent removal of this turbine.

3.6.4 Design Day – June 2020 – 16 Turbines – Tip Height 149.9 m

The key considerations for the June 2020 design workshop were peat and landscape and visual. The design focused on the aesthetic of the Development in views experienced by key visual receptors, most notably: residential receptors within Stratherrick; and recreational receptors on promoted routes within the Great Glen – particularly at promoted viewpoints and local hill summits.

Through the design process, the turbines were realigned to prevent stacking and create a balanced appearance in views experienced by the residential and recreational receptors. The turbine locations also considered hard constraints such as a 50 m hydrological buffer, avoidance of known heritage assets, and peat depths as per the Phase 1 and Phase 2a peat survey.

Following the design, Phase 2a peat surveys - comprising targeted probing at the turbine locations at 10 m centres as a cross-hair - were undertaken. As a result of the findings, turbines were further repositioned to areas of lesser peat extent whilst continuing to avoid a 50m buffer around watercourses.

The key design changes which influenced the development of Design Day - June 2020 Layout are summarised in Table 3.1.

Table 3.1: Key Design Changes from THC Consultation Layout to Design Day-June 2020 Layout

Turbine No.	Key Design Changes from THC Consultation Layout to Design Day-June 2020 Layout
T16	Removed from layout following feedback from the Council in respect to views from the east (VP3) and north (VP5), and the presence of ecological constraints associated with GWDTEs which prevented relocation of this turbine
T1	Relocated to north side of River E to improve composition of turbine layout in views from west (VP3) and south-west (VP7)
T20	Previously T2 and moved to maintain turbine spacing
T3	Relocated from between two watercourses
T4, T7, T14, T15, T18	Moved from >2 m into 1.5 m of peat or less
T5, T9, T10, T13	Moved from 1.5 m to 1 m of peat or less
T6, T12	Moved to maintain turbine spacing
T8, T10	Shifted to south to improve composition of turbine layout in views from west and north-west across the Great Glen (VP8 and VP11) as well as views from WLA (VP9)
T17	Shifted to reduce perceptibility of turbine hub in views from the north (VP5)

3.6.5 Turbine Freeze – 16 Turbines – Tip Height 149.9 m

The final Development layout is shown on Figure 3.8 and includes annotations illustrating the key design objectives considered during the refinement of the turbine layout. The key consideration at design freeze was final refinements for landscape visibility and peat depths as detailed in Table 3.2.

Table 3.2: Key Design Changes following Design Day (June 2020) to Turbine Freeze

Turbine No.	Key Design Changes from Design Day-June 2020 to Turbine Freeze
T3, T6, T9, T11 (previously T13), T13 (previously T15), T15 (previously T17)	No change to location
T1	Relocated to south side of River E due to proximity to flanks of Carn Fliuch-bhaid and wind yield implications
T2	Previously T20 and moved from 2 m into <1.5 m of peat
T4, T5, T7, T9, T10, T12, T14, T16 (previously T18)	Moved to maintain spacing, keeping turbines in 1.5 m or less of peat, and maintain balanced visual composition of layout in views from the west (VP3)
T8	Moved from >2 m of peat into 1.5 m of peat

The final peat depths at turbine locations are detailed in Table 3.3.

Table 3.3 Peat Depths at Final Turbine Locations

EIAR Final Turbine No.	Peat Depths at Final Turbine Location
1	0.95
2	1.30
3	0.75
4	1.50
5	0.79
6	1.17
7	1.43
8	1.48
9	1.15
10	0.55
11	0.76
12	1.20
13	1.04
14	1.14
15	0.78
16	1.11

This layout was fixed as the final turbine layout comprising 16 turbines, 149.9 m to tip. This layout is presented as Turbine Design Freeze layout as shown on Figure 3.1.

3.6.6 Turbine Evolution Summary

Plate 3 below provides a summary of each layout iteration.

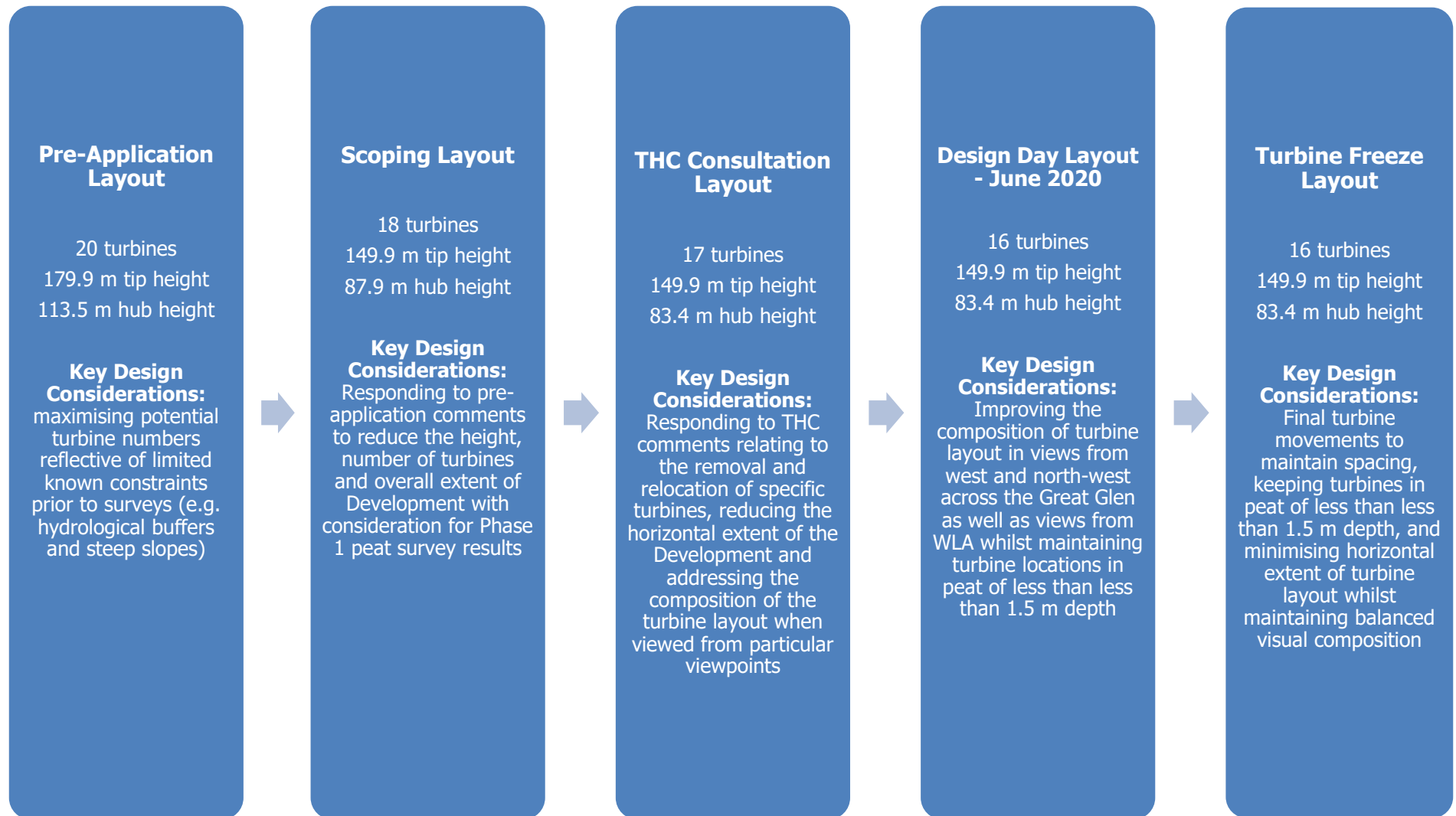


Plate 3: Summary of Key Layout Iterations

3.6.7 Infrastructure Layout

The infrastructure layout is provided on Figure 4.1.

Access Tracks

The internal track layout for the final turbine arrangement was developed so that it meets the following criteria:

- Upgrade of existing tracks where possible (with main access into the upper elevations of the Site via the existing access track for the Operational Corriegarth Wind Farm;
- Minimisation of the variation in the vertical alignment of the tracks;
- Minimising the overall length of tracks;
- Ensuring a safe and efficient layout to facilitate wind farm construction;
- Minimisation of incursion into environmental constraint areas (e.g. deep peat, sensitive habitats, watercourse buffers);
- Minimisation of the number of watercourse crossings and alignment of tracks so that crossings are approximately at right angles; and
- Minimisation of tracks through areas of peat greater than 0.5 m in depth. Floating tracks used in areas of deep peat (greater than 1.0m) where peat cannot be avoided.

Borrow Pits

The borrow pit locations have been selected to avoid known environmental constraints and were identified following a review of geological data and topography to determine where extractable rock of suitable quality is to be found. Borrow pit 1 is located on the south side of Carn na Saobhaidhe, adjacent to the borrow pit used during the construction of the Operational Corriegarth Wind Farm. Borrow pit 2 is located in an area of rocky outcrops east of Carn Fliuch-bhaid.

Substation Compound

The location of the substation compound, adjoining the main the access track, was selected for the following reasons:

- It can be located in the borrow pit on the southern flanks of Carn na Saobhaidhe (602 m AOD) which largely contains visibility of this infrastructure to views from the interior of the Site and provides screening of views from the west, north-west;
- Peat is shallower (>1 m) than the other land available near the access track; and
- Adjacent to the existing access track enabling connection into the grid.

Temporary Construction Compound

The location of the construction compound, adjoining the main access track into the Site, was selected for the following reasons:

- Utilising the same location as the construction compound for the Operational Corriegarth Wind Farm;
- Located adjacent to the site entrance to reduce the length of delivery vehicle trips and manage deliveries; and
- Peat is shallower (>1 m) than the other land available near the access track.

Access Junction

Access will be via the existing wind farm access and utilise the existing junction which leads directly on to the public road network.

3.7 SUMMARY

Various economic, technical and environmental factors, informed through a combination of baseline surveys, assessment and consultation with stakeholders, informed the iterative, design process.

The final turbine layout and associated infrastructure assessed in this EIA Report has been carefully developed taking these factors into account and is considered to achieve the balance required to increase the renewable energy generation capacity of the Site whilst minimising the introduction of new environmental effects.

The final Development turbine layout and associated infrastructure is described in **Chapter 4: Development Description** and shown on Figure 4.1.

4 DEVELOPMENT DESCRIPTION

4.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) provides a description of the proposed Corriegarth 2 Wind Farm (the Development) which forms the basis of the assessments presented within Chapters 6 to 16. It provides details of the construction phase, the 30-year operational phase and decommissioning phase of the Development.

This Chapter includes an overview of the Development followed by a detailed description of the main components and their method of construction. Measures that have been built into the design of the Development to reduce effects, also known as 'embedded' mitigation measures, are set out in the previous chapter (**Chapter 3: Site Selection and Design**), and in this chapter. In addition to these embedded mitigation measures, **Chapters 6 to 17** present mitigation and enhancement measures where specifically relevant to their assessment topic.

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a Figures excluding LVIA:

- Figure 4.1: Site Layout Plan;
- Figure 4.2: Indicative Turbine Elevations;
- Figure 4.3: Indicative Foundation Design;
- Figure 4.4: Indicative Crane Hardstanding;
- Figure 4.5: Indicative Cable Trench Detail;
- Figure 4.6: Indicative Control Building Compound;
- Figure 4.7a: Indicative Control Building Elevations;
- Figure 4.7b: SHE-T Substation Control Building Elevations;
- Figure 4.8: Indicative Construction Compound;
- Figure 4.9: Indicative Access Track;
- Figure 4.10: Indicative Culvert Details;
- Figure 4.11: Typical Bridge Detail;
- Figure 4.12: Access Junction Arrangement;
- Figure 4.13: Borrow Pit 1 Plan and Profile; and
- Figure 4.14: Borrow Pit 2 Plan and Profile.

This Chapter of the EIA Report is supported by the following Technical Appendix document provided in Volume 3 Technical Appendices:

- A4.1: Borrow Pit Assessment; and
- A4.2: Decommissioning and Restoration Plan.

4.2 DESCRIPTION OF THE DEVELOPMENT

4.2.1 Development Overview

The Development would comprise up to 16 three-bladed horizontal axis turbines up to 149.9 metres (m) tip height and all associated infrastructure, including substation, crane hardstandings, underground cabling, external transformer enclosures located adjacent to each turbine, temporary construction compound, up to two borrow pits, and temporary laydown areas. The access track from the B862 leading up the turbine area is existing, having been constructed for the operational Corriegarth Wind Farm; however, this will require minor improvement to facilitate a slightly large turbine, with new access tracks leading to the new turbines. The components of the Development are summarised in Table 4.1 and shown on Figure 4.1. Full details are provided in Sections 4.2.2 through 4.2.13.

Table 4.1 Key Parameters of the Development

Element	Details
Turbines	Up to 16 turbines, each with a tip height of up to 149.9 m. Depending on the final turbine choice, a small transformer may be located at the base of each turbine. Each turbine will have a foundation with a diameter of approximately 21 m, with a depth of approximately 3 m.
Access Track	Access track to serve the construction and operation of the wind farm with width approximately 5 m, this will consist of localised upgrades along 13 km of the existing 25 km of track and 10 km of newly constructed track. For the southern borrow pit at Carn Fluich Bhaid, the access track will not be utilised for abnormal loads, so there is no requirement for widening.
Electrical Infrastructure	A substation building will be located towards to the west of the turbines, measuring approximately 30 x 20 m with another control building measuring approximately 25 x 15 m. Both buildings will be located within a compound measuring approximately 60 x 90 m, which will also include any external electrical infrastructure and vehicle parking. Underground cabling, laid where possible alongside the access tracks, will link the turbine transformers to the onsite substation.
Crane Hardstanding	Crane hardstandings will be required adjacent to each turbine; this will consist of a main area of approximately 1400 m ² at each turbine. In addition to the main hardstanding areas, there will be additional flattened areas for crane assembly and turbine blade storage; however, these will be temporary and only include small areas of hardstandings.
Temporary Construction Compound	A temporary construction compound will be required during the construction of the Development, forming an area of hardstanding providing space for portakabins, parking and lay down areas; this will measure a maximum of 100 x 50 m and is located at the same location as the construction compound for the Operational Corriegarth Wind Farm.
Borrow Pits	Up to two onsite borrow pits are proposed. One is located adjacent to the borrow pit used for the Operational Corriegarth Wind Farm at Carn na Saobhaidhe and the other is in the south of the Site on the slopes of Carn Fluich Bhaid. Given that there is 35 km of track with 25 km existing, relatively little aggregate will be required when compared to a typical wind farm of this size, and the use of both borrow pits may not be required.
Site Access	Site access will be taken from the B862, utilising the existing access for the Operational Corriegarth Wind Farm.

It is estimated that the permanent new footprint of the Development, including infrastructure and following restoration will be approximately 15 hectares. During the construction period, it is estimated that a further 4 ha will be temporarily required, which includes the borrow pits, laydown areas and the construction compound which will be reinstated following the construction works.

4.2.2 Wind Turbines and Associated Infrastructure

4.2.2.1 Wind Turbines

Consent is being sought for the erection of up to 16 three-bladed horizontal axis wind turbines with a maximum height from base to tip that will not exceed 149.9 m (with the blade in the vertical position). Figure 4.2 illustrates a typical turbine of this type. The blades will be made of fiberglass reinforced epoxy and mounted on a tapered tubular steel tower. The turbines will be light grey in colour and the finish of the tower and blades will be semi-gloss and semi-matt respectively.

The specific turbine is dependent on the final choice of turbine models available at the time of procurement and will be chosen with the aim of optimising renewable energy generation at the Site. However, the chosen turbines will have a maximum blade tip height of no more than 149.9 m as this is the upper limit of the environmental and planning parameters considered in the EIA.

Turbines are typically of a variable speed type, so that turbine rotor speed will vary according to the energy available in the wind. Turbines of the dimensions proposed typically have rotational speeds of between 6 and 14 revolutions per minute (rpm), depending on variations in wind speed, generating power for all wind speeds between 3 and 25 metres per second (m/s). At speeds greater than 25 m/s, the turbine reduces power output by pitching the blades out of the wind to protect the turbine from damage caused by high wind speeds. These very high wind conditions usually prevail for less than 1% of the year.

The turbines are computer controlled to ensure that at all times, the turbine faces directly into the wind to ensure optimum efficiency. The rotors of all 17 turbines will rotate in the same direction.

When operating, the rotational movement of the blades is transferred through the gearbox, to drive the generator. This produces a three-phase power output typically at 690 Volts (V), which is transferred from the generator to the turbine transformer. The turbines will be controlled and monitored from within the proposed control building and will also be remotely monitored where performance details and statistical information for each turbine will be recorded.

Table 4.2 details the locations of each turbine.

During the construction phase, two cranes are typically required to install the turbines, consisting of a larger 800 – 1000 tonne main crane and a secondary 400 – 500 tonne crane. The cranes would use the crane hardstandings as described in Section 4.2.3. The construction contractors would determine the actual cranes used following the turbine procurement process, together with the exact programme and number of teams on site.

The method for erecting each turbine would depend on the turbine supplier and site conditions. Turbine components would either be lifted directly off transportation units for erection or more typically stored adjacent to the crane hardstanding area. The tower sections are initially erected, followed by the nacelle and then the hub depending on the blade installation. The turbine blades would then be lifted individually and attached to the hub or if sufficient space is available would be attached to the hub at ground level then raised together and attached to the nacelle. The overall assembly process for each turbine takes approximately two to four days, depending on weather conditions.

Table 4.2 Wind Turbine Co-ordinates and Elevations

Turbine No.	Easting	Northing	Elevation (m) AOD
1	255650	812676	584
2	256065	812153	615
3	256563	812077	644
4	257157	812139	645
5	257690	812131	698
6	258376	812555	703
7	259091	812839	699
8	259524	813455	743
9	259249	813893	732
10	258820	814213	740
11	258262	814348	690
12	257669	814560	656
13	257161	814559	630
14	257136	814013	622
15	256358	814038	579
16	255875	813556	562

4.2.2.2 Turbine Foundations

It is proposed that the foundation for the turbines would comprise a standard concrete gravity foundation constructed on poured concrete with steel reinforcement. Concrete batching would occur onsite. The foundation would require up to 612 m³ of concrete per turbine base and up to 90 tonnes of steel reinforcement. Concrete batching would occur onsite.

Each turbine foundation will consist of an octagonal or circular base approximately 6.5 m in diameter, on a foundation slab of up to approximately 21 m by 21 m which sits on the underlying rock or suitable substratum with a founding depth of between 1.8 and 3 in an 'inverted T' design. A typical turbine foundation is shown in Figure 4.3. The area of excavation is likely to be a maximum of 35 m x 35 m to allow for an excavated working area around the concrete turbine foundation.

The detailed design specification for the foundation would depend on the geotechnical site investigations undertaken during the enabling works to establish the nature of the subsoil condition at each turbine location. Each foundation would be designed separately according to the chosen turbine type and manufacturer specification.

The ground excavation methods would vary depending on the local ground conditions and the nature of the surface vegetation. The general processes would be as follows:

- Topsoil/turf will be stripped and stored in order to be reused in restoration of the turbine construction area;
- Subsoil (if present) will be stripped and stored, keeping this material separate from the topsoil/turf;
- Excavation of turbine foundations will then take place followed by the installation of the steel reinforcement bars and casting of concrete; and
- After the foundation has been poured the area would be backfilled as soon as practicable with spoil, pending turbine installation.

Once the turbines have been installed, the immediate construction area around the turbine bases would be restored using the retained topsoil or turf to within approximately 1 m of the tower bases. A 1 m wide gravel path would then be laid around the tower base. Material won from foundation excavations would, if suitable, be used in the landscaping of access tracks and other site infrastructure. If not suitable, it would be disposed of off-site to a suitably licensed facility.

4.2.2.3 Transformers and Cabling

Depending on the final choice of turbine, transformers will either be located within the turbine tower (with internal switchgear) or externally, close to the base of the tower. For the purposes of this assessment it has been assumed that the transformers will be located adjacent to each turbine. An external transformer will normally be placed within a glass reinforced plastic (GRP) housing, the size of housing will depend on the type of transformer selected but in general it will be approximately 3 m by 2.5 m in plan and 2.5 m in height above surrounding ground level, located adjacent to the turbine within the hardstanding area (Figure 4.4).

The transformers will be either oil-filled with a bunded footing to remove any risk of spillage or a solid cast resin type which is effectively non-polluting. The transformers will increase the electrical voltage from 690 V to 33 kilovolts (kV).

Turbines will be connected by 33 kV single phase power cables which will be laid in trenches alongside the access tracks, with a depth of 1 m. The excavated trenches will also include SCADA cables or fibre optic cables. This will allow interrogation and control of individual turbines as well as remote monitoring. A copper cable will also be located in the trench and will be connected to the substation and each turbine to provide an earthing system to provide protection from lightning strikes and electrical faults. The cables will be laid on a sand bed, then surrounded by further sand and backfilled using suitably graded material. Clay, or equivalent low permeability barriers, will be inserted into the cable trenches at regular intervals to avoid the trenches becoming preferential drainage pathways. Details of typical trenches are shown in Figure 4.5.

4.2.3 Crane Hardstandings

Each turbine requires an area of hardstanding adjacent to the turbine foundation to provide a stable base on which to site the turbine components and cranes for the erection of the turbine.

The main working area at each hardstanding area composed of crushed stone will be approximately 40 m x 35 m, the footprint of the main hardstanding will be approximately 1,400 m². There will be smaller temporary hardstanding areas which are required for the assembly of the main crane jib and 'blade fingers' which are required for the storage of the turbine blades.

A typical arrangement is shown in Figure 4.4; however, the final arrangement of the hardstanding will depend on the method of erection and exact specification of the cranes chosen by the turbine erection contractor. The hardstandings will be sufficiently level and with a suitable load-bearing capacity to ensure the safe storage of turbine components and operation of the cranes.

Surface water and groundwater levels will be managed to ensure that natural drainage patterns are maintained and that water levels within excavations do not rise beyond appropriate and safe limits. Various cable ducts and other ancillaries will be installed within the foundations and under the access track crossing points.

Construction of the temporary crane hardstanding would be similar to the construction of the site tracks as described in Section 4.2.4. Surplus excavated material would be reused elsewhere within the Site such as for track maintenance during construction or

during borrow pit reinstatement. Similarly, any surplus topsoil would be used to restore track edges or the borrow pits after construction.

The crane hardstanding would be left in place following construction in order to allow for the use of similar plant should major components need replacing during the operation of the Development. These would also be utilised during decommissioning at the end of the Development's life.

4.2.4 Access Tracks

Access will utilise the existing access track for the Operational Corriegarth Wind Farm, as shown on Figure 4.1. The length of access track for the Development will total approximately 23 km which consists localised upgrades to 13 km of existing track and 10 km of new track.

New tracks will be required from the existing access track to the turbine locations to enable the turbine components, construction materials and construction staff to be transported to their locations, and to enable access for subsequent maintenance visits. The proposed track layout is illustrated in Figure 4.1.

The access tracks have been designed to minimise environmental disturbance and land take wherever possible by avoiding areas of deep peat, environmental constraints identified during the EIA and limiting the number of watercourse crossings.

Access tracks will be approximately 5 m in width, with an additional 1 m verge on either side subject to local ground conditions. The tracks will be designed to have sufficient radii for turning of the construction vehicles, abnormal loads and plant. There is one exception to the track specifications, which consist of the upgraded track spur to the new borrow pit in the south of the Site on Carn Fluich Bhaid, which will not be used by abnormal loads and therefore have reduced turning radii. Turning heads have been included the design as necessary to allow abnormal load vehicles and cranes to undertake turns during the turbine delivery and assembly process. These are incorporated into the crane hardstanding areas in order to minimise land take.

It is anticipated that access tracks would be constructed using a 'cut track' design. Topsoil is stripped to expose a suitable rock or sub-soil horizon on which to build the track. The track is built up on a geotextile layer by laying and compacting crushed rock to a depth dependent on ground conditions and topography. Generally, the surface of the track will be flush with or raised slightly above the surrounding ground level.

Peat has been avoided where possible though floating tracks will be necessary where tracks cross areas of peat. If required a floating track would be constructed for short sections of track where peat depths are identified to be greater than 1.0 m in depth. A layer of crushed stone (0.5 m – 1 m, dependent on ground conditions) would be laid on geotextile/geogrid reinforcement to form the track, which results in the site track being raised above the peat surface.

Excavated soils would be stored at no greater than 3 m in height, directly adjacent to, or near the tracks on ground appropriate for storage of materials i.e. relatively dry and flat ground, a minimum of 50 m away from any watercourses. Wherever possible, reinstatement will be carried out as track construction progresses.

The access track will be left in place after construction of the Development and can be used for agricultural or forestry access as well as access to the turbines for maintenance and repair works. Figure 4.9 illustrates a typical cut track design.

Prior to the commencement of site construction, a detailed engineering specification for the access track design will be submitted to the planning authority as part of a Planning Conditions Compliance Statement which will include Construction Method Statements (CMS) for all aspects of construction.

Surface drainage measures to treat and deal with all the surface runoff from the site will be designed in accordance with Sustainable Drainage Systems (SuDS) principles.

All access tracks will incorporate robust drainage, including drainage channels running adjacent to the tracks, on one or both sides. The track would be designed with a crossfall towards the drainage channels to prevent a build-up of surface water and allowing the track to act as a watercourse. The make-up of the tracks will also be as permeable as possible to prevent any instances of surface water build up.

Cross drainage pipes will be installed at regular intervals to prevent flooding or surcharging of the drainage channels and to maintain natural drainage catchments.

The implementation of the drainage design will be developed in response to a risk appraisal undertaken by the contractor and will be proactive, rather than being reactive to any events arising once works commence. The design will reduce the risk of sedimentation (from loose material) and pollution (from accidental spillage) of all downstream watercourses.

4.2.5 Watercourse Crossings

As noted above, the track layout design has sought to limit the number of watercourse crossings; however, given the nature of the Site and the principles of wind farm design a number of crossing points are required. There is a requirement for 28 crossings for watercourses. Of these, 20 are existing crossing points as part of the existing track network with none expected to require upgrading, while eight would be subject to a new crossing.

The type and design of each watercourse crossing will be dependent on the stream morphology, peak flows, local topography and ecological requirements, and will be chosen so as to avoid or minimise potential environmental effects. A typical watercourse crossing design is shown in Figures 4.10 and 4.11.

It is likely that culverting will be the most suitable crossing method for the majority of new watercourse crossing with a bridge required to cross the River E. The design would be agreed with the Scottish Environment Protection Agency (SEPA) prior to construction.

Any crossing would be designed in accordance with Construction Industry Research and Information Association (CIRIA) Culvert design and operation guide (C689)¹ and incorporating the most recent climate change allowances, to ensure sufficient capacities.

Any watercourse crossings would be subject to registration under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)² (CAR) and Water Environment (Miscellaneous) (Scotland) Regulations 2017³.

4.2.6 Borrow Pits

It is the intention to source aggregate for the construction of access tracks, structural fill beneath turbine foundations, construction compounds and turbine hardstandings from on-site borrow pits as far as possible. Sourcing aggregate from within the Site, rather than an off-site quarry, has the advantage of reducing the number of heavy goods vehicles (HGV) on public roads.

¹ Benn, J, Kitchen, A, Kirby, A, Fosbeary, C, Faulkner D, Latham, D, Hemsworth, M (Dec 2019) Culvert, screen and outfall manual (C786F) <https://www.ciria.org/ItemDetail?iProductCode=C786F&Category=FREEPUBS> (access 14/8/2020)

² The Water Environment (Controlled Activities) (Scotland) Regulations 2011 <http://www.legislation.gov.uk/ssi/2011/209/contents/made> (accessed 14/8/2020)

³ Water Environment (Miscellaneous) (Scotland) Regulations 2017. <http://www.legislation.gov.uk/ssi/2017/389/contents/made> (accessed 14/8/2020)

It is estimated that approximately 170,000 m³ of stone (excluding aggregate for concrete) will be required as part of the construction of the Development.

Two potential borrow pits have been identified. It is estimated that these will have additional capacity to that required for construction materials which allows some flexibility in the use of borrow pits, and it is therefore likely that the final borrow pit dimensions will be smaller than those presented; however, for the purpose of the EIA Report it is assumed that both borrow pits are used to their full extents as worst case. One of the proposed borrow pits is located adjacent to the borrow pit used for the Operational Corriegarth Wind Farm on the slopes of Carn na Saobhaidhe. The second borrow pit has been identified on a small hillock with exposed rock in the south of the Site on the slopes of Carn Fliuch Bhaid, which initial surveys have indicated as being of suitable material for aggregate extraction. The locations of the borrow pits are shown in Figure 4.1 and detailed further in Figures 14.13 and 14.14. A Borrow Pit Assessment is also presented in Technical Appendix A4.1.

The locations of the two borrow pits have been influenced by environmental considerations to minimise the impacts on ecology, peatlands, cultural heritage, hydrology and landscape as described within the relevant technical chapters of this EIA Report. The final location, number and estimate of material from each potential site would be determined once full ground investigation works and testing have been completed. The borrow pits will require the use of plant to both extract and crush the resulting rock to the required grading. It is anticipated that most rock will be extracted by breakers however some blasting may be required. Precise details will be confirmed at the construction stage.

The substation will be included at the northern borrow pit on the slopes of Carn na Saobhaidhe with the substation compound not reinstated; however, following construction, the area not containing the substation and the other borrow pit would be restored. The restoration will include replacing any surplus or unused material, soil or turf materials to restore the slopes to a stable profile and allow regeneration. A restoration plan for the site, post construction, will be prepared by the Applicant and agreed with the Highland Council and relevant statutory consultees.

4.2.7 Substation Compound

The substation compound would be located at the borrow pit location in the north of the Site on the slopes of Carn na Saobhaidhe, following extraction within this area. The substation compound is centred at approximately NGR 255467, 813727, as shown on Figure 4.1. The substation would be on an area of crushed stone hardstanding measuring approximately 60 x 90 m.

The substation compound would accommodate the Scottish Hydro Electric Transmission (SHET) substation building and a control building containing the electrical infrastructure and control elements of the Development, as well as a fenced area including any external electrical switchgear and an area for vehicle parking and storage during the construction period. A typical arrangement is shown in Figure 4.6.

The principal element of the substation compound is the SHE-T substation building, which will likely comprise a single storey unit measuring approximately 30 x 20 m with a pitched roof as shown in Figure 4.7b. A separate control building will include the control components, including metering equipment, switchgear, the central computer system and electrical control panels as well as welfare facilities and would measure approximately 25 x 15 m as shown on Figure 4.7a.

The buildings will have their own foul drainage system. Surface water will drain via soakaway or other preferred SuDS method to be agreed with the Highland Council.

The buildings will be constructed in keeping with the local built environment. The final designs for the buildings and compound will incorporate sustainable design features and will be agreed with the Council.

The underground cables from the wind turbines would be brought into the substation building in ducts. The ducts would guide the cables to the appropriate switchgear inside the building. Communications cables would enter in a similar manner.

Lighting will be kept to a minimum and will be limited to working areas only and will comply with health and safety requirements. Lighting will be down lit and linked to timers and movement sensors so that light pollution is kept to a minimum.

4.2.8 Grid Connection

The grid connection does not form part of the Section 36 consent application for the Development. The consent for the grid connection will be sought by the relevant owner/operator of the local distribution network, Scottish Hydro Electric Transmission (SHET). The Network Operator will be responsible for the consenting, construction and operation and maintenance of the grid connection. The connection will be via the existing overhead transmission line connecting Corriegarth 1 Windfarm to the SHET substation at Farigaig via a tee in connection close to the existing substation.

4.2.9 Temporary Construction Compound

A temporary construction compound will be created for the duration of construction centred at approximately NGR 255065, 813781 as shown on Figure 4.1. This area has been chosen as it is the same location used for the Operational Corriegarth Wind Farm. It is a relatively level area of the Site, close to the turbine locations, and with suitable separation distance from any environmental constraints identified during the EIA process. The area of the compound will measure approximately 100 x 50 m and will include space for:

- Portakabins for site office and staff welfare facilities with provision for sealed waste storage and removal;
- Areas for storing materials;
- Parking for project related vehicles; and
- Containerised storage for tools and spares.

A typical construction compound arrangement is shown on Figure 4.8. Welfare facilities for site personnel will be required during construction which would be located within the construction compound. Foul water and effluent would be treated either via septic tank with soakaway designed to SEPA guidelines (including GPP4⁴) or by the use of chemical facilities with periodic material for off-site disposal. Any facilities would be subject to agreement with SEPA.

The area to be used for the construction compound would be stripped of topsoil to expose a suitable formation which will be stored for future re-instatement. A geosynthetic material base or similar will then be laid followed by a layer of suitable material then a further geosynthetic material laid prior to the top surface of blended fines.

Appropriate bunding arrangements will be employed in all areas where fuel and oil storage tanks will be situated, in order to prevent contamination of the surrounding soils, vegetation, surface water and ground water. The fuel storage area will be above ground with secondary containment in accordance with SEPA's GPP2 (Above Ground Oil Storage

⁴ SEPA (Nov 2017) GPP4 - Treatment and disposal of wastewater where there is no connection to the public foul sewer. Available at <https://www.netregs.org.uk/media/1471/gpp4-20171114-online-v2.pdf> (Accessed 17/8/2020)

Tanks)⁵, PPG7 (Refuelling facilities)⁶ and GPP8 (Safe storage and disposal of fuel oils)⁷, and will be situated a minimum of 50 m from watercourses to reduce the risk of pollution of watercourses. Any contaminated run-off within the sealed bund will be removed to a licensed waste management facility.

Following completion of the construction phase the components of the compounds will be removed and the area fully restored.

4.2.10 Site Access and Main Site Entrance

Due to the abnormal size and loading of wind turbine delivery vehicles, it is necessary to review the public highways that would provide access to the Site to ensure they are suitable and to identify any modifications required to facilitate access.

A preliminary transport access study is included in Appendix A12.1 utilising the port of entry at Invergordon and the A9. The Site will be accessed via the B851 and B862, utilising the existing access junction off the B862 with no upgrades required, and travelling to the end of the U112 minor road to the site entrance. The U112 junction arrangement is shown in Figure 4.12.

The following potential abnormal loads delivery route has been identified:

- Port of entry to be Invergordon (port is a proven turbine component delivery point);
- Proceed westwards on B817 towards the A9;
- Turn left onto A9;
- Proceed southwards on the A9 for approximately 25 miles;
- Turn left onto AB851 and proceed southwards for approximately 15 miles;
- Turn left onto B862 and follow B862 to Site access junction.

Improvements to the access junction were completed for the Operational Corriegarth Wind Farm, and no improvement are required at this junction to facilitate the Development turbine.

4.2.11 Site Signage

During construction, the Site will have suitable signage to protect the health and safety of workers, contractors and the general public.

During construction and operation, the Site will have suitable signage to provide directions and health and safety information for workers. There will be a sign giving the operator's name, the name of the Development and an emergency contact telephone number. On the turbines and substation building, there will be further signs giving information about the component, potential hazards, the operator's name, the location grid reference and the emergency telephone number. The final location and design of the signage will be defined prior to the Development becoming operational.

4.2.12 Micrositing

In the event that unsuitable ground conditions are encountered during the construction works, there may be a requirement to micro-site elements of the Development infrastructure. It is proposed that a 50 m micro-siting tolerance in any direction for turbines and all other infrastructure is applied to the Development and that within this distance any changes will be subject to approval of the Ecological Clerk of Works (ECow)

⁵⁵ SEPA (Jan 2017) Above ground oil storage tanks: GPP 2. Available at <https://www.netregs.org.uk/media/1299/gpp-2-pdf.pdf> (Accessed 17/8/2020)

⁶ SEPA (July 2011) The safe operation of refuelling facilities: PPG 7. Available at <https://www.netregs.org.uk/media/1673/ppg-7.pdf> (Accessed 17/8/2020)

⁷ SEPA (July 2017) GPP 8 Safe storage and disposal of used oils. Available at <https://www.netregs.org.uk/media/1435/gpp-8-v3-swmi.pdf> (Accessed 17/8/2020)

with specialist geotechnical advice as required. Beyond this distance, any relocation of Development components will require written approval from the Council.

The potential for micro-siting was considered when the detailed survey and assessment work was undertaken. For example, the habitat and peat surveys covered a wider area than just the footprint of the proposed turbine and access track locations (full details of survey areas can be found in the relevant assessment chapters). Any likely significant effects arising from micro-siting have been considered in the preparation of this EIA Report, and specific areas to be avoided have been identified in technical chapters where necessary.

4.2.13 Restoration

Site restoration will involve the restoration of track and hardstanding verges, borrow pits and the temporary construction compound to provide a natural ground profile with non-geometric surfaces and tie-ins with existing undisturbed ground levels. Restoration will be undertaken at the earliest opportunity to minimise storage of turf and other materials and to allow restoration of disturbed areas as early as possible and in a progressive manner.

A restoration plan for the site will be secured by condition and agreed with the Council and relevant statutory consultees.

4.3 CONSTRUCTION AND DEVELOPMENT PHASING

The on-site construction period is estimated at approximately 18 months in duration and would comprise the principle operations:

- Extraction of stone from the onsite borrow pits;
- Upgrade of existing access tracks and construction of new access tracks, including watercourse crossing points;
- Construction of the substation compound area;
- Installation of temporary and permanent drainage;
- Construction of turbine foundations;
- Construction of crane hardstanding areas;
- Remedial works to the public highway to accommodate turbine deliveries;
- Delivery, erection and commissioning of wind turbines;
- Construction of the substation building;
- Excavation of shallow cable trenches approximately 1 m off the edge of the track and cable laying adjacent to the access tracks and crane hardstandings for drainage;
- Connection of onsite electrical distribution cables;
- Commissioning of the site equipment; and
- Reinstatement of the borrow pits and the temporary construction compounds.

4.3.1 Construction Period

It is expected that many of the above operations will be carried out concurrently, although predominantly in the order identified in Chart 4.1, which will minimise the overall length of the construction programme. An indicative Construction Programme is illustrated in Chart 4.1.

The starting date for construction activities will largely be dependent upon the date that consent may be granted and grid availability; subsequently, the programme would be influenced by constraints on the timing and duration of any mitigation measures confirmed in the individual technical chapters or by the consent decision, as well factors such as weather and ground conditions experienced on the Site.

Chart 4.1: Indicative 18 Month Construction Programme

Activity	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Site Mobilisation																		
Access Track Construction																		
Turbine Foundations																		
Control Building / Substation																		
Cabling and Electrical Works																		
Crane Delivery																		
Turbine Delivery																		
Demobilisation																		

It is proposed that construction activities be limited to the working hours of 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays, with the exception of any emergency working or turbine deliveries. During the installation phase, there may be the requirement for extended working as some critical elements of installation cannot be stopped once started, such as concrete batching and pouring. This would be agreed in advance with the Council.

4.3.2 Construction Materials

The key materials which would be required for the construction of the track, turbine foundations, hardstanding areas and cable trenches are:

- Crushed stone;
- Geotextile;
- Cement;
- Sand;
- Concrete quality aggregate: high strength structural grade, which is not prone to substantial leaching of alkalis;
- Steel reinforcement; and
- Electrical cable.

All materials will be sourced and transported to the site from local suppliers, where possible, with the exception of materials sourced from onsite borrow pits.

4.3.3 Construction Movements

Various vehicle types are required during the construction stage of the Development, of these; the majority would be standard road vehicles of similar type to those using local roads on a daily basis. However, the delivery of some of the wind turbine components would require vehicles and transport configurations that are longer and/or wider and/or heavier than standard road vehicles, this is discussed in **Chapter 11: Traffic and Transportation**.

4.3.4 Construction Method Statement (CMS)

The construction phase will be controlled via a series of detailed CMSs which will be prepared by a Principal Contractor appointed by the Applicant, who will have overall responsibility for environmental management on the construction site. While these method statements can only be formulated following detailed site investigation and detailed engineering design it is possible to indicate the outline of the methods that will be used, particularly in relation to environmental management.

The purpose of the CMS is to:

- Provide a mechanism for ensuring that measures to prevent, reduce and where possible offset potentially adverse environmental impacts identified in the EIA Report are implemented;
- Ensure that good construction practices are adopted and maintained throughout the construction of the Development;
- Provide a framework for mitigating unexpected impacts during construction;
- Provide a mechanism for ensuring compliance with environmental legislation and statutory consents; and
- Provide a framework against which to monitor and audit environmental performance.

4.3.5 Construction Environmental Management Plan (CEMP)

The CEMP is a document which would be prepared by the Principal Contractor who will be appointed to co-ordinate the construction phase of the Development, and therefore,

would not be prepared until the post-consent phase of the planning application. The appointed Contractor will ensure construction activities are carried out in accordance with the mitigation measures outlined in this EIA Report.

The CEMP would support the CMS, outlined in section 4.3.2.1 above. The CEMP will be the overarching document which combines the principles of all other management plans and environmental plans outlined within this EIA Report and draws these together. Therefore, the principles outlined in sections 4.3.5.1 – 4.3.5.6 of this EIA Report will form the principles of the CEMP.

Contractors will also be required to adhere to the following to minimise environmental effects of the construction process:

- Conditions required under the Consent and deemed planning permission;
- Requirements of statutory consultees including SEPA and NatureScot (formerly Scottish Natural Heritage, SNH));
- Any other relevant mitigation measures identified in this EIA Report; and
- All relevant statutory requirements and published guidelines that reflect 'good practice'.

The Applicant will require that all contractors follow the requirements of ISO14001 - 'Environmental Management Systems - Specification and Guidance for Use'⁸, and will provide the following:

- Details of main contractor's corporate environmental policy;
- Assessment of environmental impacts during construction;
- Procedures and controls for environmental management;
- Environmental monitoring details and reporting systems;
- Schedule of contractual and legislative requirements; and
- Schedule of relevant consents, licences and authorisations.

The CEMP will be agreed with the relevant statutory bodies including SEPA, NatureScot and the Council prior to commencement of construction, and performance against the CEMP will be monitored by the Applicant's Construction Project Manager throughout the construction period.

Particular environmental impacts and associated mitigation measures required to be addressed within the CEMP are discussed in relevant sections of this EIA Report and outlined in the following sections.

4.3.5.1 Water Construction Environment Management Plan (WCEMP)

The Applicant has prepared a draft Water Construction Environment Management Plan (WCEMP) in line with the information contained within this chapter and **Chapter 12: Hydrology and Hydrogeology**. The draft WCEMP is included as Technical Appendix A12.1 of this EIA Report. The draft WCEMP takes into account specific activities during the construction and operational phases of the Development, including construction and operational use of:

- Access roads;
- Turbine foundations; and
- Hardstanding areas and buildings (including crane hardstandings, substation and control building, temporary construction compound and associated infrastructure).

4.3.5.2 Pollution Prevention Plan (PPP)

A Pollution Prevention Plan (PPP) will be provided as part of the CEMP prior to construction of the Development. The PPP will detail measures that will manage potential

⁸ BS EN ISO 14001:2015 Environmental management systems. Requirements with guidance for use

effects on the environment, which may arise from associated construction activities at the Development.

The WCEMP (Technical Appendix A12.1) details specific measures for the minimisation and management of construction activities on the water environment and water monitoring procedures.

4.3.5.3 Site Waste Management Plan (SWMP)

A Site Waste Management Plan (SWMP) would be prepared and implemented for the construction, operation and decommissioning phases. All waste will be removed off-site for safe disposal at a suitably licensed waste management facility in accordance with current waste management regulations. Wherever possible, excavated stone or soils will be re-used on site, primarily for the restoration of disturbed ground. All details of this will be included within the CEMP, as agreed with the Council and SEPA.

The main items of construction waste and their sources are:

- Hardcore, stone, gravel from temporary surfaces to facilitate construction waste, and concrete;
- Subsoil from excavations for foundations and roads;
- Timber from temporary supports, shuttering and product deliveries;
- Miscellaneous building materials left over from construction of the control building;
- Sanitary waste from chemical toilets (if used);
- Plastics packaging of material; and
- Lubricating oils, diesel - unused quantities at end of construction period.

Subsoil not required for reinstatement purposes will be collected at the end of the construction phase and disposed of according to best practice and existing waste legislation. Waste oils and diesel will be removed from the Site and disposed of by an approved waste contractor in accordance with provisions of the Special Waste Regulations 1996.

In the event of the complete decommissioning of the wind turbines, all mechanical/electrical equipment will be removed from the Site, the control building will be removed, the concrete bases will be covered over with soil and any disturbed ground will be reinstated and reseeded. All cables would be cut off below ground level, de-energised, and left in-situ.

The decommissioned turbine components will have sufficient salvage value to ensure their proper recycling. An important environmental issue in the decommissioning of the wind turbines will be the proper handling and disposal of any contaminating material (e.g. lubricating/cooling oils etc.). The Applicant undertakes to ensure that all such contaminating material will be removed from the Site in accordance with best practice.

4.3.5.4 Draft Peat Management Plan

The CEMP will also include details for Peat Management on site, and detail the measures which will be implemented on site to ensure peat extraction is limited and, where extraction is unavoidable, how the peat will be re-used on site. The Peat Management Plan will be agreed with Council and SEPA in advance on the construction start date.

A Draft Peat Management Plan (DPMP) is contained in Technical Appendix A13.2 of this EIA Report, and outlines the expected volumes of peat extraction and how these will be re-used on site. It is predicted that all peat will be re-used on site and within the habitat management area, without creating surplus materials which would require to be classified as waste.

4.3.5.5 Ecological Protection Plan (During Construction)

An Ecological Protection Plan would be agreed with the Council and NatureScot prior to construction. The Ecological Protection Plan would detail the species protection plan, breeding bird protection plan, and any habitat protection measures required to be implemented during construction. Further details are provided in **Chapter 7: Ecology** and **Chapter 8: Ornithology**, noting that a Habitat Management Plan (HMP) would cover the operational phase of the Development.

4.3.5.6 Traffic Management Plan

A Traffic Management Plan (TMP) would be agreed with the Council prior to construction. The TMP will provide details on the final access routes of all construction traffic and any work required to allow the safe passage of construction traffic associated with the Development. A Framework Construction Traffic Management Plan (FCTMP) is provided as Technical Appendix A11.1 to this EIA Report with further details in **Chapter 11: Traffic and Transport**.

4.3.6 Health and Safety Related Issues

Health and safety issues during construction and decommissioning fall under the Construction (Design and Management) (CDM) Regulations 2015⁹. Health and safety will be initially addressed as part of the Pre-Construction Information Pack prepared by the Applicant. The Principal Contractor will be required to prepare a Construction Phase Plan (Health and Safety Plan) and to forward information to the Applicant during the works to enable the Health and Safety File to be completed.

Turbines are designed to be safe and are built to withstand extreme wind conditions. The turbines selected for the Development will have a proven record in terms of safety and reliability.

Day-to-day operational and maintenance activities will be co-ordinated with the private landowner's operational requirements.

Public access to the Site will be restricted throughout the construction working area during construction for health and safety reasons and will be reinstated following cessation of construction activities as set out in Chapter 14 Socio-economics, Recreation and Tourism.

An Operations and Maintenance Manual for the design life of the Development will be prepared by the Contractor and will cover all operational and decommissioning procedures.

4.4 OPERATIONAL PHASE

The Development will have an operational lifespan of up to 30 years from full commissioning of the proposed turbines.

4.4.1 Turbine and Infrastructure Maintenance

Turbine maintenance will be carried out in accordance with the manufacturer's specification. The following routine turbine maintenance will be undertaken:

- Initial service;
- Routine maintenance and servicing;
- Gearbox oil changes;
- Blade, gearbox and generator inspections; and

⁹ Construction Design and Management Regulations 2015. Available at: <http://www.hse.gov.uk/construction/cdm/2015/index.htm>. Accessed 17/8/2020

- Replacement of blades and components as required.

Operational site inspections will be undertaken on a weekly basis and the servicing of turbines will be undertaken as per the turbine manufacturer requirements, usually once per year, but with monthly visits by the manufacturer's servicing team.

Ongoing track maintenance will be undertaken to ensure safe access is maintained to all parts of the Development all year round.

All wastes arising as a result of servicing and maintenance (e.g. lubricating oils, cooling oils, packaging from spare parts or equipment, unused paint etc.) will be removed from the Site and reused, recycled or disposed of in accordance with best practice.

4.4.2 Snow Clearance

Safe access to the Development is required year round. There is potential for the Development to experience snowfall and therefore clearance of snowdrifts may be necessary via grading of the track using suitable ploughing plant.

4.5 DECOMMISSIONING

As noted previously, the operational lifespan of the Development and associated infrastructure will be up to 30 years. Following this, an application may be submitted to retain or replace the turbines, or alternatively they will be decommissioned. Technical Appendix A4.2: Decommissioning and Restoration Plan provides the details of decommissioning and restoration methods.

Decommissioning would involve the following:

- Dismantling and removal of the wind turbines and electrical equipment;
- Reinstatement of the turbine areas and associated hardstanding; and
- Demolition and removal of control building and compound.

Turbine components and electrical equipment would be dismantled and removed in a similar manner to their delivery and erection. Cranage would be used to dismantle the turbine towers and blades into sections which would then be transported from the site by HGV; i.e. the loads may not constitute abnormal loads. The nacelle is likely to require transport as an abnormal load, and a route assessment will be undertaken prior to decommissioning to identify the best route to remove the nacelle offsite. Turbine components would be broken up offsite in controlled environments ready for reuse, recycling or appropriate disposal.

The removal of the top 1 m of the turbine base and plinth would be undertaken, requiring an excavated trench around the upstand to provide a working area. Breakout of the top part of the plinth would be undertaken using an excavator-mounted jack hammer. The cables would be cut level with the remaining concrete. Once the broken out concrete has been removed, the area would be reinstated by backfilling with soil/peat to an agreed method statement, as outlined in Section 4.2.13 above.

A similar process would be undertaken for the substation building, with the equipment removed offsite for breaking up and appropriate disposal and the building demolished. The top one metre of the concrete foundation slab would be broken up and removed, and the ground reinstated with topsoil. However, cut faces are likely to be retained, as there would be insufficient material to fully backfill the substation area.

The access tracks will be retained in situ at decommissioning for use by the landowner. The cables will also be left in situ.

Overall, it is estimated that the decommissioning period for the Development would be approximately eight months.

5 EIA METHODOLOGY

5.1 INTRODUCTION

Environmental Impact Assessment (EIA) is a process aimed to ensure that permissions for developments with potentially significant effects on the environment are granted only after assessment of the likely significant environmental effects has been undertaken. The assessment must be carried out following consultation with statutory consultees, other interested bodies and members of the public. This chapter of the Environmental Impact Assessment Report (EIA Report) describes the EIA process for the Corriegarth 2 Wind Farm (the Development) and is supported by the following Technical Appendices:

- A5.1: Scoping Opinion (received April 2020); and
- A5.2: Gatecheck Report.

5.2 EIA PROCESS

With an overall generating capacity of over 50 megawatts (MW), consent for the Development is being sought from the Scottish Ministers under Section 36 of the Electricity Act (1989)¹. The requirement for EIA in Scotland for wind farm generating stations with an electrical output capacity in excess of 50 MW is provided under Part 4 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017² (hereafter referred to as the 'EIA Regulations').

The EIA Regulations implement European Union (EU) Directive 2014/52/EU which amended Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

The EIA Regulations outline the process of an EIA and the criteria that would determine if an EIA is necessary or not, the relevant environmental studies and statements, how the information is evaluated by the Scottish Ministers, Planning Authority and consultative bodies, and how this is implemented through consent under Section 36 of the Electricity Act 1989.

Schedule 2 of the EIA Regulations lists developments for which an EIA is required for certain types of development where there are likely to be significant effects on the environment by virtue of factors such as the nature, size or locations of the development proposal.

The results of the EIA are presented in this EIA Report which, as prescribed in the EIA Regulations, is required to include a "description of the likely significant effects" of the Development; the effects which are not considered to be significant do not need to be described. It is therefore necessary for the scope of the EIA to be appropriately and clearly defined to ensure that any likely significant effects are described and assessed.

5.3 EIA METHODOLOGY

The EIA Report has been prepared following a systematic approach to EIA and project design. The process of distinguishing environmental effects is iterative and cyclical, running concurrently with the design process, whereby the design of the Development is refined in order to avoid or reduce potential adverse environmental effects using mitigation as necessary.

¹ UK Government, Electricity Act 1989 [Online] Available at: <https://www.legislation.gov.uk/ukpga/1989/29/contents> (Accessed 11/08/2020)

² The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. London: HMSO [Online] Available at: <http://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 11/08/2020)

The EIA process follows a number of stages broadly in line with the following:

- Site selection and feasibility;
- Screening – to determine if an EIA is required (unless an Applicant volunteers an EIA, as is the case with the Development);
- Pre-application consultation with statutory and non-statutory consultees;
- Scoping - to identify the parameters of the assessment issues on which the EIA should focus;
- Baseline studies - to establish the current environmental conditions at the Site;
- Identification of potential environmental effects, including cumulative effects;
- Mitigation to avoid or reduce the effects through iterative design process;
- Assessment of residual effects;
- Preparation of an EIA Report;
- Submission of the EIA Report;
- Consideration of application and environmental information by the Scottish Government, the relevant local authority (The Highland Council, referred to as 'the Council') and other statutory and non-statutory consultees;
- Determination of application; and
- Implementation and monitoring.

The EIA Regulations require that an EIA Report should include a range of information including: a description of the development, a description of reasonable alternatives, baseline information, a description of the likely significant effects of the development, and mitigation measures amongst other factors.

This EIA Report has been prepared in accordance with the EIA Regulations and includes the required information.

5.4 CONSULTATION

Consultation has formed an essential part of the EIA. The EIA team and Corriegarth 2 Windfarm Limited (the Applicant) have proactively engaged interested parties throughout the EIA process to determine their views on the Development and assessment methodology, and to collect baseline information. This engagement has principally been undertaken within the following key stages:

- Pre-scoping – procuring initial feedback on the Development and agreeing extent of consultation;
- Scoping – outlining EIA methodology and documentation of key issues;
- Gatecheck – engagement with the Energy Consents Units (ECU) and key consultees following Scoping to identify how comments received at Scoping have been incorporated;
- Further Technical Consultation – gathering baseline information from relevant organisations and confirming survey methodologies outwith the formal Scoping process; and
- Public Engagement: Informing site design through an Online Public Exhibition – communication with local communities and consideration of baseline information.

Further detail on each stage is included in the following subsections.

5.4.1 Pre-scoping

Consultation was commenced with the ECU of the Scottish Government in August 2019 and with the Council in October 2019, following completion of a feasibility study and prior to Scoping. The primary purpose of this engagement was to introduce the Development and to agree the approach to Scoping, including agreement on the consultees to be contacted as part of the Scoping exercise.

Consultation prior to Scoping was also undertaken with NatureScot (formally known as Scottish Natural Heritage, SNH) in June 2019 to establish the survey requirements for the ornithology impact assessment. NatureScot confirmed that a combination of one breeding season of new ornithology survey work, combined with post-construction monitoring data from the Operational Corriegarth Wind Farm is sufficient to inform the ornithology impact assessment.

5.4.2 Scoping

The aim of the Scoping process is to identify key environmental issues at an early stage; determine which elements of the Development are likely to cause significant environmental effects; and identify issues that can be 'scoped out' of the assessment. This exercise for the Development established the work and level of detail required to inform the EIA Report.

The request for a Scoping Opinion was submitted to the Scottish Government in February 2020. The request was accompanied by a Scoping Report which described the Development, the proposed EIA methodology, and the key issues to be considered within this EIA Report. The Scoping Report was also sent to a range of consultees, as agreed in advance with the ECU.

The Scoping Opinion was issued by the ECU in April 2020. A copy is included within Technical Appendix A5.1.

Table 5.1 provides an overview of the issues raised by the consultees at the Scoping stage. The detail of the individual responses received during the EIA, including at the Scoping stage, is set out in the relevant technical chapters. Where appropriate, reference is provided as to where the comments have been addressed within this EIA Report.

Table 5.1: Scoping Responses

Consultee	No Response	No Comments	Landscape and Visual	Ecology / Ornithology	Hydrology / Hydrogeology	Peat	Cultural Heritage	Noise	Existing Infrastructure	Forestry	Socio-economics / recreation	Access / Traffic	Climate Change / Carbon Balance	Cumulative Effects	Overarching EIA Comments	Relevant Chapter
Consultees																
The Highland Council			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Chapter 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, & 16
Scottish Environment Protection Agency (SEPA)				✓	✓	✓									✓	Chapter 4, 7, 12, & 13
NatureScot			✓	✓		✓								✓	✓	Chapter 6, 7, 8, & 13
Historic Environment Scotland							✓									Chapter 9
British Horse Society	✓															N/A
British Telecommunications									✓							Chapter 16

Consultee	No Response	No Comments	Landscape and Visual	Ecology / Ornithology	Hydrology / Hydrogeology	Peat	Cultural Heritage	Noise	Existing Infrastructure	Forestry	Socio-economics / recreation	Access / Traffic	Climate Change / Carbon Balance	Cumulative Effects	Overarching EIA Comments	Relevant Chapter
Cairngorms National Park Authority			✓													Chapter 6 & 14
Civil Aviation Authority	✓															N/A
Crown Estate Scotland	✓															N/A
Defence Infrastructure Organisation									✓							Chapter 16
Fisheries Management Scotland	✓															N/A
Highlands and Islands Airport									✓							Chapter 16
John Muir Trust	✓															N/A
Joint Radio Company									✓							Chapter 16
Marine Scotland				✓												Chapter 7
Mountaineering Scotland			✓													Chapter 6
NATS Safeguarding									✓							Chapter 16
RSPB Scotland				✓		✓										Chapter 7, 8 & 13
Scottish Forestry										✓						No felling anticipated as detailed in Chapter 4
Scottish Rights of Way and Access Society (ScotWays)		✓														N/A
Scottish Water					✓											Chapter 12
Scottish Wild Land Group (SWLG)	✓															N/A
Scottish Wildlife Trust	✓															N/A
Transport Scotland												✓				Chapter 11
Visit Scotland	✓															N/A
Findhorn District Salmon Fisheries Board	✓															N/A
Ness and Beaully Fisheries trust	✓															N/A
Stratherrick and Foyers Community Trust	✓															N/A

5.4.3 Gatecheck

In line with the ECU Gatechecking procedure³ for Section 36 developments, a Gatecheck report was issued to the ECU and statutory consultees once an advanced design had been reached in July 2020. The Gatecheck report described how the design of the Development has evolved since the pre-scoping stage, highlighting influencing factors on the design either as a response to environmental constraints identified during the EIA process or through consultation feedback from statutory or non-statutory consultees.

A key element to the Gatecheck report was the collation of scoping responses with details on how the points raised by various consultees have been addressed and how this has influenced the design of the Development and the progression of the EIA. The Gatecheck report is included as Technical Appendix A5.2.

5.4.4 Further Technical Consultation

In addition to the formal Scoping process, where appropriate, authors of technical assessments within this EIA Report engaged directly with statutory and non-statutory consultees throughout the duration of the EIA Report preparation stage to further refine the scope for each assessment. Consultees contacted in this manner include NatureScot, Historic Environment Scotland (HES), the Council's Environmental Health Department, the Council's Transport and Structures department and Highlands and Islands Airports (Inverness Airport).

A summary of all relevant consultation is documented in the relevant Technical Chapters 6 to 16 of this EIA Report.

5.4.5 Public Engagement

Public consultation is a key component to the EIA process however since March 2020 the COVID-19 pandemic has prevented the regular method of face to face community engagement. As a result, the Applicant developed alternative ways to engage with the local community, namely the 'Online Public Exhibition'.

In addition to the online public exhibition, the Applicant consulted the members of the local community through attendance at local Community Council meetings. Table 5.2 summarises the steps undertaken to ensure the local community were informed and involved with the process.

Table 5.2: Community Engagement throughout EIA Process

Date	Exercise
24 th February 2020	Attendance at Stratherrick and Foyers Community Council (CC) A brief presentation to the CC was given outlining the wind farm proposals and questions were taken from the CC members and members of the public who attended.
June 2020	Public Exhibitions held: Online at: https://www.baywa-re.co.uk/en/wind/corriegarth-2-windfarm/ (3rd – 24th June 2020) Following a request from Stratherrick & Foyers CC the exhibition was advertised via a letter drop to residents (approximately 355) within and around the settlements of Foyers, Whitebridge & Stratherrick.

³ Scottish Government (2020), Gate-checking process for Section 36 and Section 37 applications [Online] Available at: <https://www.gov.scot/Topics/Business-Industry/Energy/Infrastructure/Energy-Consents/Guidance/Gatecheckingprocessforsection36andsection37applica> (Accessed on 11/08/2020)

Date	Exercise
Ongoing	The applicant has responded to requests for information or clarification from individual householders.

The public exhibition was hosted online due to the Scottish Government's COVID-19 advice and guidelines⁴. The Applicant originally planned to hold a public exhibition event in Stratherrick Hall in April 2020; however, the exhibition materials were provided for inspection on the dedicated project webpage instead. The stated aims of the exhibition were to introduce the Applicant, inform the local community of the proposals for Corriegarth 2 Wind Farm and to receive feedback from the community. Information, including graphics and visualisations was provided in relation to the following:

- Project facts including maps of the wind farm location and layout;
- Information about the Operational Corriegarth Wind Farm;
- The need for the Development;
- The application, determination and public consultation processes;
- Project Benefits; and
- EIA process including the key findings to date relating to:
 - Landscape and Visual Amenity – including Zone of Theoretical Visibility (ZTV) figures, and photomontages or wirelines from key viewpoints;
 - Ecology;
 - Ornithology;
 - Archaeology and Cultural Heritage;
 - Noise;
 - Traffic and Transport – including a map showing the proposed route to Site;
 - Geology and Peat;
 - Socio-economics, Recreation and Tourism;
 - Climate Change and Carbon Balance; and
 - Aviation and telecommunications.

Over the course of the online public exhibition, a total of approximately 149 visitors were recorded as having visited the dedicated project webpage and 12 questionnaires were completed.

5.5 THE EIA REPORT

The information that an applicant is required to submit as part of the EIA process is presented in this EIA Report. The preparation and production of this EIA Report has been conducted in accordance with relevant regulations and good practice guidance. Relevant legislation, policy and guidance are referred to in each of the technical assessments within the EIA Report. Overarching regulation, policy and guidance documents have been used in preparing this EIA Report are:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017⁵;
- The Electricity Works (Environmental Impact Assessment) (Scotland) Amendment Regulations 2017⁶;

⁴ The Scottish Government (2020) Online Public Exhibition established in accordance with COVID-19 Scottish Government advice and regulations [Online] Available online at: <https://www.gov.scot/publications/coronavirus-covid-19-planning-guidance-on-pre-application-consultations-for-public-events/> (Accessed 02/08/2020)

⁵ Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 [Online] Available at: <http://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 11/08/2020)

⁶ Electricity Works (Environmental Impact Assessment) (Scotland) Amendment Regulations 2017 [Online] Available at: <http://www.legislation.gov.uk/ssi/2017/451/made> (Accessed 11/08/2020)

- Scottish Planning Policy (SPP) (June 2014)⁷;
- Planning Advice Note (PAN) 1/2013: Environmental Impact Assessment, 2013⁸ which, whilst prepared to inform EIAs under the Town and Country Planning (Scotland) Act 1997 as amended, is also relevant to EIAs produced under the EIA Regulations;
- Planning Circular 1/2017: Environmental Impact Assessment Regulations, 2017⁹
- Environmental Impact Assessment Handbook (Scottish Natural Heritage, 2018)¹⁰; and
- Environmental Impact Assessment Guide to Delivering Quality Development (Institute of Environmental Management and Assessment [IEMA], 2016)¹¹.

This EIA Report conveys the findings of the assessment of the potential significant environmental effects of the Development during construction, operation and decommissioning.

The EIA Report comprises of the following documents:

- **Volume 1** – EIA Report Text;
- **Volume 2** – EIA Report Figures;
 - **Volume 2a** – Figures excluding Landscape and Visual Amenity (LVA);
 - **Volume 2b** – LVA Plan Figures;
 - **Volume 2c** – LVA Visualisations Part 1 of 2;
 - **Volume 2d** – LVA Visualisations Part 2 of 2;
- **Volume 3** – EIA Report Technical Appendices; and
- **Volume 4** – EIA Report Non-Technical Summary.

The EIA Report includes chapters covering the following technical areas:

- **Chapter 6: Landscape and Visual Amenity;**
- **Chapter 7: Ecology;**
- **Chapter 8: Ornithology;**
- **Chapter 9: Archaeology and Cultural Heritage;**
- **Chapter 10: Noise;**
- **Chapter 11: Traffic and Transportation;**
- **Chapter 12: Hydrology and Hydrogeology;**
- **Chapter 13: Geology and Peat;**
- **Chapter 14: Socioeconomics, Recreation and Land-use;**
- **Chapter 15: Climate Change and Carbon Balance; and**
- **Chapter 16: Other Issues.**

Each of the technical chapters follows the broad assessment principles outlined in Section 5.6.

Chapter 17: Summary of Mitigation presents a summary of the main effects of the Development, along with a description of any proposed mitigation measures.

⁷ The Scottish Government (2014) Scottish Planning Policy [Online] Available at: <https://beta.gov.scot/publications/scottish-planning-policy/> (Accessed 11/08/2020)

⁸ The Scottish Government (2013, Rev. 2017) Planning Advice Note 1/2013 Environmental Impact Assessment [Online] Available at: <http://www.gov.scot/Publications/2013/08/6471> (Accessed 11/08/2020)

⁹ The Scottish Government (2017) Planning Circular 1/2017 Environmental Impact Assessment regulations [Online] Available at:

<https://www.gov.scot/publications/planning-circular-1-2017-environmental-impact-assessment-regulations-2017/> (Accessed on 11/08/2020)

¹⁰ NatureScot (2018) Environmental Impact Assessment Handbook [Online] Available at: <https://www.nature.scot/handbook-environmental-impact-assessment-guidance-competent-authorities-consultees-and-others> (Accessed 11/08/2020)

¹¹ IEMA (2016) Environmental Impact Assessment Guide to: Delivering Quality Development

5.6 TECHNICAL ASSESSMENTS

Each of the technical assessments follows a systematic approach with the main steps as follows:

- Introduction, assessment methodology and significance criteria;
- Description of the baseline conditions;
- Assessment of potential effects;
- Mitigation measures and residual effects;
- Cumulative effects assessment;
- Summary of effects (residual effects); and
- Statement of significance.

A summary of each step is highlighted below.

5.6.1 Introduction, Assessment Methodology and Significance Criteria

Each technical assessment sets out the relevant legislation, policy and guidance together with scope and methodology used to carry out the assessment of potential effects, including the criteria that are used to establish which effects are significant. The methodology seeks to ensure transparency in the assessment. Each technical assessment has the criteria set out for assessing significance. Where a level of significance is attributed to an effect, this is based on technical guidance and professional judgement, informed by consideration of the sensitivity of the receptor and the degree of the effect.

This section also sets out the scoping requirements and pre-application consultation responses that form the framework and scope of the specialist assessment work for the topic.

5.6.2 Description of Baseline Conditions

In order to evaluate the potential environmental effects, the existing environmental conditions were recorded through field and desktop research. Prior to the initiation of fieldwork studies, desktop studies were undertaken to gain a better understanding of the study area. Site-specific baseline field surveys were then undertaken by experienced professionals to provide an understanding of the current condition of the development site and the surrounding area.

This forms the baseline, alongside a prediction of these conditions into the future. Such predictions can involve a high number of variables and be subject to large uncertainties, and as a result, in some cases, the current baseline condition is assumed to remain unchanged throughout the timeframe of the Development.

The baseline has been used to assess the sensitivity of receptors within the study areas. Wind farms that are operational or consented at the time of commencing the assessments are treated as being part of the existing baseline except where specific guidance advises to the contrary. This includes the Operational Corriegarth Wind Farm which is incorporated within the baseline for all technical assessments.

The approach to describing baseline conditions is set out in each relevant technical chapter. Baseline information is used to inform the layout of the Development. From baseline information, constraints were identified which were considered as part of the design process. Further detail on the design process adopted for the Development is detailed in **Chapter 3: Site Selection and Design** and **Chapter 4: Development Description**.

5.6.3 Assessment of Potential Effects

The prediction of potential significant effects covers the three phases of the Development: construction, operation and decommissioning, as different environmental effects are likely to arise during the different stages. The effects during construction and decommissioning are generally considered to be short term effects, and those arising as a result of the operation of the Development are generally considered to be long term effects. Each technical assessment considers the nature of effects and includes cumulative effects with other developments where appropriate.

Following identification of potential environmental effects, the baseline information is used to predict changes to existing conditions, and conduct an assessment of these changes.

The significance of effects resulting from the Development will be determined through a combination of the sensitivity of the receiving environment (the sensitivity) and the predicted degree of change (the magnitude) from the baseline state.

5.6.3.1 Sensitivity of Receptors

Environmental sensitivity may be categorised by multiple factors, such as the presence of rare or endangered species, transformation of natural landscapes, soil quality and land-use etc. The initial assessment, consultation and scoping stages identified these factors along with the implications of the predicted changes.

The sensitivity classification of the receiving environment varies between the different technical areas of assessment e.g. landscape and visual, ecology, noise etc. Sensitivity is normally defined as high, medium or low. Table 5.3 details a general framework for determining the sensitivity of receptors; however, each technical assessment will specify their own appropriate sensitivity criteria that will be applied during the EIA and details will be provided in each technical chapter.

Table 5.3: Framework for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
Very High	The receptor has little or no ability to absorb change without fundamentally altering its present character, is of very high environmental value, or of international importance.
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance.
Low	The receptor is tolerant of change without detriment to its character, is low environmental value, or local importance.
Negligible	The receptor is resistant to change or is of little environmental value.

5.6.3.2 Magnitude of Change

For the purposes of environmental assessment, the magnitude of an 'effect' is generally dependent on the degree to which the change affects the feature or asset, from a fundamental, permanent or irreversible change that changes the character of the feature or asset, to barely perceptible changes that may be reversible. Magnitude would also encompass the certainty of whether an impact would occur. Magnitude is generally classified as high, medium, or low. General criteria for assessing the magnitude of an

effect are presented in Table 5.4. Each technical assessment will apply their own appropriate magnitude of effects criteria during the EIA, with the details provided in the relevant EIA chapter.

Table 5.4: Framework for Determining Magnitude of Change

Magnitude of Effects	Definition
High	A fundamental change to the baseline condition of the asset, leading to total loss or major alteration of character.
Medium	A material, partial loss or alteration of character.
Low	A slight, detectable, alteration of the baseline condition of the asset.
Negligible	A barely distinguishable change from baseline conditions.

If the effects of zero magnitude (i.e. none / no change) are identified, this will be made clear in the assessment.

5.6.3.3 Significance of Effect

The sensitivity of the asset and magnitude of the predicted impacts will be used as a guide, in addition to professional judgement, to assess the level of effects. Table 5.5 summarises guideline criteria for assessing the significance of effects.

Table 5.5: Framework for Assessment of the Significance of Effects

Magnitude of Effect	Sensitivity of Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Major / Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light grey in the above table.

Zero magnitude effects upon a receptor will result in no effect, regardless of sensitivity.

This EIA Report generally follows the above principles in relation to the identification of significant effects; however, some technical assessments may adopt a variation process. The assessment criteria used to determine the significance of effects are made explicit in each technical assessment chapter within this EIA Report.

5.6.4 Mitigation Measures and Residual Effects

The IEMA EIA Guide to Delivering Quality Development Report demonstrates that EIA is an iterative process rather than a unique, post-design, environmental appraisal. In adopting this approach, the findings of the technical environmental studies used to inform the design of the project, and hence achieve a 'best fit' with the environment. This approach has been adopted in respect of the Development; where potentially significant effects have been identified, their avoidance or minimisation has been prioritised at the

design stage. This is referred to within this EIA Report as 'embedded mitigation', i.e. mitigation that is embedded within the project design, and includes best practice as well as design features.

In line with the mitigation hierarchy identified in the updated PAN 1/2013 (V1.0, 2017), the strategy of avoidance, reduction, and remediation is a hierarchical one, which seeks to:

- First to avoid potential effects;
- Then to reduce those which remain; and
- Lastly, where no other measures are possible, to propose compensatory measures.

Appropriate mitigation measures are discussed within each technical chapter as relevant.

5.6.5 Cumulative Effects Assessment

In accordance with the EIA Regulations, the assessment has considered 'cumulative effects'. By definition, these are effects that result from incremental changes caused by past, present or reasonably foreseeable developments together with the Development being assessed. For the cumulative assessment, the combined effects of several developments in isolation may be insignificant but cumulatively when considered with other developments have a significant effect.

Cumulative assessment addresses the combined effects from the addition of the Development to a baseline of identified wind farms on landscape and visual, hydrology, ecology, ornithology, noise, cultural heritage, traffic and transport, recreation, tourism and other impacts.

Other developments which may come forward in the future, but which do not currently have sufficient information available in relation to their likely effects to make an informed cumulative assessment (*e.g.* those within scoping), are not considered in detail in this EIA Report.

The extent of any cumulative assessment is defined in each technical assessment chapter and can include both existing and proposed wind farm developments and other forms of development. The potential landscape and visual effects, for example, which relate to the intervisibility of individual wind farm development schemes, will be much more wide ranging than noise effects which will be limited to receptors in the more immediate vicinity of the Development.

Consideration of cumulative effects has been undertaken for all technical assessments. Where no cumulative effects are likely, this is stated. Operational wind farms are considered to be part of the baseline in the majority of assessments. In relation to some of the technical chapters, specific guidance and policy exists advising that effects associated with existing wind farm developments should be considered as cumulative effects. Where relevant, these are noted within each chapter.

5.6.6 Summary of Effects

The residual effects of the Development are those that remain following successful implementation of the identified mitigation and enhancement measures.

Residual effects are identified in each technical assessment alongside an assessment of whether any residual effects are significant or not in terms of the EIA Regulations.

5.7 ASSUMPTIONS AND LIMITATIONS OF EIA

A number of assumptions have been made during preparation of this EIA Report, as set out below. The assumptions are:

- The principal land uses adjacent to the development site remain as they are at the time of the submission of the application, except in cases where permission has already been granted for development. In these cases, it is assumed that the approved development will take place, and these have been treated as contributing to "cumulative" effects; and
- Information provided by third parties, including publicly available information and databases is correct at the time of submission.

The EIA has been subject to the following limitations:

- Baseline conditions are accurate at the time of the physical surveys but, due to the dynamic nature of the environment, conditions may change during the site preparation, construction and operational phases; and
- The assessment of cumulative effects has been reliant on the availability of known information relating to existing wind farm developments as at July 2020.

Assumptions specific to certain environmental aspects are discussed in the relevant Chapters of this EIA Report.

6 LANDSCAPE AND VISUAL AMENITY

6.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) evaluates the effects of the Corriegarth 2 Wind Farm (the Development) on the landscape and visual resource. This assessment was undertaken by Chartered Landscape Architects (CMLI) at LUC (Land Use Consultants Limited) on behalf of Corriegarth 2 Wind Farm Limited (the Applicant).

This Chapter of the EIA Report is supported by the following Technical Appendix documents provided in Volume 3 EIA Report Technical Appendices:

- A6.1: Landscape and Visual Impact Assessment (LVIA) Assessment Methodology;
- A6.2: ZTV and Visualisation Methodology;
- A6.3: Assessment of Effects on Special Landscape Qualities; and
- A6.4: Wild Land Impact Assessment.

Accompanying figures are included as Figures 6.1 – 6.20 contained in Volume 2b – LVIA Figures. Accompanying visualisations are illustrated as Figures 6.21 – 6.44 contained in Volume 2c: NatureScot¹ Visualisations and Volume 2d: The Highland Council (THC) Visualisations and have been prepared in accordance with the methodology set out in Appendix A6.2.

This Chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Landscape Baseline Conditions;
- Visual Baseline Conditions;
- Assessment of Potential Effects;
- Mitigation and Residual Effects;
- Cumulative Effect Assessment;
- Summary of Effects;
- Statement of Significance; and
- Glossary.

The following terms are used in this chapter to describe the Development and Study Area:

- The Development: the whole physical process involved in the development of Corriegarth 2 Wind Farm, including wind farm construction, operation and decommissioning (i.e. not a piece of land or an area);
- The Site: the application site boundary within which the land available for turbine development and associated wind farm infrastructure is located (shown as a red line boundary (the Site) in Figure 6.1);
- The Study Area: area which is considered as part of the assessment process, which includes the area within a 40 km radius from the outermost wind turbines of the Development in all directions

6.2 LEGISLATION, POLICY AND GUIDANCE

The following guidance, legislation and information sources have been considered in carrying out this assessment.

¹ Scottish Natural Heritage (SNH) rebranded in August 2020 as NatureScot. Where relevant reference is still made to SNH within this chapter in respect of guidance which remains valid and is yet to be republished etc.

6.2.1 Legislation and Assessment Guidance

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017²;
- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)³;
- Assessing the cumulative impact of onshore wind energy developments⁴;
- A Handbook on Environmental Impact Assessment, Appendix 2: Landscape and Visual Impact Assessment, Version 5⁵;
- Visual Representation of Wind Farms, Version 2.2⁶;
- Visualisation Standards for Wind Energy Developments⁷;
- Technical Guidance Note 06/19 Visual representation of development proposals⁸;
- Technical Guidance Note 2/19: Residential Visual Amenity Assessment (RVAA)⁹;
- Assessing impacts on Wild Land Areas – technical guidance draft¹⁰;
- Assessing impacts on Wild Land Areas – technical guidance¹¹
- General pre-application and scoping advice for onshore wind farms¹²; and
- Guidance for Assessing Effects on Special Qualities and Special Landscape Qualities. Working Draft 11¹³.

6.2.2 Design and Locational Guidance

- Siting and Designing Wind Farms in the Landscape, Version 3¹⁴;
- Policy Statement No 02/02: Strategic Locational Guidance for Onshore Windfarms in Respect of the National Heritage¹⁵;

² The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. London: HMSO [Online] Available at: <http://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 11/08/2020)

³ Landscape Institute and the Institute of Environmental Assessment (2013), Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)

⁴ Scottish Natural Heritage (SNH) (2012), Assessing the cumulative impact of onshore wind energy developments. [Online] Available at: <https://www.nature.scot/guidance-assessing-cumulative-impact-onshore-wind-energy-developments> (Accessed 06/10/2020)

⁵ SNH (2018), A Handbook on Environmental Impact Assessment, Appendix 2: Landscape and Visual Impact Assessment, Version 5. [Online] Available at: <https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf> (Accessed 06/10/2020)

⁶ SNH (2017), Visual Representation of Wind Farms, Version 2.2. [Online] Available at: <https://www.nature.scot/visual-representation-wind-farms-guidance> (Accessed 06/10/2020)

⁷ The Highland Council (THC) (2016), Visualisation Standards for Wind Energy Developments. [Online] Available at: http://www.highland.gov.uk/download/downloads/id/12880/visualisation_standards_for_wind_energy_developments.pdf (Accessed 06/10/2020)

⁸ Landscape Institute (2019), Technical Guidance Note 06/19 Visual representation of development proposals. [Online] Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf (Accessed 06/10/2020)

⁹ Landscape Institute (2019), Technical Guidance Note 2/19: Residential Visual Amenity Assessment (RVAA). [Online] Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/03/tgn-02-2019-rvaa.pdf> (Accessed 06/10/2020)

¹⁰ SNH (2017), Assessing impacts on Wild Land Areas – technical guidance draft. [Online] Available at: <https://www.nature.scot/consultation-draft-guidance-assessing-impacts-wild-land-areas-technical-guidance> (Accessed 06/10/2020)

¹¹ SNH (2020), Assessing impacts on Wild Land Areas – Technical Guidance. [Online] Available at: <https://www.nature.scot/sites/default/files/2020-09/Guidance%20-%20Assessing%20impacts%20on%20Wild%20Land%20Areas%20-%20technical%20guidance.pdf>

¹² SNH (2020), General pre-application and scoping advice for onshore wind farms. [Online] Available at: <https://www.nature.scot/general-pre-application-and-scoping-advice-onshore-wind-farms> (Accessed 06/10/2020)

¹³ SNH (unpublished, 2018). Guidance for Assessing Effects on Special Qualities and Special Landscape Qualities. Working Draft 11

¹⁴ SNH (2017), Siting and Designing Wind Farms in the Landscape, Version 3. [Online] Available at: <https://www.nature.scot/siting-and-designing-wind-farms-landscape-version-3a> (Accessed 06/10/2020)

¹⁵ SNH (2009), Policy Statement No 02/02: Strategic Locational Guidance for Onshore Windfarms in Respect of the National Heritage.

- Spatial Planning for Onshore Wind Turbines – natural heritage considerations, Guidance¹⁶;
- Good Practice During Windfarm Construction, Version 3¹⁷;
- Constructed Tracks in the Scottish Uplands, 2nd Edition¹⁸;
- Scottish Planning Policy (SPP)¹⁹;
- Scottish Energy Strategy: The future of energy in Scotland²⁰;
- Onshore Wind Policy Statement²¹; and
- Planning Advice Note (PAN) 68: Design Statements²².

6.2.3 Local Development Plans and Supplementary Planning Guidance

- Highland-Wide Local Development Plan²³;
- Inner Moray Firth Local Development Plan²⁴;
- Onshore Wind Energy Supplementary Guidance, November 2016 (with addendum, December 2017)²⁵;
- Local Development Plan, Adopted 2015²⁶; and
- Local Development Plan 2020, Proposed Plan²⁷.

6.3 CONSULTATION

6.3.1 Scoping Responses and Consultations

Consultation for this EIA Report topic was undertaken with the consultees listed in Table 6.1.

¹⁶ SNH (2015), Spatial Planning for Onshore Wind Turbines – natural heritage considerations, Guidance. [Online] Available at: <https://www.nature.scot/sites/default/files/2019-10/Guidance%20-%20Spatial%20Planning%20for%20Onshore%20Wind%20Turbines%20-%20natural%20heritage%20considerations%20-%20June%202015.pdf> (Accessed 06/10/2020)

¹⁷ SNH (2015), Good Practice During Windfarm Construction, Version 3. [Online] Available at: <https://www.nature.scot/guidance-good-practice-during-wind-farm-construction> (Accessed 06/10/2020)

¹⁸ SNH (2015), Constructed Tracks in the Scottish Uplands, 2nd Edition. [Online] Available at: <https://www.nature.scot/sites/default/files/Publication%202015%20-%20Constructed%20tracks%20in%20the%20Scottish%20Uplands.pdf> (Accessed 06/10/2020)

¹⁹ Scottish Government (2014), Scottish Planning Policy (SPP). [Online] Available at: <https://www.gov.scot/publications/scottish-planning-policy/> (Accessed 06/10/2020)

²⁰ Scottish Government (2017), Scottish Energy Strategy: The future of energy in Scotland. [Online] Available at: <https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/> (Accessed 06/10/2020)

²¹ Scottish Government (2017), Onshore Wind Policy Statement. [Online] Available at: <https://www.gov.scot/publications/onshore-wind-policy-statement-9781788515283/> (Accessed 06/10/2020)

²² Scottish Government (2003), Planning Advice Note (PAN) 68: Design Statements. [Online] Available at: <https://www.gov.scot/publications/planning-advice-note-68-design-statements/> (Accessed 06/10/2020)

²³ The Highland Council (2012), Highland-Wide Local Development Plan. [Online] Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan (Accessed 06/10/2020)

²⁴ The Highland Council (2015), Inner Moray Firth Local Development Plan. [Online] Available at: https://www.highland.gov.uk/downloads/file/15008/adopted_inner_moray_firth_local_development_plan (Accessed 06/10/2020)

²⁵ The Highland Council (2017), Onshore Wind Energy Supplementary Guidance, November 2016 (with addendum, December 2017). [Online] Available at: https://www.highland.gov.uk/directory_record/712079/onshore_wind_energy (Accessed 06/10/2020)

²⁶ Cairngorms National Park (2015), Local Development Plan, Adopted 2015. [Online] Available at: <https://cairngorms.co.uk/planning-development/local-development-plan-2020/ldp-2015/> (Accessed 06/10/2020)

²⁷ Cairngorms National Park (2019), Local Development Plan 2020, Proposed Plan. [Online] Available at: <https://cairngorms.co.uk/planning-development/local-development-plan-2020/> (Accessed 06/10/2020)

Table 6.1: Consultation Responses

Type and Date	Summary of Consultation Response	Response to Consultee
SNH		
Pre-application advice for major developments, 06/11/2019	Given proximity to Wild Land Area 20 – Monadhliath, wild land assessment and it should follow Wild Land Areas: Technical Guidance (Draft Document) ²⁸	Guidance referred to when preparing the Wild Land Impact Assessment included in Appendix A6.4.
	<i>"Turbines of a height of 150m or greater currently require aviation lighting. This is an area where there is on-going discussion around the requirements of lighting, possible technological solutions."</i>	Following Pre-Application, wind turbine tip height was subsequently lowered to 149.9 m. Ministry of Defence (MOD) Defence Infrastructure Organisation confirmed that no visible aviation lighting would be required ²⁹ .
	Draft Special Quality Assessment guidance ³⁰ should be used to undertake an assessment of the impact on the Special Landscape Qualities of the Cairngorms National Park. Given the location of the Development outside the National Park boundary, SNH will take a lead role with the CNPA in a supporting role.	Guidance referred to in preparing the Assessment of Effects on the Special Landscape Qualities of the Cairngorms National Park (CNP) included within Appendix A6.3.
	National Park Partnership Plan 2017-2022 (NPPP) will be a material consideration, in particular: - Policy 3.3: <i>"Large-scale wind turbines are not compatible with the landscape character or special landscape qualities of the National Park. They are inappropriate within the National Park or where outside the Park they significantly adversely affect its landscape character or special landscape qualities;"</i> <i>"Policy 1.3 which seeks to conserve and enhance the special landscape qualities with a particular focus on (a) conserving and enhancing wildness qualities (b) Maintaining and promoting dark skies (c) enhancements that also deliver habitat improvements (d) enhancing opportunities to enjoy and experience the landscapes of the Park and (e) applying a presumption against</i>	Landscape character and special landscape qualities of the CNP considered within the LVIA and Appendix A6.3.

²⁸ SNH (2017), Assessing impacts on Wild Land Areas – technical guidance draft. [Online] Available at: <https://www.nature.scot/professional-advice/landscape/landscape-policy-and-guidance/assessing-impacts-wild-land-areas-draft-guidance> (Accessed 23/09/2020)

²⁹ Letter received from Ministry of Defence Safeguarding Department – 14 August 2020

³⁰ SNH (unpublished, 2018). Guidance for Assessing Effects on Special Qualities and Special Landscape Qualities. Working Draft 11.

Type and Date	Summary of Consultation Response	Response to Consultee
	<i>new constructed tracks in open moorland."</i>	
	<i>"Cumulative effects of the proposal should be assessed in particular the operational Corriegarth wind farm which is made up from turbines with different heights and dimensions to those proposed. A layout and design should be presented which is in keeping with the existing design and pattern of development, and should respect the mitigation measures incorporated in that development."</i>	Cumulative effects considered within LVIA, see Section 6.7. Further information regarding evolution of turbine layout design is included in Chapter 3: Site Selection and Design .
Scoping Opinion, 18/03/2020	Further consultation advised on scope of Wild Land Impact Assessment.	Further consultation undertaken with SNH, 06/04/2020 and 27/08/2020.
	Wild Land Impact Assessment should follow draft 2017 guidance.	Wild Land Impact Assessment (Appendix A6.4) follows 2017 draft guidance. Cognisance has also been taken of the recently published finalised version of this guidance.
	Should aviation lighting be required, night-time lighting assessment should be undertaken for WLA.	Ministry of Defence (MOD) Defence Infrastructure Organisation confirmed that no visible aviation lighting would be required ³¹ .
Wild Land Impact Assessment follow up consultation, 06/04/2020	Confirmed that Wild Land Impact Assessment only should consider effects on WLA 20 Monadhliath.	Appendix A6.4 assesses effects on WLA 20: Monadhliath. Other WLAs within Study Area scoped out of assessment.
	Wild Land Impact Assessment to follow draft 2017 guidance in addition to further clarifications outlined in note: Supplementary Information on Wild Land Impact Appraisal ³² .	Further clarifications outlined in SNH8 ³² considered in the approach to Wild Land Impact Assessment (Appendix A6.4).
Further consultation via email, 05/05/2020	Confirmed assessment of effects on the Special Qualities of Cairngorms NP should be included within LVIA and	Assessment of effects on the Special Landscape Qualities of the Cairngorms NP included in Appendix A6.3.

³¹ Letter received from Ministry of Defence Safeguarding Department – 14 August 2020

³² Note provided by SNH as part of combined public inquiry for Drum Hollistan (DPEA case reference: WIN-270-9) and Limekiln 2 (DPEA case reference WIN-270-1).

Type and Date	Summary of Consultation Response	Response to Consultee
	confirmed scope of Special Landscape Qualities to be included in assessment	
Further consultation via email 12/05/2020	Additional sample points requested for the assessment of effects on Special Landscape Qualities for Cairngorms National Park: • Carn Ban • Carn an Fhreiceadain • A'Chailleach	Assessment points included in Appendix A6.3.
Further consultation via email 27/08/2020	Confirmation of WLA assessment points and scope of assessment to include all four WLA qualities	Assessment of all four WLA qualities included in Appendix A6.4.
The Highland Council		
Pre-application advice for major developments, 06/11/2019	<i>"There is concern that the extension as currently proposed would undo the previously secured mitigation, have an impact on the setting of Loch Ness and may not accord with the established pattern of wind energy development."</i>	Turbine layout has been refined to minimise additional visibility resulting from the introduction of the Development (see Comparative ZTV, Figure 6.2). Further information regarding evolution of turbine layout design is included in Chapter 3: Site Selection and Design .
	<i>"The design and scale of the proposal as currently presented requires further consideration. Based upon the current layout, scale and design it is unlikely that the application could be supported. However, if there is a reduction in the scale of the wind farm, by virtue of height of turbines and number of turbines, to ensure that the visual impacts are minimised the scheme could be supported."</i>	Following Pre-Application advice, the layout of the Development was further refined and wind turbine tip height was lowered from 179.9 m to 149.9 m. Further information regarding evolution of turbine layout design is included in Chapter 3: Site Selection and Design .
	<i>"HwLDP Policy 61 Landscape requires new development to reflect the landscape characteristics and special qualities identified in the relevant, recently refreshed and published (2019) SNH Landscape Character Assessments (LCAs)."</i>	SNH 2019 landscape character assessment LCTs considered within assessment, Section 6.9.3.
	<i>"Pages 18-20 of the Onshore Wind Energy Supplementary Guidance list ten landscape and visual criteria that the Council will use as a framework for assessing proposals. They are not absolute requirements but set out key considerations of the Council that the developer should be aware of and take account of in progressing assessment and design of the proposal."</i>	Development has been assessed against the applicable criteria from the Onshore Wind SG, presented in Table 6.43 and replicated in the Planning Statement (Table 4.2) which accompanies the Section 36 Application.
	Onshore Wind Energy Supplementary Guidance, Loch Ness Landscape Sensitivity Appraisal should be taken	Onshore Wind SG, Loch Ness Landscape Sensitivity Appraisal considered in refinement of the turbine layout. Further information

Type and Date	Summary of Consultation Response	Response to Consultee
	into consideration when refining the proposal.	regarding evolution of turbine layout design is included in Chapter 3: Site Selection and Design .
	Visualisations should be provided that accord with the Council's latest Visualisation Standards for Wind Energy Developments.	Visualisations produced to the Council's standards are included in Volume 2d: The Highland Council (THC) Visualisations.
	<i>"Assessments should cover impacts of all elements of the development, not just the turbines, where they are not covered under a separate application."</i>	LVIA considers impacts of proposed wind turbines, site infrastructure, new access tracks and ancillary structures.
	Regarding design of the Development: <i>"this proposal is significant in the scale of turbines proposed which, due to their increased height, compared to those operational, are likely to contrast with the consented scheme, particularly in terms of massing of the various turbine components";</i> <i>"attention should be paid to the landscape features which contain the visual impacts of the operational scheme. Any development outwith the open lipped bowl would be unlikely to be supported".</i>	Following Pre-Application, the wind turbine tip height of the Development was lowered from 179.9 m to 149.9 m, such that the proposed wind turbines appear at a more compatible scale with those of the Operational Corriegarth Wind Farm. The wind turbine layout of the Development was further refined to present a discrete extension to the Operational Corriegarth Wind Farm, avoiding locating wind turbines beyond the containing topography of the interior of the site. Further information regarding evolution of turbine layout design is included in Chapter 3: Site Selection and Design .
Email correspondence preceding Scoping Opinion, 10/03/2020	Additional viewpoints requested: - A9 in the vicinity of the Kessock Bridge - North and south bound A9 picnic sites at North Kessock - Ptarmigan Restaurant/in the vicinity of the ski-lifts - Elevated location within the Loch Lochy and Loch Oich SLA to represent views around the Great Glen from the west - Viewpoints from popular hill walking and mountaineering areas within Glen Strathfarrar NSA, Glen Affric NSA, Strathconon, Monar and Mullardoch SLA and Moidart, Monar and Glen Shiel SLA	Assessment viewpoints (illustrated by wireline) included: - VP 16: North Kessock- A9 northbound picnic area (south bound picnic area not included due to screening by intervening vegetation) - VP 19: Ptarmigan Restaurant, Cairngorm - VP 17: Ben Tee, representing views experienced by hill walkers within Loch Lochy and Loch Oich SLA - VP 18: Toll Creagach, representing views across Glen Affric NSA on the boundary of the Strathconon, Monar and Mullardoch SLA
Design consultation and follow up, 03/04/2020	Feedback received from THC on the latest turbine layout design, as detailed in Chapter 3: Site Selection and Design . For VP 6: Beinn Bhreac Mhor, VP 9: Carn Sgulain, VP 13: Geal Charn, VP 14: Corrieyairack Hill:	Feedback influenced the refinement of the turbine layout, and further information regarding evolution of turbine layout design is included in Chapter 3: Site Selection and Design . New baseline photography was obtained during June and July 2020 (in accordance with the Council's standards), and none of the original baseline photography has been used

Type and Date	Summary of Consultation Response	Response to Consultee
	- Use of photography from previous application³³ for Operational Corriegarth Wind Farm discussed - Format of visualisations (wireline and baseline photograph) discussed	in the preparation of accompanying visualisations.
Scoping Opinion, 06/03/2020	Consider the visual impact of tracks which have not already been assessed and consented through the Corriegarth Wind Farm application	LVIA considers impacts of proposed wind turbines, site infrastructure, new access tracks and ancillary structures.
	Single frame images to be used for visualisations and photomontages should follow the Council's Visualisation Standards	Visualisations produced to the Council's standards are included in Volume 2d: THC LVIA Visualisations.
	Cumulative assessment study area should consider wind farms within 60 km of the Development	Cumulative assessment considers wind farm development within 60 km of the Development; however the assessment focusses on developments that are likely to give rise to significant cumulative effects and therefore concentrates on wind farm development within 40 km. Approach confirmed in further consultation on 21/08/2020.
	Consultation should be undertaken with ECU as to schemes currently at Scoping Stage which may be progressing	Schemes considered for inclusion within cumulative assessment are those which are in the public domain and the subject of a valid application by the cut-off date of 30/10/2020. Given the uncertainty of schemes that have only progressed to Scoping Stage, these are considered briefly to provide an overall context to the cumulative assessment but are not considered in the detail assessment of cumulative effects.
	New photography should be used wherever possible	New photography has been used for all visualisations contained with Volume 2d: The Highland Council (THC) Visualisations.
	The purpose of the selected and agreed viewpoints shall be clearly identified	Reason for selection of viewpoints included in Table 6.5.

³³ ECU reference: EC00003115

Type and Date	Summary of Consultation Response	Response to Consultee
	Assess the impacts on core paths, national cycle network, Great Glen Way, South Loch Ness Trail and Loch Ness 360 routes	Recreational routes considered within assessment, Section 6.9.6.
	SNH 2019 landscape character assessment should be used	SNH 2019 landscape character assessment LCTs considered within assessment, Section 6.9.3.
	An assessment of the Development against the criteria set out in the Onshore Wind SG should be included within the LVIA	Development assessed against the applicable criteria from the Onshore Wind SG, presented in Table 6.43 and replicated in the Planning Statement (Table 4.2) which accompanies the Section 36 Application
	An assessment of impacts on any landscapes designated at a national and local scale should be included and undertaken using SLA citations	Potential implications on designated landscapes are discussed in Section 6.9.7. SLA citations were used for the assessment of the Loch Ness and Duntelchaig SLA.
	<i>"We are content that residential visual amenity is assessed within the LVIA chapter."</i>	Residential visual amenity is assessed within the assessment of Operational Visual Effects (Section 6.9.4).
Gatecheck Response, 06/07/2020	<i>"We would seek that the LVIA chapter includes a clear definition of sensitivity of receptor and magnitude of change."</i> <i>"We would welcome it if this is clearly set out (with a matrix approach to support any text on identifying magnitude of effect)"</i>	Appendix A6.1 LVIA Assessment Methodology includes clear definition of sensitivity, magnitude of change, and a matrix detailing the approach to identifying magnitude of change.
	Requested assessment summary table setting out 'Viewpoint', 'Receptor', 'Sensitivity of Visual Receptor', 'Magnitude of Change' and 'Residual Effect on Visual Amenity at Viewpoint' or similar	Assessment summary table included in Section 6.11 Summary of Effects.

Type and Date	Summary of Consultation Response	Response to Consultee
Further consultation, 17/08/2020	Format of THC visualisations confirmed: • Panoramic photography of existing view and wireline • Panoramic photography of existing view and cumulative wireline (only necessary where other schemes beyond the Operational Corriegarth Wind Farm and Corriegarth 2 are visible) • Single Frame 75mm Photomontage (required for all viewpoints, with the Operational Corriegarth Wind Farm shown in blue and the proposed Corriegarth 2 wind farm shown in red) • Panoramic viewer images to be included for VP 11: Meall Fuar-mhonaidh, VP15: Carn na Leitire and VP7: General Wade's Military Road • Two printed copies to be sent to THC headquarters in Inverness, presented in ring bound folders	Visualisations produced to the Council's standards are included in Volume 2d: The Highland Council (THC) Visualisations. Two printed copies in ring bound folders provided to the Council.
	LVIA should include clear definitions of sensitivity (including what constitutes a high sensitivity or low sensitivity receptor, with reference to susceptibility and value) and magnitude of change (and the constituent criteria which inform levels of magnitude e.g. size/scale, duration, reversibility and geographical extent), to ensure there is clear understanding and transparency as to how the assessment of landscape and visual effects has been undertaken and the final judgements reached.	Landscape and Visual Impact Assessment (LVIA) Assessment Methodology (Appendix A6.1) includes definitions of sensitivity and magnitude of change, and these are referenced clearly in assessment tables within this chapter. As discussed, no matrix has been included.
Further consultation, 21/08/2020	Final list of other wind farm developments to be considered within assessment confirmed. Wind farms to be considered will be limited to those within 40km radius. Bhlaraidh Extension and Fasnakyle (at Scoping) to be excluded from assessment. Auchmore and Auchmore Extension to be included within assessment.	Further information on approach to cumulative assessment included in Section 6.7 Other Wind Farm Development. Cumulative assessment included within assessment tables throughout this chapter.
Cairngorms National Park Authority (CNPA)		
Pre-application advice for major developments, 06/11/2019	<i>"Cairngorms National Park Authority will be inputting to the comments from SNH as under our existing protocol with SNH they take the lead on commenting on proposals outwith the National Park which are likely to</i>	No direct correspondence with CNPA. Refer to SNH response above.

Type and Date	Summary of Consultation Response	Response to Consultee
	<i>have an impact with the CNPA in supporting role."</i>	
Scoping Opinion, 05/03/2020	<i>"In accordance with our working protocol with Scottish Natural Heritage (SNH)³⁴...SNH provide advice on the potential effects of development outwith the Park on the Special Landscape Qualities of the Park. We therefore have no comments to make at this stage and refer you to their advice."</i>	No direct correspondence with CNPA. Refer to SNH response above.
Gatecheck Response, 06/07/2020	Working protocol with SNH reiterated (see Scoping Opinion above).	No direct correspondence with CNPA. Refer to SNH response above.
Non-Statutory Consultees		
Mountaineering Scotland		
Scoping Opinion, 02/03/2020	Additional viewpoint requested from Carn na Saobhaidhe (811m)	Carn na Saobhaidhe (811m) not used in previous applications for Operational Corriegarth Wind Farm, not considered further.
	Concerns raised over turbines located at higher altitudes potentially increasing adverse impact of existing scheme	The interaction between operational and proposed turbines, including the difference in turbine size, has informed the design of the Development, as detailed in Chapter 3: Site Selection and Design . The LVIA will consider any perceptible differences in turbine scale and the relevant effects.

6.4 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

The LVIA methodology was prepared in accordance with the principles contained within GLVIA3 and is described in detail in Appendix A6.1. Appendix A6.1 should be referred to whilst reviewing the findings of this assessment in order to gain a clear understanding of how findings of significance have been informed.

The key steps in the methodology for assessing both landscape and visual effects are as follows:

- The area from which the Development may theoretically be visible was established through creation of a ZTV covering a distance of up to 40 km from the outermost wind turbines of the Development, refer to Figure 6.3a-6.3c for blade tip ZTV;
- The landscape of the Study Area was analysed, and landscape receptors identified;
- The visual baseline was recorded in terms of the places where people will be affected by views of the Development, and the nature of views and visual amenity, seen by different groups of people;

³⁴ SNH (2013). Agreement on roles in advisory casework between Scottish Natural Heritage and Scottish National Park Authorities. [Online] Available at: <https://www.nature.scot/agreement-roles-advisory-casework-between-scottish-natural-heritage-and-scottish-national-park> (Accessed 06/10/2020)

- Viewpoints were selected (including representative viewpoints, specific viewpoints and illustrative viewpoints), in consultation with the Council, Scottish Natural Heritage (SNH) and Cairngorm National Park Authority; and
- Likely effects on landscape and visual resources were identified.

The 35-year consent for the Operational Corriegarth Wind Farm runs to June 2042. Effects associated with the eventual decommissioning or potential repowering of the Operational Corriegarth Wind Farm are not considered within this assessment.

6.4.1 Study Area / Survey Area

The Study Area for the assessment is defined as 40 km from the outermost wind turbines of the Development in all directions, as recommended in SNH guidance³⁵ for wind turbines of 131-150 m blade tip height. The extent of the Study Area is shown on Figure 6.1. The consideration of landscape and visual effects, including cumulative effects, on particular receptors is dealt with in the sections which follow, with specific reference to the distance within which the potential for significant effects is considered likely for both landscape and visual receptors.

To consider cumulative effects of the Development in relation to other schemes in the wider area, wind farms within 40 km of the outermost wind turbines of the Development have been included for the purposes of modelling and detailed assessment, as agreed with SNH and the Council. A review of patterns of development is also provided for wind farms in the wider area as required, following guidance from SNH³⁶. Wind farms within 40 km of the outermost wind turbines of the Development are shown on Figure 6.8b.

A ZTV map to blade tip height (up to 149.9 m) was generated, illustrating areas from where the proposed wind turbines may be visible in the Study Area. The ZTV was based on bare earth topography and therefore does not take account of potential screening by vegetation or buildings. The ZTV is used as a tool for understanding where significant visual effects may occur. Receptors located outside the ZTV would not be affected by the wind turbines of the Development and are not considered further in assessment. The ZTV to tip height is shown on Figure 6.3a-6.3c, and the equivalent ZTV to turbine hub (or nacelle) height (83.4 m) is shown on Figure 6.4a-6.4b.

6.4.2 Scope of Assessment

The key issues for the assessment of potential landscape and visual effects relating to the Development are listed below. The following effects have been assessed in accordance with the principles contained within GLVIA3:

- Effects on the physical landscape of the Application Site ('the Site');
- Effects on the perceived landscape character of Landscape Character Types (LCT) within a 15 km radius from the outermost wind turbines of the Development;
- Effects which could be of relevance to the reasons for designation as described by the key characteristics/special qualities of nationally and locally designated landscapes within the Study Area, as well as the overall integrity of nationally designated areas, as required by Scottish Planning Policy (SPP);
- Effects on visual receptors at representative viewpoints;
- Effects on visual receptors at settlements and routes in the Study Area; and
- Cumulative landscape and visual effects (including combined, successive and sequential visual effects).

³⁵ SNH (2017). Visual Representation of Wind Farms, Version 2.2. [Online] Available at: <https://www.nature.scot/visual-representation-wind-farms-guidance> (Accessed 06/10/2020)

³⁶ SNH (2012). Assessing the Cumulative Impacts of Onshore Wind Energy Developments. [Online] Available at: <https://www.nature.scot/guidance-assessing-cumulative-impact-onshore-wind-energy-developments> (Accessed 06/10/2020)

Finally, THC Onshore Wind SG sets out ten landscape and visual criteria that the Council will use as a framework for assessing proposals. The criteria do not set absolute requirements but seek to ensure that developers are aware of key constraints to development, which should be taken account of when progressing assessment and design of wind energy proposals. An assessment of the Development against the ten criteria is set out Table 6.43 below, and replicated in the Planning Statement (Table 4.2) which accompanies the Section 36 Application.

6.4.3 Elements Scoped Out of Assessment

On the basis of the desk based and survey work undertaken, the professional judgement and experience of the assessment team, experience from other relevant projects, feedback received from consultees and policy guidance or standards, the following potential effects have been scoped out of the assessment:

- Effects on visual receptors beyond a 40 km radius from the outermost wind turbines of the Development, where it is judged that potential significant effects are unlikely to occur;
- Effects on landscape character beyond a 15 km radius from the outermost wind turbines of the Development, where the potential for significant effects on landscape character is limited;
- Effects on designated landscapes beyond a 20 km radius from the outermost wind turbines of the Development, from where it is judged that potential significant effects on key characteristics and/or special qualities, or views are judged unlikely to occur;
- Effects on routes and settlements beyond a 15 km radius from the outermost wind turbines of the Development, where the potential for significant visual and sequential effects is limited, unless otherwise stated;
- Effects on landscape and visual receptors that have minimal or no theoretical visibility (as predicted by the ZTV) and/or very distant visibility, and are therefore unlikely to be subject to significant effects; and
- Cumulative effects in relation to turbines under 50 m to blade tip height and single turbines beyond 5 km from the outermost wind turbines of the Development (except where otherwise stated).

Given the location of the nearest residential properties at distances of over 3.5 km from the Development and the consideration of the potential level of effects on residential receptors within the Study Area, it was deemed that the 'Residential Visual Amenity Threshold'³⁷ will not be exceeded by the introduction of the Development and, as such, a detailed RVAA was deemed to not be essential. Residential visual amenity is considered throughout the LVIA, including in the assessment of effects on views experienced from representative viewpoints (VP1: Gorthleck, VP2: Boleskine Parish Church, VP3: B862 West of Corriegarth Lodge, VP4: South Loch Ness Trail, north of Whitebridge and VP5: Errogie) and from settlements (Gorthleck). Further information regarding the approach to assessment of residential visual amenity is included in Appendix A6.1 (LVIA Assessment Methodology).

6.4.4 Baseline Survey Methodology

Field survey work was carried out during several visits under differing weather conditions between November 2019 and August 2020, and records were made in the form of field notes and photographs. Field survey work included visits to the Site, viewpoints, designated landscapes and Wild Land Areas (WLA), as well as extensive travel around

³⁷ The Landscape Institute (February 2019), Technical Guidance Note 2/19: Residential Visual Amenity Assessment (RVAA). [Online] Available at: <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/03/tgn-02-2019-rvaa.pdf> (Accessed 06/10/2020)

the Study Area to consider potential effects on landscape character and on experiences of views seen from designated landscapes, settlements and routes.

6.4.4.1 Desk Based Research and Data Sources

The following data sources have informed the baseline and assessment:

Landscape character and landscape capacity

- Scottish Landscape Character Types Maps and Descriptions³⁸;
- Onshore Wind Energy Supplementary Guidance, November 2016 (with addendum, December 2017)³⁹; and
- Cairngorms National Park Landscape Areas.⁴⁰

Designated Areas

- The Special Landscape Qualities of the Cairngorms National Park⁴¹;
- The special qualities of the National Scenic Areas⁴²;
- Guidance on Local Landscape Designations⁴³;
- Draft Guidance on Local Landscape Areas⁴⁴; and
- Assessment of Highland Special Landscape Areas⁴⁵.

Wild Land

- Scotland's Wild Land Area Descriptions: methodology⁴⁶;
- Description of Wild Land Areas – Monadhliath Wild Land Area⁴⁷;
- Descriptions of Wild Land Areas – Central Highlands Wild Land Area⁴⁸;
- Descriptions of Wild Land Areas – Kinlochourn - Knoydart – Morar Wild Land Area⁴⁹;

³⁸ SNH (2019), Scottish Landscape Character Types Maps and Descriptions. [Online] Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions> (Accessed 06/10/2020)

³⁹ The Highland Council (2019). Onshore Wind Energy Supplementary Guidance, November 2016 (with addendum, December 2017). [Online] Available at:

https://www.highland.gov.uk/directory_record/712079/onshore_wind_energy (Accessed 06/10/2020)

⁴⁰ Cairngorms National Park. Landscape Areas. [Online] Available at: <https://cairngorms.co.uk/caring-future/cairngorms-landscapes/landscape-areas/> (Accessed 06/10/2020)

⁴¹ SNH (2010), The Special Landscape Qualities of the Cairngorms National Park. [Online] Available at: <https://www.nature.scot/naturescot-commissioned-report-375-special-landscape-qualities-cairngorms-national-park> (Accessed 06/10/2020)

⁴² SNH (2010), The special qualities of the National Scenic Areas, SNH Commissioned Report No.374. [Online] Available at: <https://www.nature.scot/naturescot-commissioned-report-374-special-qualities-national-scenic-areas> (Accessed 06/10/2020)

⁴³ SNH (2006), Guidance on Local Landscape Designations. [Online] Available at: <https://www.nature.scot/sites/default/files/2017-06/Publication%202006%20-%20Guidance%20on%20Local%20Landscape%20Designations.pdf> (Accessed 06/10/2020)

⁴⁴ SNH and Historic Environment Scotland (2017), Draft Guidance on Local Landscape Areas. [Online] Available at: <https://www.nature.scot/sites/default/files/2019-10/Local%20Landscape%20Designations%20-%20consultation%20draft.pdf> (Accessed 06/10/2020)

⁴⁵ The Highland Council and SNH (2011), Assessment of Highland Special Landscape Areas. [Online] Available at: https://highland.gov.uk/download/downloads/id/2937/assessment_of_highland_special_landscape_areas.pdf (Accessed 06/10/2020)

⁴⁶ SNH (2017), Scotland's Wild Land Area Descriptions: methodology.

⁴⁷ SNH (2017), Description of Wild Land Areas – Monadhliath Wild Land Area. [Online] Available at: <https://www.nature.scot/sites/default/files/2017-11/Consultation-response-Description-of-Wild-Land-Monadhliath-July-2016-20.pdf> (Accessed 06/10/2020)

⁴⁸ SNH (2017), Descriptions of Wild Land Areas – Central Highlands Wild Land Area. [Online] Available at: <https://www.nature.scot/sites/default/files/2017-11/Consultation-response-Description-of-Wild-Land-Central-Highlands-July-2016-24.pdf> (Accessed 06/10/2020)

⁴⁹ SNH (2017), Descriptions of Wild Land Areas – Kinlochourn - Knoydart – Morar Wild Land Area. [Online] Available at: <https://www.nature.scot/sites/default/files/2017-11/Consultation-response-Description-of-Wild-Land-Kinlochhourn-Knoydart-Morar-July2016-18.pdf> (Accessed 06/10/2020)

- Description of Wild Land Areas – Braeroy - Glenshirra - Creag Meagaidh Wild Land Area⁵⁰;
- Description of Wild Land Areas – Rannoch - Nevis - Mamores - Alder Wild Land Area⁵¹;
- Description of Wild Land Areas – Cairngorms Wild Land Area⁵²;
- Core Areas of Wild Land 2013 Map - Advice to Government – 16th June 2014⁵³;
- Assessing Impacts on Wild Land Areas – Technical Guidance⁵⁴;
- Assessing impacts on Wild Land Areas – technical guidance draft⁵⁵;
- Assessing the Impacts on Wild Land, Interim Guidance Note⁵⁶;
- Mapping Scotland's Wildness⁵⁷; and
- Wildness in Scotland's Countryside, Policy Statement No. 02/03⁵⁸.

Data Sources

- Ordnance Survey (OS) Maps at 1:50,000 and 1:25,000 scales;
- OS Terrain® 5 mid-resolution height data (DTM) (5m grid spacing, 2.5metres RMSE);
- Ordnance Survey 1:25,000 raster data;
- Ordnance Survey 1:50,000 raster data; and
- Ordnance Survey 1:250,000 raster data.

Cumulative Assessment

- Data from other wind farm applications for the cumulative assessment⁵⁹; and
- The Highland Council and the Energy Consents Unit (websites) to inform the cumulative assessment.

6.4.5 Methodology for the Assessment of Effects

The significance of the potential effects of the Development has been classified by professional consideration of the sensitivity of the receptor and the magnitude of the potential effect.

⁵⁰ SNH (2017), Description of Wild Land Areas – Braeroy - Glenshirra - Creag Meagaidh Wild Land Area. [Online] Available at: <https://www.nature.scot/sites/default/files/2017-11/Consultation-response-Description-of-Wild-Land-Braeroy-Glenshirra-Creag-Meagaidh-July-2016-19.pdf> (Accessed 06/10/2020)

⁵¹ SNH (2017), Description of Wild Land Areas – Rannoch - Nevis - Mamores - Alder Wild Land Area. [Online] Available at: <https://www.nature.scot/sites/default/files/2017-11/Consultation-response-Description-of-Wild-Land-Rannoch-Nevis-Mamores-Alder-July-2016-14.pdf> (Accessed 06/10/2020)

⁵² SNH (2017), Description of Wild Land Areas – Cairngorms Wild Land Area. [Online] Available at: <https://www.nature.scot/sites/default/files/2017-11/Consultation-response-Description-of-Wild-Land-Cairngorm-January-2017-15.pdf> (Accessed 06/10/2020)

⁵³ SNH (2014), Core Areas of Wild Land 2013 Map - Advice to Government – 16th June 2014. [Online] Available at: <https://www.nature.scot/naturescot-core-areas-wild-land-map-consultation-paper-and-advice-government> (Accessed 06/10/2020)

⁵⁴ NatureScot (September 2020). Assessing Impacts on Wild Land Areas – Technical Guidance. [Online] Available at: <https://www.nature.scot/assessing-impacts-wild-land-areas-technical-guidance> (Accessed 28/09/2020)

⁵⁵ SNH (2017), Assessing impacts on Wild Land Areas – technical guidance draft. [Online] Available at: <https://www.nature.scot/consultation-draft-guidance-assessing-impacts-wild-land-areas-technical-guidance> (Accessed 06/10/2020)

⁵⁶ SNH (2014), Assessing the Impacts on Wild Land, Interim Guidance Note.

⁵⁷ SNH (2014), Mapping Scotland's Wildness. [Online] Available at: <https://www.nature.scot/mapping-scotlands-wildness-and-wild-land-non-technical-description-methodology> (Accessed 06/10/2020)

⁵⁸ SNH (2003), Wildness in Scotland's Countryside, Policy Statement No. 02/03. [Online] Available at: <https://www.nature.scot/sites/default/files/2019-10/Wildness%20in%20Scotland%27s%20Countryside%20-%20Policy%20Statement.pdf> (Accessed 06/10/2020)

⁵⁹ A cut-off date of 30th October 2020 was applied for the inclusion of developments within the cumulative assessment

6.4.5.1 Sensitivity of Receptors

The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Site or the sensitivity of potentially affected receptors, has been assessed in line with best practice guidance, legislation, statutory designations and / or professional judgement.

Judgements regarding the sensitivity of landscape or visual receptors require consideration of both the susceptibility of the landscape or visual receptor to the type of development proposed and the value attached to the landscape or visual receptor or view. Judgements have been recorded as high, medium, low or negligible. Detailed information about the approach to assessment of sensitivity is provided in Appendix A6.1.

6.4.5.2 Magnitude of Change

The magnitude of changes has been identified through consideration of the Development, the degree of change to baseline conditions predicted as a result of the Development, the duration and reversibility of an effect and best practice guidance and legislation.

Judgements regarding the magnitude of landscape or visual change have been recorded as high, medium, low or negligible and combine an assessment of the scale and geographical extent of the landscape or visual effect, its duration and reversibility. Detailed information about the approach to assessment of magnitude is provided in Appendix A6.1.

6.4.5.3 Significance of Effect

The sensitivity of the asset and the magnitude of the predicted effects has been used as a guide, in addition to professional judgement, to predict the significance of the likely effects.

Appendix A6.1 provides full details of the criteria considered in judging the identified aspects of sensitivity (susceptibility and value) and magnitude of change (size/scale, geographical extent, duration and reversibility), and the grades used to describe each.

Levels of effect have been identified as negligible, minor, moderate or major. In terms of the direction of effects (positive or adverse), there is a wide spectrum of opinion with regard to wind energy development. To cover the worst-case scenario, effects are assumed to be adverse, unless stated otherwise.

Where the magnitude of change that will occur as a result of the introduction of the Development in the LVIA has been identified as being either low or barely perceptible, potential cumulative effects on the relevant landscape or visual receptor are not assessed in the cumulative assessment. In these instances, it is considered that owing to distance and/or the limited magnitude of change, there will not be potential for significant cumulative effects to arise.

This determination requires the application of professional judgement and experience to take on board the many different variables which need to be considered, and which are given different weight according to site-specific and location-specific considerations in every instance. Judgements have been made on a case by case basis, guided by the principles set out in Diagram 1 in Appendix A6.1.

Although a numerical or formal weighting system has not been applied, consideration of the relative importance of each aspect has been made to feed into the overall decision. Levels of effect have been identified as **negligible, minor, moderate** or **major** where moderate and major effects are considered significant in the context of the EIA Regulations.

6.4.6 Assessment Limitations

No substantial information gaps have been identified during the preparation of baseline information or undertaking of the assessment, and it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant effects on landscape, views and visual amenity.

6.4.7 Embedded Mitigation

Landscape and visual effects have been reduced by the embedded mitigation measures described in **Chapter 3: Site Selection and Design** and **Chapter 4: Development Description**. **Chapter 3** sets out the design strategy for the Development, which was informed by the principles of SNH Siting and Designing Wind Farms in the Landscape guidance¹⁴, the design rationale for the Operational Corriegarth Wind Farm and design advice set out within the Onshore Wind Energy SG²⁵. General and site specific design objectives design objectives are detailed in **Chapter 3**, and the site specific design objectives related to landscape and visual amenity detailed below:

- To complement the layout and design of the Operational Corriegarth Wind Farm, integrating the Development so that it creates a consistent visual image and avoids conflicting or discordant relationships between the two, so that the two developments appear as one coherent wind farm development 'cluster';
- To ensure the Development does not disproportionately increase the horizontal and vertical extents of the Operational Corriegarth Wind Farm;
- To design a turbine layout which responds to the underlying landform and is broadly contained by the peripheral topography of the broad natural 'bowl' of the Site, defined by Carn na Saobhaidhe (602 m AOD) and Carn Fliuch-bhaid (656 m AOD) to the west and Carn na Saobhaidhe (811 m AOD) to the east;
- Minimise additional effects by avoiding the highest ground and sensitive skylines formed by the surrounding hills and ridges which contain the interior of the Site, including Carn Ruighe na Gaoithe and Beinn Bhùraich (780 m AOD) to the north, and Carn a' Choire Sheilich (791 m AOD) and neighbouring summits to the south, south-east;
- Seek to avoid siting turbines such that those of the proposed extension are seen against the skyline from key viewpoints;
- To develop a layout which minimises additional visibility and potential effects on nationally and locally designated landscapes and wild land areas, including the Cairngorms National Park (CNP) and Loch Ness and Duntelchaig Special Landscape Area (SLA), and Wild Land Area (WLA) 20: Monadhliath, beyond those which currently arise from the presence of the Operational Corriegarth Wind Farm; and
- To develop a layout which avoids or minimises potential effects on views from settlements, and residential properties within close proximity, most notably those within Stratherrick to the west and north-west of the Site; and
- Utilise existing onsite infrastructure as far as possible (e.g. access tracks), and consider the siting of additional ancillary infrastructure to minimise visibility from key sensitive receptors (e.g. transformers, substation/control building).

No further additional mitigation measures have been identified, and no monitoring of landscape and visual effects is proposed.

6.4.8 Visualisation Methodology

The methodology for production of the visualisations was based on current good practice guidance as set out by SNH⁶⁰ and the Council⁶¹. Detailed information about the approach to viewpoint photography, ZTV and visualisation production is provided in Appendix A6.2.

6.5 LANDSCAPE BASELINE CONDITIONS

6.5.1 Introduction

This section presents an overview of the landscape baseline including current landscape character (including constituent landscape elements), landscape condition and any designations attached to the landscape.

6.5.2 The Site and Context

The Site context is described in **Chapter 3: Site Selection and Design** and detailed information on the Development is provided in **Chapter 4: Development Description** and shown in Figure 3.1.

The Site encapsulates and extends the Operational Corriegarth Wind Farm. The topography of the Site comprises rolling hills (ranging in height from 600-800 m Above Ordnance Datum [AOD]) and plateau bisected by a number of watercourses, including Allt Bad Fionnaich and Allt a' Ghille Charaich within the River Foyers and Findhorn watersheds. The existing access track extends on a north-west to south-east alignment, rising from an elevation of approximately 170 m AOD within Stratherrick towards the rolling hills and plateau of the site centre. The main area of the Site where wind turbines are proposed consists of undulating open moorland, with neighbouring landform creating a broad upland 'bowl' contained by Carn na Saobhaidhe (811 m AOD) to the north-east of the Site Boundary, Carn a' Coire Sheilich (791 m AOD) to the south-east, and Carn na Saobhaidhe (602 m AOD) within the western extents of the Site. The landform of the Site gradually rises to the east towards the interior of the Monadhliath Mountains.

Within 5 km to the south and west of the outermost wind turbines of the Development, the predominant land cover is that of open, elevated moorland covered hills, with occasional pockets of woodland located along incised watercourses. Land within and immediately adjacent to the Site is used for grazing and managed for grouse shooting.

A handful of residential properties are located within 5 km of the outermost wind turbines of the Development, with scattered dwellings and small clustered communities located along Stratherrick to the north-west, west and south-west of the Site within 10 km. The nearest residential properties are Garrogie Lodge, located 3.5 km to the west of the nearest wind turbine of the Development, and Killin Lodge, located 4.5 km to the south-west of the nearest wind turbine of the Development.

Access to the Site is afforded via an unclassified road leading south-east from the B862. The road forms the existing access to the Operational Corriegarth Wind Farm, passing Corriegarth Lodge to join the main existing wind farm access track which broadly follows the alignment of the River E on a north-west to south-east alignment.

6.5.3 Landscape of the Study Area

The Study Area, shown in Figure 6.1, extends to a 40 km radius from the outermost wind turbines of the Development in all directions. The majority of the Study Area is within

⁶⁰ SNH (2017). Visual Representation of Wind Farms, Version 2.2. [Online] Available at: <https://www.nature.scot/visual-representation-wind-farms-guidance> (Accessed 06/10/2020)

⁶¹ The Highland Council (2016). Visualisation Standards for Wind Energy Developments. [Online] Available at: http://www.highland.gov.uk/download/downloads/id/12880/visualisation_standards_for_wind_energy_developments.pdf (Accessed 06/10/2020)

the Highland Council administrative area, whilst the south-eastern periphery of the Study Area is within the Cairngorms National Park.

The landscape character of the Study Area is varied and includes open areas of rolling moorland plateau contrasted with intimate glens and straths. The Great Glen is a defining landscape feature of the Study Area, forming a steep sided and deep fissure which runs on a north-east to south-west alignment 8 km to the west of the nearest wind turbine of the Development. Loch Ness occupies the floor of the glen, from which the steep sides contain views to the east and west within the glen and along the glens which run perpendicular to the north-west, and generally screen longer-distance views to the elevated ground beyond.

Within the Study Area, forestry is a prominent feature on eastern and western slopes of the Great Glen, with open moorland at higher elevations. Pockets of mixed woodland line the shoreline and lower slopes of the loch and adjoining glens.

Whilst there are relatively few residential properties within 5 km of the outermost wind turbine of the Development, a number of scattered residential properties are located within 10 km to the east and west of the nearest wind turbine along Stratherrick. This includes farmsteads and small settlements along the B862 at Whitebridge, Gorthleck and Errogie. Beyond 10 km within the Study Area, settlement is generally located along key communications corridors within glens and straths, whilst the city of Inverness is located approximately 30 km to the north of the Site.

Besides the Operational Corriegarth Wind Farm, there are several existing large scale wind farms located within the Study Area. The closest, Dunmaglass Wind Farm, is located approximately 5.5 km north-east of the nearest wind turbine of the Development. The operational Farr Wind Farm is located 19.4 km to the north-east and Kyllachy Wind Farm (under construction) is located 18.4 km to the north-east of the nearest wind turbine of the Development. The operational Stronelairg Wind Farm is located 7.5 km to the south of the nearest wind turbine. Existing wind farms along the western periphery of the Monadhliath Mountains are generally set back into the interior of the plateau and maintain a pattern of spacing between clusters of development such that coalescence between schemes is avoided in key views from the surrounding area. Refer to Table 6.8 for further detail of wind farms in the area.

6.5.4 Landscape Character Types

This section provides a description of landscape character (including constituent landscape elements) – drawing on published studies, supplemented with project specific research and field work where relevant.

The landscape character of the Site and the Study Area is described in the 'Scottish Landscape Character Assessment', published by SNH in 2019. Landscape Character Types (LCTs) across the Study Area are shown in Figure 6.6a and are shown overlaid with the ZTV in Figure 6.6b.

The Highland Council Onshore Wind SG includes a Landscape Sensitivity appraisal of Landscape Character Areas within a study area surrounding Loch Ness. The LCTs considered within this assessment are based on the SNH 2019 'Scottish Landscape Character Assessment'; however, the findings of the SG Landscape Sensitivity appraisal have been considered within the assessment.

With the exception of part of the existing access track, the majority of the Site lies within LCT 221 Rolling Uplands- Inverness. This is an area of undulating upland plateaux with occasional steep-sided straths. Land cover is predominantly heather moorland, which is uniform in colour and texture. This LCT is relatively uninhabited and there are few signs of management, which leads to a sense of remoteness.

The LCTs within 40 km of the Development are listed in Table 6.2 below. The theoretical visibility of the Development is described. The theoretical visibility of the Development (ZTV coverage) is used as a means of identifying which LCTs require further assessment, and which LCTs can be scoped out because they are unlikely to experience significant effects arising from the Development. LCTs beyond 15 km from the Site, and those with limited actual visibility within 15 km of the Site, are not considered further within the assessment.

Table 6.2: Landscape Character Types

LCT	Theoretical Visibility of Development
Within 15 km of the Site	
LCT 221 – Rolling Uplands - Inverness	Host , widespread visibility indicated within 5 km to the north-west, north, east, south and south-east of the Development, with further visibility indicated from elevated landform to the north, north-east and south within 15 km of the Development. Considered within assessment.
LCT 125 – Rolling Uplands – Cairngorms	Limited visibility indicated near A'Chailleach, An Sguabach and Carn Sleamhuinn to the east and south-east of the Development. Considered within assessment due to presence of CNP designation and WLA20 protection.
LCT 227 – Farmed Strath - Inverness	Within 10 km visibility is indicated to the north, north-west of the Development across Loch Mhor and to the west of the B862. Visibility is also indicated to the west, north-west of the Development extending north from Whitebridge to the junction of the B862 and B852. No turbines are located within this LCT but the existing access track for Corriegarth wind farm crosses through this host LCT to the B862. Considered within assessment.
LCT 224 – Farmed and Wooded Foothills	Within 10 km visibility is indicated near Foyers and within the Farigaig Forest to the north-west of the Development and near Lock Knockie to the west of the Development, however actual visibility will be limited by intervening forestry and woodland. Within 15km to the north-west of the Development visibility is indicated along the River Farigaig near Torness and to the south-west near Knockie Lodge. Considered within assessment.
LCT 225 – Broad Steep-Sided Glen	Visibility indicated within 15 km to the west and north-west of the Development along the western shore of Loch Ness between Portclair and Drumnadrochit. Actual visibility will be reduced, but not altogether removed, by intervening woodland and forestry. Considered within assessment.
LCT 222 – Rocky Moorland Plateau - Inverness	Visibility indicated within 15 km along the eastern edge of the LCT, including at Meall Fuar-mhonaidh to the north-west of the Development. Further visibility is indicated within 20-30 km to the north-west of the Development across the Dundreggan Forest, Levishie Forest and the northern slopes of Glen Urquhart. However, actual visibility will be limited by intervening forestry and woodland. Not considered further.
LCT 126 – Upland Glen - Cairngorms	No visibility indicated by ZTV, not considered further.

LCT	Theoretical Visibility of Development
LCT 220 – Rugged Massif - Inverness	Limited visibility indicated within 15 km to the west of the Development, with further visibility indicated from elevated summits and landform within 20-40 km to the south-west, west and north-west of the Development. Given the limited visibility within 15 km, this LCT is not considered further.
Within 15-45 km of the Site	
LCT 127 – Upland Strath	No visibility indicated by ZTV, not considered further.
LCT 226 – Wooded Glen - Inverness	Limited visibility indicated from north-eastern slopes of Glen Urquhart and Glen Moriston within 20 km to the west and north-west of the Development. Not considered further.
LCT 231 – Upland Glen - Inverness	No visibility indicated by ZTV, not considered further.
LCT 223 – Flat Moorland Plateau with Woodland	Limited visibility indicated at a distance of 16-30 km to the north, north-east of the Development near Loch Ashie. Not considered further.
LCT 0 – Urban	Limited visibility indicated in the north-west of the LCT near South Kessock and Citadel in Inverness at a distance of over 30 km to the north of the Development. Not considered further.
LCT 85 – Isolated Mountain Plateau	Limited visibility indicated from elevated summits at a distance of 20-40 km to the south, south-west of the Development. Not considered further.
LCT 86 – Smooth Rounded Hills - Badenoch & Strathspey	Limited visibility indicated from elevated summits in the west of the LCT at a distance of 25-30 km to the south of the Development. Not considered further.
LCT 87 – Small Craggy Knolls and Hills	Limited visibility indicated from elevated landform in the east of the LCT at a distance of 25-30 km to the south of the Development. Not considered further.
LCT 88 – Loch and Glen	Very limited visibility indicated by ZTV at a distance of over 35 km to the south of the Development. Not considered further.
LCT 89 – Broad Loch and Glen	No visibility indicated by ZTV, not considered further.
LCT 122 – Mountain Massif - Cairngorms	Visibility indicated from elevated summits along the western edge of the LCT at a distance of 30-40 km to the east, south-east of the Development. Not considered further.
LCT 123 – Smooth Rounded Hills - Cairngorms	No visibility indicated by ZTV, not considered further.
LCT 124 – Summits and Plateaux - Cairngorm	No visibility indicated by ZTV, not considered further.
LCT 128 – Forest Upland Fringe	No visibility indicated by ZTV, not considered further.
LCT 228 – Rolling Farmland and Woodland	Limited visibility indicated along A82 corridor and to the south-east and east of Inverness at a distance of 25-40 km to the north of the Development. Not considered further.
LCT 229 – Enclosed Farmland	No visibility indicated by ZTV, not considered further.
LCT 230 – Interlocking Sweeping Peaks – Lochaber	Limited visibility indicated from elevated landform at a distance of over 35 km to the west and north-west of the Development. Not considered further.
LCT 235 – Broad Forested Strath	Limited visibility indicated from elevated landform to the south of Glen Garry at a distance of 30-40 km to the south-west of the Development. Not considered further.

LCT	Theoretical Visibility of Development
LCT 236 – Smooth Moorland Ridges	Very limited visibility indicated from elevated summits at a distance of 25 km to the south-west of the Development. Not considered further.
LCT 237 – Rocky Moorland - Lochaber	Visibility indicated from elevated landform in the north-east of the LCT at a distance of 25-35 km to the south-west of the Development. Not considered further.
LCT 238 – Rugged Massif - Lochaber	Very limited visibility indicated from elevated landform at a distance of 25-40 km to the south-west of the Development. Not considered further.
LCT 239 – Interlocking Sweeping Peaks – Lochaber	Very limited visibility indicated from summits in the north of the LCT at a distance of 35-40 km to the south-west of the Development. Not considered further.
LCT 284 – Coastal Farmlands - Moray & Nairn	Very limited visibility indicated at a distance of 30-40 km to the north, north-east of the Development. Not considered further.
LCT 285 – Rolling Farmland and Forests - Moray & Nairn	No visibility indicated by ZTV, not considered further.
LCT 286 – Narrow Wooded Valley - Moray & Nairn	No visibility indicated by ZTV, not considered further.
LCT 289 – Upland Farmed Valleys	No visibility indicated by ZTV, not considered further.
LCT 291 – Open Rolling Upland	Very limited visibility indicated from the south-western edge of the LCT at a distance of 30-35 km to the north-east of the Development. Not considered further.
LCT 294 – Upland Valleys - Moray & Nairn	No visibility indicated by ZTV, not considered further.
LCT 328 – Rugged Mountain Massif - Ross & Cromarty	No visibility indicated by ZTV, not considered further.
LCT 331 – Rounded Rocky Hills - Ross & Cromarty	Very limited visibility indicated at a distance of over 35 km to the north-west of the Development. Not considered further.
LCT 341 – Forest Edge Farming	Very limited visibility indicated a distance of over 30 km to the north, north-west of the Development. Not considered further.
LCT 342 – Farmed River Plains	Very limited visibility indicated a distance of over 35 km to the north of the Development. Not considered further.
LCT 343 – Coastal Shelf	No visibility indicated by ZTV, not considered further.
LCT 345 – Farmed and Forested Slopes - Ross & Cromarty	No visibility indicated by ZTV, not considered further.
LCT 346 – Open Farmed Slopes	No visibility indicated by ZTV, not considered further.
LCT 348 – Cliffs and Rocky Coasts - Ross & Cromarty	Very limited visibility indicated at a distance of over 35 km to the north, north-east of the Development. Not considered further.
LCT 365 – Rugged Massif - Skye & Lochalsh	No visibility indicated by ZTV, not considered further.
LCT 373 – Upper Upland Glens with Lochs	No visibility indicated by ZTV, not considered further.
LCT 376 – Summits and Plateaux - Tayside	No visibility indicated by ZTV, not considered further.

6.5.5 Designated Landscapes

The Site itself is not located within any landscape designations; however, there are a number within the 40 km Study Area, including National Scenic Areas (NSAs), Special Landscape Areas (SLAs), and the Cairngorms National Park.

Designated Landscapes across the Study Area are listed in Table 6.3 below, and are shown in Figure 6.7a and are shown overlaid with the ZTV in Figure 6.7b. The theoretical inter-visibility with the Development (ZTV coverage) is used as a means of identifying which Designated Landscapes require further assessment.

The assessment of effects on the special landscape qualities (AESLQ) of the Cairngorms National Park is contained in Appendix A6.3 and was undertaken as a separate exercise because of the specific assessment guidance that applies, albeit that the findings of the LVIA are used to inform it.

Table 6.3: Designated Landscapes (within 40 km of the Site)

National Park	Theoretical Visibility of Development
Cairngorms National Park	Limited visibility indicated from summits on the western park boundary, including Carn Sgùlain and Geal-charn Mor at a distance of 10-25 km to the south-east of the Development. Visibility also indicated from elevated summits and west-facing slopes in the north-western extents of the CNP. This includes the summits of Cairn Gorm and Braeriach, at a distance of 30-40 km to the east, south-east of the Development. Considered within assessment.
National Scenic Areas	Theoretical Visibility of Development
Cairngorm Mountains NSA	Visibility indicated from elevated summits and west-facing slopes including Cairn Gorm (illustrated by VP 19) and Braeriach, at a distance of 30-40 km to the east, south-east of the Development. Not considered further, however effects on relevant special landscape qualities of Cairngorms National Park which draw on those relating to the Cairngorm Mountains NSA are considered in Appendix A6.3.
Glen Affric NSA	Limited visibility indicated from elevated summits (illustrated by VP 18) and upper slopes in the northern extents of the NSA at distances of over 30 km to the west, north-west of the Development. Not considered further.
Glen Strathfarrar NSA	Limited visibility indicated from elevated landform in the northern extents of the NSA at distances of over 30 km to the north-west of the Development. Not considered further.
Special Landscape Areas	Theoretical Visibility of Development
Loch Ness and Duntelchaig SLA	Visibility indicated across the SLA within 7-20 km to the south-west, west and north-west of the Development (illustrated by VP 4, 7, 8, 10, 11 and 12). Considered within assessment.
Ben Alder, Laggan and Glen Banchor SLA	Limited visibility indicated from summits and elevated landform at distances of over 25 km to the south of the Development. Not considered further.

Loch Lochy and Loch Oich SLA	Limited visibility indicated from summits in the west of the SLA (illustrated by VP 17) at distances of over 35 km to the south-west of the Development. Not considered further.
Strathconon, Monar and Mullardoch SLA	Limited visibility indicated from elevated landform and summits in the south-east of the SLA (illustrated by VP 18) at distances of over 30 km to the north-west of the Development. Not considered further.
Drynachan, Lochindorb and Dava Moors SLA	Limited visibility indicated from summits and elevated landform along the south-western boundary of the SLA at distances of over 30 km to the north-east of the Development. Not considered further.
Moidart, Morar and Glen Shiel SLA	Limited visibility indicated from elevated landform in the north-eastern extents of SLA at distances of over 35 km to the west, south-west of the Development. Not considered further.
Gaick SLA	No visibility indicated by ZTV, not considered further.

6.5.6 Wild Land

Wild Land Areas (WLA) are not designated but are identified and mapped as per the 2014 SNH Map, with accompanying WLA descriptions published by SNH in January 2017⁶², and are considered sensitive to development. They are afforded '*areas of significant protection*' status within Scottish Planning Policy (SPP) (Table 1. Page 39, SPP) which states that development proposed within these areas should '*demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation*'.

There are six areas of Wild Land located within the Study Area, as shown on Figure 6.7a. The south-eastern corner of the Site is located within WLA 20: Monadhliath. The Wild Land Areas within the Study Area are listed in Table 6.4 below.

The wind turbines and ancillary infrastructure forming the Development are not located within a WLA but an assessment of effects on areas of wild land closest to the Development has been undertaken with reference to the recently published NatureScot guidance⁶³. This assessment is contained in Appendix A6.4 and was undertaken as a separate exercise because of the specific assessment guidance that applies, albeit that the findings of the LVIA are used to inform it.

Table 6.4 Wild Land Areas (within 40 km of the Site)

Wild Land Area	Theoretical Visibility of Development
WLA 20: Monadhliath	Visibility indicated across the western extents of the WLA, from elevated summits and west, north-west and south-west facing slopes (illustrated by VPs 9 and 13), within >1-20 km of the Development. Considered within assessment.
WLA 24: Central Highlands	Limited visibility indicated from elevated summits along the eastern boundary of the WLA at a distance of over 25 km to the west and north-west of the Development. Not considered further.

⁶² SNH (2017). Wild Land Area descriptions. [Online] Available at: <https://www.nature.scot/wild-land-area-descriptions> (Accessed: 15/09/2020)

⁶³ NatureScot (September 2020). Assessing Impacts on Wild Land Areas – Technical Guidance. [Online] Available at: <https://www.nature.scot/assessing-impacts-wild-land-areas-technical-guidance> (Accessed 28/09/2020).

Wild Land Area	Theoretical Visibility of Development
WLA 18: Kinlochourn - Knoydart – Morar	Limited visibility indicated from elevated summits in the east of the WLA at a distance of over 35 km to the west, south-west of the Development. Not considered further.
WLA 19: Braeroy - Glenshirra - Creag Meagaidh	Limited visibility indicated from elevated summits in the east of the WLA at a distance of over 20 km to the south-west of the Development. Not considered further.
WLA 14: Rannoch - Nevis - Mamores - Alder	Limited visibility indicated from elevated summits in the north-eastern extents of the WLA at a distance of over 25 km to the south of the Development. Not considered further.
WLA 15: Cairngorms	Visibility indicated from summits (illustrated by nearby VP 19) and west-facing elevated landform at distances of over 30 km to the south-east of the Development. Not considered further.

6.5.7 Gardens and Designed Landscapes

There are no Gardens and Designed Landscapes (GDL) within 10km of the Site, and as such, potential effects on the setting of GDLs have been scoped out of the assessment contained within **Chapter 9: Archaeology and Cultural Heritage**. There are a number of designated and previously recorded undesignated cultural heritage assets within the Study Area. Further information on these is provided in **Chapter 9: Archaeology and Cultural Heritage**.

6.6 VISUAL BASELINE CONDITIONS

6.6.1 Introduction

This section identifies the extent of theoretical visibility of the Development and identifies visual receptors that are assessed within the visual assessment of the LVIA. This section also introduces the viewpoints that are used as representative points from which to assess effects on visual receptors (people) and particular views, including reasons for their selection.

6.6.2 Analysis of Visibility of the Development

Figure 6.3a-6.3c and Figure 6.4a-6.4b illustrate the theoretical visibility of the wind turbines of the Development to blade tip height (149.9 m) and hub height (83.4 m) respectively. Within 5 km of the outermost wind turbines of the Development, theoretical visibility is largely focused within the interior of the Site, with the broad 'bowl'-shaped landform of the Site containing visibility of the Development in views from lower lying areas to the west of the Site. Theoretical visibility is indicated from lower lying areas along and adjacent to the existing access track, which passes to the north-west of the Site to the B862.

Within 10-15 km of the outermost wind turbines of the Development, theoretical visibility is indicated from Stratherrick, elevated slopes to the west of the Great Glen, and elevated summits and slopes within the interior of the Monadhliath Mountains to the east. Due to intervening landform and the dramatic profile of the Great Glen, very limited visibility is indicated across much of Loch Ness and its shoreline with actual visibility further limited by the presence of intervening woodland and forestry.

Beyond 15 km of the outermost wind turbines of the Development, theoretical visibility is indicated from west-facing slopes of the Cairngorms Massif at the western interior of the Cairngorms National Park, elevated summits within the Ardverrick Forest and Ben Alder to the south, elevated summits within the Central Highlands to the west and

elevated landform within the Drynachan moor to the north-east of the Site, and across Drummossie Muir, the Moray Firth and Kessock Bridge to the north of the Site.

6.6.3 Key Visual Receptors

Potential visual receptors include:

- Residents, including views from isolated properties, scattered communities or defined settlements;
- Road users (including tourists);
- Those engaged in recreational activities (e.g. hill walkers and cyclists); and
- People at their place of work, including agricultural workers.

6.6.4 Selection of Viewpoints for Assessment

This section sets out the viewpoints that are used to represent and assess the visual effects of the Development. The viewpoint list is a representative selection of locations agreed with the statutory consultees; it is not an exhaustive list of locations from which the Development will be visible.

A total of 19 viewpoints were selected through desk study (including review of the Operational Corriegarth Wind Farm LVIA), field work and consultation with statutory consultees (as detailed in Table 6.1). The viewpoints are all publicly accessible as advocated by GLVIA3⁶⁴ and include:

- Locations selected to represent the experience of different types of receptor;
- Locations at different distances to provide a representative range of viewing angles and distances (i.e. short, medium and long distance views);
- Locations which illustrate key cumulative interactions with other existing, consented and/or proposed wind farms (i.e. either in combined or successive views);
- Locations which represent a range of viewing experiences (i.e. static views and points along sequential routes);
- Specific viewpoints selected because they represent promoted views or viewpoints within the landscape; and
- Illustrative viewpoints chosen specifically to demonstrate a particular visual effect or specific issue (which could include restricted visibility in particular locations).

The viewpoints used to assess the visual effects are listed in Table 6.5 below and are shown on Figure 6.3a.

Table 6.5 Viewpoint Locations

Viewpoint Locations ⁶⁵					
No.	Location	Reason for Selection	Grid Reference		Approx. Distance (km) ⁶⁶
			Easting	Northing	
1	Gorthleck ⁶⁷	Represents views experienced by road users and residential receptors.	252920	819575	6.5 km

⁶⁴ The selection of viewpoints for LVIA should take account of the factors listed in Paragraph 6.20 of GLVIA3.

⁶⁵ A number of the viewpoint locations are also used as assessment points within the Assessment of Effects on Special Landscape Qualities (Appendix A6.3) and Wild Land Impact Assessment (Appendix A6.4).

⁶⁶ Distance between viewpoint and the nearest wind turbine of the Development.

⁶⁷ Viewpoint referred to as 'South Murnich' in the LVA (July 2007) for the operational development and subsequent Section 36 Application: Supporting Environmental Report (June 2013)

Viewpoint Locations⁶⁵					
No.	Location	Reason for Selection	Grid Reference		Approx. Distance (km)⁶⁶
			Easting	Northing	
2	Boleskine Parish Church ⁶⁸	Represents views experienced by visitors and nearby residential receptors.	250719	818235	7.0 km
3	B862 West of Corriegarth Lodge	Represents views experienced by road users and nearby residential receptors.	249664	817270	7.2 km
4	South Loch Ness Trail, north of Whitebridge	Represents views experienced by recreational users of this promoted trail and nearby residential receptors.	248861	816336	7.5 km
5	Errogie	Represents views experienced by road users and residential receptors.	255535	822146	7.8 km
6	Beinn Bhreac Mhor	Represents views experienced by recreational receptors.	267785	819786	10.4 km
7	General Wade's Military Road ⁶⁹	Represents views experienced by road users, tourists and recreational receptors on National Cycle Network (NCN) Route 78, and within the Loch Ness and Duntelchaig SLA.	244961	810545	10.9 km
8	Great Glen Way, East of Creag Dhearg ⁷⁰	Represents views experienced by recreational receptors on the Great Glen Way, within the Loch Ness and Duntelchaig SLA.	246953	821103	11.7 km
9	Carn Sgulain	Represents views experienced by recreational receptors (hill walkers on the Munro summit), within Monadhliath Wild Land Area (WLA 20) and from boundary of the Cairngorms National Park.	268305	805814	11.6 km
10	A82 Achnahannet	Represents views experienced by road users of A82 passing through the Loch Ness and Duntelchaig SLA.	251277	826100	13.0 km
11	Meall Fuar-mhonaidh	Represents views experienced by recreational receptors at the popular local hill summit within the Loch Ness and Duntelchaig SLA.	245892	822187	13.2 km

⁶⁸ Viewpoint referred to as 'St. Dunstan's Cemetery' in the LVA (July 2007) for the operational development and subsequent Section 36 Application: Supporting Environmental Report (June 2013)

⁶⁹ Viewpoint referred to as 'B862, General Wades Military Road East of Carn an t-Suidhe' in the LVA (July 2007) for the operational development and subsequent Section 36 Application: Supporting Environmental Report (June 2013)

⁷⁰ Viewpoint referred to as 'Great Glen Way Viewpoint, East of Creag Dhearg (b)' in the Section 36 Application: Supporting Environmental Report (June 2013)

Viewpoint Locations⁶⁵					
No.	Location	Reason for Selection	Grid Reference		Approx. Distance (km)⁶⁶
			Easting	Northing	
12	B862 North of Torness	Represents views experienced by road users within the Loch Ness and Duntelchaig SLA.	257595	827908	13.3 km
13	Geal Charn	Represents views experienced by recreational receptors (hill walkers) from this Munro summit, within WLA 20 and boundary of the CNP.	256139	798771	13.3 km
14	Corrieyairack Hill	Represents views experienced by recreational receptors (hill walkers) on the hill summit.	242818	799737	18.2 km
15	Carn na Leitire	Represents views experienced by recreational receptors (hill walkers) from hill summit near to route of the Great Glen Way.	254695	834464	20.1 km
16	North Kessock - A9 northbound picnic area	Represents views experienced by road users and tourists at this popular stopping point on the A9.	265470	848026	34.4 km
17	Ben Tee	Represents views experienced by recreational receptors on the Corbett summit within the Loch Lochy and Loch Oich SLA.	224027	797264	35.2 km
18	Toll Creagach	Represents views experienced by recreational receptors on the Munro summit within the Central Highlands WLA, looking across the Glen Affric NSA.	219452	828264	39.3 km
19	Ptarmigan Restaurant, Cairngorm	Represents views experienced by recreational receptors from the popular and accessible mountain location within the CNP.	300459	804888	41.8 km

6.6.5 Settlements

Settlements are those defined as such within the Highland Council Inner Moray Firth Local Development Plan and the Cairngorms National Park Local Development Plan. The broad pattern of settlement within the Study Area is generally concentrated within the glens and straths, located along key transportation routes. Outside of settlements, scattered residential properties and farmsteads follow a similar pattern of development.

The Highland Council Inner Moray Firth Local Development Plan, which covers a majority of the central extents of the Study Area, identifies a hierarchy of settlements including city centres, town centres, local centres and other settlements. The Cairngorms National Park Local Development plan, which covers the western and south-western peripheries of the Study Area, identifies a hierarchy of settlements including strategic, intermediate and rural settlements. Settlements in Table 6.6 below

are identified in accordance with the settlement hierarchy used in the Local Development Plans (LDPs).

There are no settlements located within 5 km of the outermost wind turbines of the Development.

Theoretical visibility of the Development from settlements across the 40 km radius Study Area is illustrated by Figure 6.3b with potential views from settlements described below.

The ZTV does not take account of any screening or filtering of views by built form or vegetation, which will substantially reduce visibility from the majority of settlements. In order to focus on potentially significant effects, settlements from which there is no theoretical visibility are not considered further in this assessment. Furthermore, settlements with limited visibility over a longer-distance i.e. beyond 15 km from the outermost wind turbines of the Development; or where views of the surrounding landscape (including the Site) are not important to its setting, and where it is unlikely that significant effects could occur, are not considered further in the assessment.

Table 6.6: Settlements

Settlements	
Settlement	Theoretical Visibility of Development (ZTV coverage)
Within 15 km	
Foyers (other settlement)	Limited visibility indicated from eastern settlement edge at a distance of 8.2 km to the north-west of the Development. Actual visibility will be screened by intervening woodland. Not considered further.
Gorthleck (other settlement)	Visibility indicated across settlement at a distance of 6.6 km to the north-west of the Development, with principal views from residential properties afforded looking south-east across Loch Mhor towards the Development. Considered within assessment.
Whitebridge (other settlement)	Visibility indicated across settlement at a distance of 7.3 km to the west, south-west of the Development, however actual visibility will be limited by intervening vegetation. Not considered further.
Invermoriston (other settlement)	Visibility is indicated from the south-eastern edge of the settlement at a distance of 12.1 km to the west of the Development, however actual visibility will be limited by intervening vegetation. Not considered further.
Croachy (other settlement)	No visibility indicated by ZTV, not considered further.
Within 15-40 km	
Fort Augustus (town centre)	No visibility indicated by ZTV, not considered further.
Drumnadrochit (town centre)	Visibility limited to upper slopes to the north and north-east of the settlement at a distance of over 15 km. Actual visibility will be further limited by intervening vegetation. Not considered further.
Abriachan (other settlement)	Visibility limited to upper slopes to north of settlement within 20-25 km to the north of the Development. Not considered further.
Dochgarroch (other settlement)	Visibility indicated across the settlement at a distance of over 25 km to the north of the Development. However, actual visibility will be limited by intervening vegetation. Not considered further.

Settlements	
Farr (other settlement)	No visibility indicated by ZTV, not considered further.
Inverarnie (other settlement)	No visibility indicated by ZTV, not considered further.
Balnain (other settlement)	No visibility indicated by ZTV, not considered further.
Cannich (other settlement)	No visibility indicated by ZTV, not considered further.
Tomich (other settlement)	No visibility indicated by ZTV, not considered further.
Struy (other settlement)	No visibility indicated by ZTV, not considered further.
Inverness (city centre)	Visibility limited to north-western extents of city centre at a distance of over 30 km to the north of the Development. Actual visibility will be further reduced by intervening features. Not considered further.
Muir of Ord (town centre)	Limited visibility indicated at a distance of over 35km to the north north-west of the Development. Not considered further.
Beaully (town centre)	No visibility indicated by ZTV, not considered further.
Kirkhill (local centre)	No visibility indicated by ZTV, not considered further.
Inchmore (local centre)	No visibility indicated by ZTV, not considered further.
Daviot (other settlement)	Limited visibility indicated at a distance of over 30 km to the north north-east of the Development. Not considered further.
Tomatin (local centre)	No visibility indicated by ZTV, not considered further.
Kiltarlity (local centre)	No visibility indicated by ZTV, not considered further.
Laggan (rural settlement)	No visibility indicated by ZTV, not considered further.
Newtonmore (strategic settlement)	No visibility indicated by ZTV, not considered further.
Kingussie (strategic settlement)	No visibility indicated by ZTV, not considered further.
Insh (rural settlement)	No visibility indicated by ZTV, not considered further.
Kincraig (intermediate settlement)	No visibility indicated by ZTV, not considered further.
Aviemore (strategic settlement)	No visibility indicated by ZTV, not considered further.
Boat of Garten (intermediate settlement)	No visibility indicated by ZTV, not considered further.
Carrbridge (intermediate settlement)	No visibility indicated by ZTV, not considered further.

6.6.6 Routes

Visibility from a route is rarely uniform along its entire length. This is because views of the surrounding landscape change as one moves along a route depending on the surrounding landform, the presence of built form, structures, tree cover and vegetation situated along a route. Theoretical visibility of the Development from routes across the Study Area is illustrated by Figure 6.3b. They include a hierarchy of roads and recreational routes (promoted long distance footpaths, core paths and cycle routes). Road routes

tend to use low lying areas or glens and passes, but walking routes are more variable and can pass over hills and along ridges often offering open and longer-distance views.

Based on an analysis of theoretical visibility and potential views, Table 6.7 provides information on which routes have been carried forward for detailed assessment. Due to the lower susceptibility of receptors typically using roads and railways, those beyond 15 km from the outermost wind turbines of the Development have been scoped out of the assessment. Promoted long distance footpaths and cycle routes have been included at up to 15 km from the outermost wind turbines of the Development. Where there is limited theoretical visibility, or where actual visibility from a route is likely to be limited due to localised screening, these routes are not considered further in this LVIA, as the likelihood for significant sequential effects is limited.

Table 6.7: Routes

Routes	
Route	Theoretical Visibility of Development (ZTV coverage)
Roads	
A82	Visibility indicated between Invermoriston and Drumnadrochit at distances of 11-15 km to the west and north-west of the Development. Considered within assessment.
B862	Visibility indicated between Whitebridge and Errogie at a distance of 7-9 km to the west and north-west of the Development. Considered within assessment.
B852	Limited visibility indicated near junction with B862 at Boleskine Parish Church within 7 km to the north-west of the Development. Visibility will be further limited by intervening vegetation. Not considered further.
Recreational Routes	
NCN Route 78 - The Caledonia Way	Intermittent visibility indicated from route where it follows the B862 near the promoted Suidhe viewpoint (illustrated by VP7: General Wade's Military Road) within 12 km to the west, south-west of the Development and near the junction with B852 within 7 km to the north-west of the Development. Considered within assessment.
Great Glen Way ⁷¹	Visibility indicated from short sections of route between Invermoriston and Drumnadrochit, and Drumnadrochit and Abriachan Forest. Considered within assessment.
Great Glen Canoe Trail (incl. Caledonian Canal, Loch Lochy and Loch Ness)	No visibility indicated by ZTV, not considered further.
South Loch Ness Trail ⁷² (Core Path IN25.01, IN17.09, IN17.05)	Intermittent visibility indicated near the B862 Suidhe viewpoint and as the route follows the B852 between the junction with the B862 and Inverfarigaig within 10 km to the south-west, west and north-west of the Development. Considered within the assessment.
Affric-Kintail Way	No visibility indicated by ZTV, not considered further.

⁷¹ The Great Glen Way forms part of the Loch Ness 360 route between Fort Augustus and Inverness via Invermoriston and Drumnadrochit.

⁷² The South Loch Ness Trail forms part of the Loch Ness 360 route between Fort Augustus and Inverness via Whitebridge, Foyers, Inverfarigaig and Dores.

Routes	
Trail of the Seven Lochs (following Core Paths IN25.02, IN17.10, IN17.06, IN17.01, IN12.05, IN12.02 and IN12.06)	Visibility indicated from route between Corriegarth Lodge and Inverfarigaig, the north-eastern shore of Loch Mhor, and near Ault-na-goire within 5-15 km to the north-west of the Development. However, actual visibility will be limited to wind turbine blade tips and will be further limited by intervening forestry and woodland. Not considered further.
Core Path IN17.02, IN17.03, IN17.04, IN17.07	No visibility indicated by ZTV, not considered further.
Core Path IN17.08	No visibility indicated by ZTV, not considered further.
Core Path IN25.03	Visibility indicated from southern extents of route within 9 km to the north-west of the Development. However, actual visibility will be limited by intervening forestry. Not considered further.
Core Path IN17.13	Visibility indicated from western extents of route within 8.5 km to the north-west of the Development. However, actual visibility will be limited by intervening forestry. Not considered further.
Core Path IN17.12	Widespread visibility indicated from extents of route within 7.8 km to the north-west of the Development. However, actual visibility will be limited by intervening forestry. Not considered further.
Core Path IN17.11	Widespread visibility indicated from extents of route within 8.6 km to the north-west of the Development. However, actual visibility will be limited by intervening forestry. Not considered further.
Core Path IN18.02	Widespread visibility indicated from extents of route within 13.8 km to the north-west of the Development. However, actual visibility will be limited by intervening forestry and woodland. Not considered further.

6.7 OTHER WIND FARM DEVELOPMENT

6.7.1 Existing Wind Farm Development

There are a number of operational wind farms and wind farms under construction located across the Study Area, as listed in Table 6.8 and shown on Figure 6.8a-6.8b. Operational wind farms, including the Operational Corriegarth Wind Farm, and those under construction as listed in Table 6.8 below, are included as part of the baseline for the LVIA and considered as part of the primary LVIA assessment.

6.7.2 Identification of Developments to be included in the CLVIA

In accordance with SNH guidance⁷³, the scope for the assessment of cumulative landscape and visual effects included wind farms and wind farm proposals within a 60 km radius search area from the Development, to identify the distribution of wind energy development in the wider area (as shown on Figure 6.8a).

The assessment of effects focuses on developments that are likely to give rise to significant cumulative effects, and concentrates on the relationship between the proposed Development with other operational, consented and proposed developments (i.e. developments the subject of a valid application or currently awaiting determination following appeal/public inquiry). In this instance it was not considered necessary to include other developments located beyond the 40 km Study Area, because of the very

⁷³ SNH (2012). Assessing the cumulative impact of onshore wind energy developments. [Online] Available at: <https://www.nature.scot/guidance-assessing-cumulative-impact-onshore-wind-energy-developments> (Accessed 06/10/2020)

limited potential for them to be seen in conjunction with the Development or result in significant cumulative landscape or visual effects.

Single turbines in the immediate Study Area were given consideration where it was judged that potential interactions with the Development may give rise to significant cumulative effects. Proposals that have not yet progressed beyond scoping stage are considered briefly to provide an overall context to this assessment, but as the final form and layout of these schemes cannot be stated with any certainty, the findings included here are on a for information only basis.

Wind energy developments located within the 40 km radius Study Area, which are considered likely to give rise to significant cumulative effects and therefore included in the CLVIA have been selected as follows:

- All wind turbines within a 5 km radius of the proposed outermost wind turbines;
- All wind turbines of ≥ 50 m blade tip height within a 10 km radius of the proposed outermost wind turbines;
- Wind farms (e.g. clusters of 2 or more wind turbines) with wind turbines of ≥ 50 m blade tip height between a 10 – 40 km radius of the proposed outermost wind turbines; and
- All single wind turbines of ≥ 80 m blade tip height⁷⁴ within a 10 – 40 km radius of the proposed outermost wind turbines.

Consented wind farms and wind farms currently in-planning, or subject to an appeal or local public inquiry (PLI), are considered as part of the assessment of potential future cumulative effects and included in the CLVIA.

Given the uncertainty of schemes that have only progressed to the scoping or early design stage, these are not considered within the cumulative assessment but are shown on Figure 6.8a for reference.

A cut-off date of 30th October 2020 was applied for the inclusion of other wind energy developments within the cumulative assessment and the final list was agreed with statutory consultees (the final list was agreed with statutory consultees (see Table 6.1 for details). These developments are listed in Table 6.8 below and shown on Figure 6.8b.

Table 6.8: Other Wind Farm Developments within 40 km

Distance ⁷⁵	Name	Status	Blade Tip Height (m)	Number of Wind Turbines
Operational and Under Construction				
0.4 km	Corriegarth	Operational	120 m	23
3.3 km	Easter Aberchalder	Operational	45.5 m	1
5.4 km	Dunmaglass	Operational	125 m	33
8.3 km	Stronelairg	Operational	135 m	67
18.7 km	Kyllachy	Under Construction	110 m	20
18.8 km	Bhlairaidh	Operational	135 m	32

⁷⁴ The inclusion of the turbines (79 m to blade top height) of Auchmore and Auchmore Extension was requested by THC.

⁷⁵ Approximate distance between the turbines of the Proposed Development and the turbines of the closest turbines of the wind energy development listed.

Distance ⁷⁵	Name	Status	Blade Tip Height (m)	Number of Wind Turbines
19.7 km	Farr ⁷⁶	Operational	101 m	40
24.1 km	Corrimony	Operational	100 m	5
26.2 km	Millennium	Operational	125 m	26
26.2 km	Beinneun	Operational	132 m	25
29.4 km	Moy	Operational	125 m	20
32.4 km	Beinneun Extension	Operational	136 m	7
33.4 km	Tom Nan Clach	Operational	125 m	13
35.8 km	Auchmore	Operational	79 m	1
35.5 km	Auchmore Extension	Operational	79 m	1
39.9 km	Fairburn	Operational	100 m	20
Consented				
7.2 km	Dell	Consented	130.5 m	14
8.1 km	Aberarder	Consented	130 m	12
28.0 km	Millennium South	Consented	132 m	10
In Planning / At Appeal or Public Inquiry				
8.0 km	Cloiche	Application Submitted	149.9 m	36
11.0 km	Glenshero	Public Inquiry	135 m	39

It should be noted that the baseline situation to the cumulative assessment is constantly evolving, and there may be changes to the status or list of wind energy developments considered between carrying out the assessment and the determination of the application. Unless there are substantial changes to proposals that will materially alter the pattern of cumulative development (such as the addition of a large wind farm located within a 10 km radius of the Development), it is considered that the cumulative assessment undertaken for the relevant landscape and visual receptors will remain relevant.

Although all of these wind farms are considered in the cumulative assessment, the assessment focuses on the relationship of the Development with the closest wind farms or groups of wind farms. For the cumulative assessment, these expanded wind farm groupings include:

- Dunmaglass (operational) and Aberarder (consented) Wind Farms located 5.4 km to the north-east of the Development;
- Stronelaire (operational), Dell (consented), Glenshero (at PLI) and Cloiche (application) Wind Farms located 7.2 km south-west of the Development;
- Kyllachy (under construction) and Farr (operational) Wind Farms located 18.7 km to the north-east of the Development; and
- Beinneun and Extension (operational), Millennium (operational) and Millennium South (consented) Wind Farms located 26.2 km to the south-west of the Development.

⁷⁶ A planning application was submitted to ECU on 28th August 2020 to extend the operational period of Farr Wind Farm from 25 years to 35 years (ECU reference: ECU00002123).

Given the varied status, and therefore certainty, associated with un-built wind farms across the Study Area the CLVIA is structured so as to report on two potential development scenarios:

- **Scenario 1:** Higher level of certainty: the addition of the Development to a landscape with operational, under construction and consented wind farms; and
- **Scenario 2:** Lower level of certainty: the addition of the Development to a landscape with operational, under construction, consented and undetermined valid planning applications.

The CLVIA has focused on the assessment of 'additional' cumulative effects, i.e. the effect of adding the Development to a baseline of other built or unbuilt wind farms. Where 'total' cumulative effects (i.e. assessment which considers the effects if all current, past and future proposals are deemed present, including the Development) are considered to be significant, then reference is also made to these.

Combined ZTVs (Figures 6-12 to 6-16) for other wind farms have been prepared to show where ZTVs overlap and where cumulative effects may arise (i.e. areas where combined views – seen at the same time in a similar direction, and successive views - seen from the same location but in different directions).

6.7.3 General Observations – Current Baseline (Operational and Under Construction Developments)

Figure 6.8b illustrates the distribution and status of wind energy developments with the 40 km Study Area. General observations on the location, pattern and scale of existing wind energy development across the Study Area are summarised below:

- In addition to the Operational Corriegarth Wind Farm, there are two operational commercial scale wind energy developments within 10 km of the Development, located within the Rolling Uplands – Inverness (LCT 221). This includes Stronelairg Wind Farm, located 8.3 km to the south-west of the Development, and Dunmaglass Wind Farm, located 5.4 km to the north-east of the Development. Close proximity views of these developments are afforded from elevated areas within the upland plateau. Longer distance views are experienced from elevated landform and summits within the Study Area, with occasional views of wind turbines afforded from lower lying areas within Stratherrick seen partially screened by intervening landform.
- Other wind farm development within the Rolling Uplands – Inverness (LCT 221) includes Farr Wind Farm (operational) and Kyllachy Wind Farm (under construction) located 18.7 km to the north-east of the Development and Moy Wind Farm (operational) 29.3 km to the north-east of the Development. Views of these developments are afforded from elevated landform and summits within the Study Area.
- Other operational developments within 35 km of the Development include Bhlaraidh Wind Farm, located 18.8 km to the north-west of the Development, and the cluster of development comprising Millennium, Beinneun, Beinneun Extension Wind Farms located 26.2 km to the south-west of the Development. These wind farms are located to the west of the Great Glen and are generally located within areas of upland and within the interior of plateaux. Close proximity views of these developments are afforded from surrounding elevated landform and summits, with longer distance views experienced from elevated locations to the east of the Great Glen.

Combined, successive and sequential views of the Development with other operational wind farms will be largely limited to close proximity elevated positions within 10 km and longer distance views from elevated landform and summits within the Study Area. The existing pattern of development has resulted in minimal visibility from lower lying areas,

however the Development will be seen in combination with the Operational Corriegarth Wind Farm and in successive views with Dunmaglass Wind Farm from limited extents within Stratherrick.

Figure 6.9 illustrates the potential combined visibility of the Development and the operational wind farms. The ZTV indicates that operational wind turbines are visible from similar locations as the Development. The Development will introduce very limited pockets of visibility within 5 km to the east and south-east of the Site within WLA 20, within 5-10 km to the south-west of the Site within Stratherrick and within 15 km to the north of the Site near Loch Ruthven.

6.7.4 General Observations – Consented Developments (Existing, plus Consented Developments)

General observations on the location, pattern and scale of existing and consented wind energy development across the Study Area are summarised below:

- Consented Dell Wind Farm is located adjacent to operational Stronelairg Wind Farm 7.2 km to the south-west of the Development.
- Consented Aberarder Wind Farm is located adjacent to operational Dunmaglass Wind Farm 8.1 km to the north-east of the Development.
- Consented Millennium South is located 28.0 km south-west of the Development within the cluster of development formed by operational Millennium, Beinneun and Beinneun Extension Wind Farms.

Figure 6.10 illustrates potential combined visibility of the Development with operational and consented development. The ZTV indicates that combined theoretical visibility will be experienced from elevated landform and sections of Stratherrick within 10 km of the Site, within 15 km from the A82 between Invermoriston and Drumnadrochit and from elevated landform and summits throughout the Study Area. Similar to areas of visibility of operational development, the Development will result in very limited areas of introduced visibility.

6.7.5 General Observations – Proposed Developments at Application

General observations on the location, pattern and scale of existing, consented and proposed wind energy development across the Study Area are summarised below:

- Glenshero Wind Farm (at public inquiry) is located 11.0 km to the south-west of the Development and will increase the extent of the Stronelairg and Dell Wind Farm cluster further south.
- Cloiche Wind Farm (application submitted) is located 8.0 km to the south-west of the Development and will increase the extent of the Stronelairg and Dell Wind Farm cluster further west and east.

Figure 6.11 illustrates potential combined visibility of the Development with operational, consented and proposed development. The ZTV indicates limited areas of introduced visibility resulting from the Development, with areas of combined visibility largely similar to those associated with operational and consented development.

6.7.6 General Observations – Proposed Developments at Scoping

General observations on the location, pattern and scale of existing, consented and proposed wind energy development (including developments at scoping stage) across the Study Area are summarised below:

- Bhlaraidh Extension Wind Farm (at scoping) is located 16.6 km to the north-west of the Development and will increase the extent of the Bhlaraidh Wind Farm further north-east.

- Fasnakyle Wind Farm (at scoping) is located 25.0 km to the north-west of the Development and will substantially increase the extent of the Corrimony Wind Farm further north-west and south-west.

Tomchrasky Wind Farm (at scoping) is located 30.4 km to the west of the Development. This development is located between clusters of wind farm development. Given the final layout and form of these developments cannot be stated with any certainty, these developments are not considered within the cumulative assessment.

6.8 THE 'DO NOTHING' SCENARIO

In the absence of the Development, it is likely that the land will continue under the same land use, including the Operational Corriegarth Wind Farm, and the character of the Site is unlikely to change notably. However, the landscape and visual amenity of the Study Area is likely to be influenced by a number of 'forces for change' including further wind energy development.

Forces for change are those factors affecting the evolution of the landscape and which may, consequently, affect the perception of the Study Area in the near or distant future. Although prediction of these is necessarily speculative, those of particular relevance are discussed briefly below.

Wind farm development is a clear force for change within this area of the Scottish Highlands and is likely to continue with further wind energy proposals emerging. Figure 6.8a illustrates the location and extent of operational, consented and proposed wind farms within the wider Study Area. In addition, there are an increasing number of operational, consented and proposed domestic wind turbines of varying heights and rotor diameters, located within the surrounding landscape. As farmers diversify income and seek opportunities to generate energy for domestic and commercial use, interest in this type of development may continue.

Agriculture is expected to continue within the Study Area, including upland land management practices, pastoral grazing and some arable farming. The expansion of woodland, including commercial forestry plantations, is also likely to remain an important land use.

6.9 ASSESSMENT OF POTENTIAL LANDSCAPE AND VISUAL EFFECTS

The assessment of landscape and visual effects follows the methodology summarised in this chapter and set out in detail in Appendix A6.1 and is based upon the project description outlined in **Chapter 4: Development Description**. The LVIA reports on construction and operational effects separately.

6.9.1 Construction Effects

Sources of Effects during Construction

During the proposed 18 month construction phase, there will be potential short-term landscape and visual effects arising from the presence of partially constructed infrastructure and undertaking of construction activities on the Site (as described in **Chapter 4: Development Description**). Effects occurring during the construction phase are considered to be reversible unless otherwise stated (e.g. creation of new landform which remains as a permanent feature beyond the lifespan of the operational phase (35-years) of the Development).

The changes arising from the construction of the Development will be primarily associated with:

- 16 turbines up to a maximum 149.9 m to blade tip (approximate 133 m rotor diameter and approximate 83.4 m hub height⁷⁷);
- Turbine transformers;
- Access tracks, including widening of existing tracks, and areas of hardstanding;
- On site substation and control building;
- Temporary laydown areas;
- Temporary construction compound; and
- Borrow pits.

The majority of the effects which will occur during the construction phase will be **short-term** and largely **reversible**, limited to the Site and the immediate surrounding vicinity from which construction activities may be perceptible. The main exception to this is construction of the proposed turbines. However, landscape and visual effects arising from the presence of partially constructed turbines will be comparable to the operational effects (although arguably to a lesser degree as construction-related effects will be of a shorter duration and transient in nature). Therefore, effects arising from the introduction of partially constructed turbines are not anticipated to exceed the long-term operational effects.

Landscape Effects during Construction

Potential effects on the landscape character and resources of the Site are considered in Table 6.9 below. Landscape effects during construction will largely be limited to the host LCT, as effects beyond the extents of the Site will be indirect and largely related to the construction of the partially erected turbines and will be seen in the context of the Operational Corriegarth Wind Farm. As such, effects on the wider LCT are not considered to be any greater than operational effects.

Table 6.9: Construction Effects on the Site

The Site
Location and baseline description: The Site is described in detail in Section 6.5.2: The Site and Context.
Sensitivity: The Highland Council Onshore Wind Energy SG notes that whilst the sensitivity of the Rolling Uplands LCT is considered to be lower, the presence and density of wind farm development within LN6: Monadhliath ridge and tops, Rolling Uplands leads to a higher sensitivity to wind farm development. However, within the immediate context of the Site, landscape characteristics are judged to result in a lower susceptibility taking account of the wider larger scale and simple landscape pattern of the Rolling Uplands – Inverness LCT 221. Sections of the existing Site access track are located within a higher sensitivity LCT (Farmed Strath – Inverness LCT 227 or LN 15: Farmed Straths, Stratherrick and Strath Nairn), however given the presence of the existing track, the susceptibility of this LCT within localised extents is considered to be medium. The Site is not located within a designated landscape. Considering the present condition of the Site, the presence of the Operational Corriegarth Wind Farm and the influence of wind farm development on the surrounding landscape, overall the landscape value is judged to be low. Taking account of the judgements of susceptibility and value, overall sensitivity is considered to be medium.
Magnitude of Change and Significance of Landscape Effects: The main construction activities with the potential to affect the Site include, but are not limited to: disturbance of land and vegetation through; excavation of borrow pit(s); widening and improvement of existing access tracks, construction of temporary compound(s), construction of turbine foundations and hardstanding, construction of turbines, new tracks connecting each turbine, new

⁷⁷ The rotor diameter and hub height of the candidate turbine have been defined for the purpose of the assessment, and the final selection of the chosen turbine manufacturer will be determined post-consent.

The Site

watercourse crossings, underground high voltage and control cables, substation/switchgear housing and a perceived increase in activity on the Site with vehicular/personnel movements.

The extent of construction activity will be at a relatively localised site-level. Given the existing presence of wind turbines and ancillary development of the Operational Corriegarth Wind Farm, the introduction of the Development will result in a medium scale change.

The construction works are expected to last approximately 18 months, so will be temporary and short-term.

The level of reversibility will be varied, from fully reversible changes associated with ground disturbances (albeit that vegetation will take some time to recover) to longer lasting effects associated with infrastructure that forms part of the operational scheme. Overall, the magnitude of change is judged to be **medium**.

Taking account of the low sensitivity, this will result in a **moderate** (adverse) and **significant** landscape effect, however these effects would be temporary and largely contained within localised geographical extents. The majority of effects would cease following the 18 month construction period.

Visual Effects during Construction

In terms of visual effects during the construction phase, beyond those experienced at the Site level where low level construction activity will be apparent in certain views, these will largely relate to views of tall cranes and turbine construction experienced from the wider Study Area. These effects will be transient and change throughout the construction period as wind turbines are gradually constructed in sections. As such, visual effects during the construction phase are unlikely to exceed the level of effect associated with operational visual effects.

Decommissioning of the Development is expected to take approximately eight months. Due to the similar activities involved in both the construction and dismantling of a wind farm site, a similar level of effect is predicted on the landscape and visual amenity of the Site and wider Study Area.

Proposed Mitigation

Measures such as arrangements for vegetation and soil removal, storage and replacement and the restoration of disturbed areas after construction will be detailed in the outline Construction Environmental Management Plan (CEMP) to be secured by condition produced following consent and prior to construction, which would also include reference to Construction Method Statements.

Residual Construction Effects

The assessment of effects above assumes all construction related, best practice, mitigation measures are implemented, therefore the residual effects arising from construction will remain as identified in the section above.

6.9.2 Operational Effects

Sources of Effects during Operation

The main likely effects of the Development on landscape and visual amenity once operational will be associated with the presence of the wind turbines, turbine transformers and ancillary infrastructure including access tracks, on-site substation and site access track as described in **Chapter 4: Development Description** and shown on Figure 4.1.

6.9.3 Landscape Assessment: Operational Effects

This section describes the operational effects resulting from the Development on the landscape fabric of the Site and the LCTs which have been identified as requiring detailed consideration in Table 6.2. Further information on key characteristics of each LCT and relevant designated landscapes is provided in Table 6.10.

All operational effects are considered to be long-term, reversible and adverse unless stated otherwise.

Table 6.10: Operational Effects on the Site

Operational Effects on the Site
Location and Baseline Description: The Site is described in detail in Section 6.5.2: The Site and Context.
Sensitivity: See Table 6.9 above. Overall sensitivity is considered to be medium .
Magnitude of Change and Significance of Landscape Effects: The majority of the Development will be located within upland plateau immediately adjacent to the Operational Corriegarth Wind Farm. The existing site access, which extends south-east from the B862, will be utilised with some localised widening of tracks and proposed additional tracks within the interior of the Development. The Development will slightly increase the extents of the landscape occupied by wind farm development. Close proximity views into the Site are limited to the elevated 'bowl'-like landform surrounding the Site to the north, west and south. The topographical 'bowl' of the Site is more open towards the east, and views are afforded into the Site from lower-lying areas to the north-east along the general alignment of the existing access track. Given the Development will be located within and immediately adjacent to an area with an existing presence of wind farm development, the introduction of the Development will result in a medium scale change to the landscape of the Site, experienced from relatively localised extents. Overall, the magnitude of change to the landscape of the Site is considered to be medium, resulting in a moderate (adverse) and significant landscape effect.
Potential for Future Cumulative Effects (Scenario 1 and 2): There are currently no other consented or proposed wind farm developments located within the Site therefore significant cumulative effects on the landscape of the Site are considered unlikely. As such no significant additional or total cumulative landscape effects are predicted under either cumulative assessment scenario.

Operational Effects on Landscape Character

LCTs within 40 km of the Development are illustrated on Figure 6.6a, with theoretical visibility from those LCTs located within 20 km indicated by the ZTV shown on Figure 6.6b. The assessment in Table 6.11-6.15 describes the potential effects on landscape character resulting from the introduction of the Development during the operational phase and a consideration of potential cumulative landscape effects arising in conjunction with other existing, consented and/or proposed wind farms. The assessment is limited to those LCTs where potentially significant effects are considered possible, as detailed in Table 6.2.

Table 6.11: Operational Effects on Rolling Uplands – Inverness (LCT 221)

SNH (2019) LCT	Rolling Uplands – Inverness (LCT 221)
Location and Baseline Description:	

SNH (2019) LCT	Rolling Uplands – Inverness (LCT 221)
Within the Study Area, this LCT covers a broad area extending north-east and south-west from the Site. The majority of the Site is located within this LCT. Key characteristics include: • <i>"A series of large scale, smooth, rounded hills with summits of similar height forming broad, undulating upland plateaux containing occasional steep-sided straths.</i> • <i>Open heather moorland dominates, the uniform colour and texture accentuating the landform.</i> • <i>Straths floors contain inbye pastures, trees and small patches of woodland.</i> • <i>Conifer forests limited to the lower edges of uplands and strath sides.</i> • <i>Settlement limited to a few isolated farms in remote straths.</i> • <i>A few mainly single track roads, integrated within the landform.</i> • <i>Uninhabited interior, largely inaccessible to vehicles.</i> • <i>Archaeological evidence of settlement and farming from prehistoric times to the 19th century.</i> • <i>Striking colour and textural contrast between strath floors and moorland vegetation above.</i> • <i>Expansive views from the hill tops and plateaux create a strong sense of openness and exposure.</i> • <i>Scale and distance difficult to judge.</i> • <i>Few signs of active management in the interiors, creating a strong perception of remoteness, although this is affected by a number of large wind farm developments."</i> A number of operational wind farms are located within this LCT including the Operational Corriegarth (23 turbines at 120 m tip height), Dunmaglass (33 turbines at 125 m tip height), Farr (40 turbines at 101 m tip height), Moy (20 turbines at 125 m tip height) and Kyllachy (under construction, 20 turbines at 110 m tip height) to the north-east of the Development, and Stronelaig (67 turbines at 135 m tip height) to the south-west of the Development.	
THC Onshore Wind SG (2017) LCAs	LN6: Monadhliath ridge and tops, Rolling Uplands
The LCT is identified as LN6: Monadhliath ridge and tops, Rolling Uplands in the Highland Council SG. LN6 shares the same boundary as LCT 221. The SG notes that LN6 is the "<i>most extensive landscape in the Study Area</i>" and "<i>although the LCA is large, it forms a strong contrast to the Rugged and Rocky LCTs which oppose it across the Great Glen</i>". The SG considers the LCA to be of medium sensitivity to wind energy development of the type and scale proposed due to the existing density of wind farm development and the potential for coalescence between clusters of development.	
Sensitivity: The large scale, simple landform and presence of existing wind farm development indicate a low susceptibility to wind energy development of the type and scale proposed. Limited extents along the western edge of the LCT are located within the Loch Ness and Duntelchaig SLA and limited extents along the northern edge of the LCT are located within the Drynahan, Lochindorb and Dava Moors SLA. The eastern extents of the LCT cover a proportion of the WLA 20: Monadhliath. Overall, the landscape value is considered to be medium. Discrete areas of the LCT in which operational wind farm development is located are judged to be of lower sensitivity. However, considering the judgements of susceptibility and value, overall sensitivity is judged to be medium.	
Magnitude of Change and Significance of Landscape Effects: Direct operational effects will arise from the introduction of 16 wind turbines and associated infrastructure. The Site is located within the central extents of the LCT, comprising and immediately adjacent to the Operational Corriegarth Wind Farm. The introduction of the Development will result in the loss of approximately 15 Ha of moorland vegetation. Figure 6.6b indicates extensive theoretical visibility within 5 km of the Development from elevated landform and hill summits to the north-east to south-east, including the Corbett summit of Carn na Saobhaidhe to the north-east. Visibility is also indicated from lower-lying areas along the River E to the north-west adjacent to the existing access track. Within 15 km theoretical visibility is indicated from hill summits and elevated landform, including hills summits within WLA20. There is a strong existing presence of wind farm development within the LCT. As indicated by the comparative ZTVs in Figure 6.9, the Development will often be seen in combination with the	

SNH (2019) LCT	Rolling Uplands – Inverness (LCT 221)
Operational Corriegarth Wind Farm, with relatively limited extents of introduced visibility indicated from lower north-facing slopes within 8-15 km to the south of the Development, lower-lying areas and lower slopes near Aberchalder Burn within 5 km to the north of the Development and the lower slopes of hill summits within 15 km to the north-east of the Development. Where wind turbines of the Development introduce visibility of wind farm development within the LCT, the Development will result in a medium scale change, indirectly affecting the sense of remoteness of the LCT. However, the geographical extent of these effects is considered to be relatively small. Given the presence of other existing wind farms within the LCT, including the Operational Corriegarth, Dunmaglass and Stronelairg wind farms, the Development will often be seen in the context of existing wind farm development, resulting in a small scale change to the landscape features of the LCT. The magnitude of change is judged to be medium locally, reducing to low for the LCT as a whole. Taking account of the low sensitivity, this will result in a minor (adverse) and not significant landscape effect.	
Potential for Future Cumulative Effects (Scenario 1): In addition to operational and under construction wind farms, the consented Dell and Aberarder Wind Farms will be located within this LCT. Consented wind farm development will appear adjacent to the operational Stronelairg and Dunmaglass Wind Farms within the interior of the plateau, resulting in a relatively small scale change to localised extents of the LCT. These schemes will appear as distant and/or distinctly separate to the Development. The cumulative magnitude of change to this LCT resulting from the introduction of the Development under this scenario will be low and the additional and total cumulative effects will be minor (adverse) and not significant.	
Potential for Future Cumulative Effects (Scenario 2): In addition to operational, under construction and consented wind farms, Glenshero (at PLI) and Cloiche (at application) Wind Farms will be located within this LCT. Glenshero and Cloiche will increase the extent of the Stronelairg and Dell Wind Farm clusters, however wind turbines will be located within the interior of the plateau and spacing between clusters of wind turbines will be maintained. The introduction of the Development will result in a relatively small scale change under this scenario, given the relatively compact nature of the Development in relation to the Operational Corriegarth Wind Farm. The cumulative magnitude of change to this LCT resulting from the introduction of the Development under this scenario will be low and the additional and total cumulative effects will be minor (adverse) and not significant.	

Table 6.12: Operational Effects on Rolling Uplands – Cairngorms (LCT 125)

SNH (2019) LCT	Rolling Uplands – Cairngorms (LCT 125)
Location and Baseline Description: Within the Study Area, this LCT covers a narrow area between the Rolling Uplands – Inverness (LCT 221), the Upland Glen - Cairngorms (LCT 126) and the Upland Strath (LCT 127). This LCT has many of the same characteristics of LCT 221 and broadly covers part of the same wider uplands area. However, the presence of the CNP boundary splits the wider uplands area into two LCTs, with LCT 125 located within the CNP. Key characteristics include: • <i>"A series of massive, broad, smooth, rounded summits: over 800 metres to the south, with the overall height tapering northwards to around 600 metres at the Strathdearn Hills.</i> • <i>North-east/south-west alignment, running parallel to the Highland Boundary Fault.</i> • <i>Lower slopes made up of small-scale hummocks and hollows.</i> • <i>Heather and upland grassland on higher ground often extending to lower slopes</i> • <i>Number of relatively isolated glens.</i> • <i>Improved pastures and woodland in larger glens.</i> • <i>Sparse, scattered settlement of isolated traditional farmsteads and estate buildings on lower foothills and flat glen floors.</i>	

SNH (2019) LCT	Rolling Uplands – Cairngorms (LCT 125)
<i>Perception of relative remoteness</i> There are no operational wind farms located within the LCT. Figure 6.9 indicates limited visibility of operational wind farm development from within the LCT.	
Sensitivity: The large scale and simple landform indicate a low susceptibility to wind energy development of the type and scale proposed. However, the relative remoteness and discrete areas of more complex smaller-scale topography indicate a higher susceptibility to wind energy development of the type and scale proposed. The LCT is located within the CNP and the south-western edge of the LCT is located within WLA 20: Monadhliath. Overall, the landscape value is considered to be high. Considering the judgements of susceptibility and value, overall sensitivity is judged to be high.	
Magnitude of Change and Significance of Landscape Effects: The Development will be located entirely outside this LCT, therefore any effects will be limited to indirect effects experienced through views of the Development from within the LCT. Figure 6.6b indicates limited theoretical visibility near A'Chailleach (AESLQ03, Figure 6.44), approximately 13 km to the south-east of the Development, and near An Sguabach and Carn Sleamhuinn, approximately 23-27 km to the east of the Development. From these locations, the Development will be seen in the context of the Operational Corriegarth Wind Farm and will result in limited introduced visibility (as indicated by Figure 6.9). The geographical extent of similar views, and of resultant indirect landscape effects, is considered to be small. The introduction of the Development will result in a small scale change to the landscape of the LCT and a low magnitude of change. Taking account of the high sensitivity, this will result in a minor (adverse) and not significant landscape effect.	
Potential for Future Cumulative Effects (Scenario 1): There are no operational, under construction or consented wind farms located within this LCT, however views of wind farms in adjacent LCTs will be afforded from localised extents of the LCT. In addition to operational and under construction wind farms, the consented Aberarder Wind Farm will be seen in long-distance views from elevated landform and summits within this LCT. The consented wind turbines will appear adjacent to the operational Dunmaglass Wind Farm, resulting in a relatively small scale change to localised extents of the LCT. Aberarder Wind Farm will appear as distant and/or distinctly separate to the Development. The cumulative magnitude of change to this LCT resulting from the introduction of the Development under this scenario will be low and the additional and total cumulative effects will be minor (adverse) and not significant.	
Potential for Future Cumulative Effects (Scenario 2): There are no operational, under construction, consented or proposed wind farms located within this LCT, however views of wind farms in adjacent LCTs will be afforded from localised extents of the LCT. In addition to operational, under construction and consented wind farms, the Cloiche Wind Farm (at application) will be seen in long-distance views from elevated landform and summits within this LCT. The proposed wind turbines will be barely perceptible beyond intervening landform, resulting in a relatively small scale change to localised extents of the LCT. Cloiche Wind Farm will appear as distant and/or distinctly separate to the Development. The cumulative magnitude of change to this LCT resulting from the introduction of the Development under this scenario will be low and the additional and total cumulative effects will be minor (adverse) and not significant.	

Table 6.13: Operational Effects on Farmed Strath – Inverness (LCT 227)

SNH (2019) LCT	Farmed Strath – Inverness (LCT 227)
Location and Baseline Description: Within the Study Area, this LCT covers narrow extents located to the north-west of LCT 221. The existing access track for the Operational Corriegarth Wind Farm is located within this LCT. The LCT extends on a south-west to north-east alignment and includes Stratherrick and Strath Nairn. Key characteristics include: • <i>"Linear to sinuous channels cut through uplands, with a central meandering river located in a flat or gently undulating strath floor, edged by the steep, rocky, side slopes.</i> • <i>Pronounced and dynamic river meanders of Strathglass, emphasised by riparian trees, oxbow lakes and curved wetland features.</i> • <i>Small scale broadleaf woodlands and small blocks of conifer forest within Strathnairn/Stratherrick strath floor which do not override openness of the strath.</i> • <i>A few small settlements located on the strath floor or sides and infrequent small farms, crofts, estate buildings or groups of houses.</i> • <i>Roads which generally relate well to landform, with a limited number of river crossing points.</i> • <i>Many archaeological sites in Strathnairn dating from a range of periods.</i> • <i>Contrast between the open, inhabited and agricultural landscape of the straths, the side slopes cloaked in alternating broadleaf woodlands, conifer forests and heather moorland, and the setting of adjacent rugged, remote uplands.</i> • <i>Diversity of colour and texture added by river meanders, wetlands, damp pastures and thin bands of woodland.</i> • <i>An overall sense of linear enclosure, which directs distant views along the strath and allows uninterrupted views of the flanking hill slopes."</i> There are no existing wind farm developments within this LCT.	
THC Onshore Wind SG (2017) LCAs	LN15: Farmed Straths, Stratherrick and Strath Nairn
The LCT is identified as LN15: Farmed Straths, Stratherrick and Strath Nairn in the Highland Council SG. LN15 shares the same boundary as LCT 227. The SG notes the small scale of the LCA, with views contained by landform. The sensitivity of the LCA to wind energy development of the type and scale proposed is considered to be high.	
Sensitivity: The smaller scale, complex landscape pattern and presence of small scale settlement indicate a higher susceptibility. Overall susceptibility to wind energy development of the type and scale proposed is considered to be high. Limited extents in the south-west and west of the LCT are located in the Loch Ness and Duntelchaig SLA. However, the overall landscape value is considered to be medium. Considering the judgements of susceptibility and value, overall sensitivity is judged to be high.	
Magnitude of Change and Significance of Landscape Effects: The existing access track for Operational Corriegarth Wind Farm is located within this LCT. However, no wind turbines or other ancillary infrastructure will be located within this LCT. Therefore, operational effects will be limited to indirect effects experienced through views of the Development from within the LCT. Figure 6.6b indicates widespread theoretical visibility from Stratherrick within 10 km to the west and north-west of the Development. However, actual visibility will be limited by intervening forestry and woodland cover and localised undulations in the terrain. Beyond 10 km within Strath Nairn to the north and north-east of the Development, theoretical visibility is very limited. The Development will often be seen in the context of existing wind farm development and will result in limited introduced visibility (as indicated by Figure 6.9). Where theoretical visibility is introduced as a result of the Development, as illustrated in Figure 6.21 (VP 1: Gorthleck), wind turbines are partially screened by intervening landform with blade tips visible above the skyline. Where similar views are afforded from the LCT, or where the Development increases the prominence of the Operational Corriegarth Wind Farm, wind turbines may interrupt characteristic views of the containing hill slopes and the perception of remote uplands to the east of the LCT, however visibility	

SNH (2019) LCT	Farmed Strath – Inverness (LCT 227)
of wind turbine blade tips is unlikely to form a prominent focal feature. The geographical extent of similar views, and of resultant indirect landscape effects, is considered to be small. The Development will result in a medium scale change in the landscape character of the LCT. The magnitude of change is considered to be medium, resulting in a moderate (adverse) and significant effect within localised extents along the north-western shore of Loch Mhor. Figure 6.22 (VP 2: Boleskine Parish Church), Figure 6.23 (VP 3: B862 West of Corriegarth Lodge), Figure 6.24 (VP 4: South Loch Ness Trail, north of Whitebridge) and Figure 6.25 (VP 5: Errogie) illustrate potential views south, south-east and east towards the Site from the southern extents of the LCT. From these locations, wind turbines will be seen partially screened by intervening landform, slightly increasing the horizontal extent of the Operational Corriegarth Wind Farm. The introduction of the Development will result in a small scale change to landscape characteristics given the existing presence of wind farm development in views. The geographical extent of similar views, and of resultant indirect landscape effects, is considered to be medium. The magnitude of change for the LCT as a whole is considered to be low, resulting in a minor (adverse) and not significant effect.	
Potential for Future Cumulative Effects (Scenario 1): There are no operational, under construction or consented wind farms located within this LCT, however views of wind farms in adjacent LCTs will be afforded from localised extents of the LCT. The consented Aberarder Wind Farm will be seen in long-distance views from the LCT, with wind turbine hubs and blade tips appearing against the skyline in combination with the operational Dunmaglass Wind Farm. Whilst this may slightly increase horizontal extents of wind farm development in views, Aberarder Wind Farm will not overwhelm the scale of adjacent landform and will be located within the interior of the plateau. The introduction of the Development will result in similar views, with wind turbine hubs and blade tips occasionally appearing against the skyline alongside the Operational Corriegarth Wind Farm. The consented Millennium South Wind Farm will appear as a relatively distant feature in long-distance views from the LCT, within the same proportion of the view occupied by the operational Millennium Wind Farm. Given the long-distance nature of views of cumulative schemes under this scenario, and the limited visibility of additional consented wind farms, the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	
Potential for Future Cumulative Effects (Scenario 2): There are no proposed wind farms within this LCT, and no other farms will be perceptible in views from this LCT. Therefore, no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.	

Table 6.14: Operational Effects on Farmed and Wooded Foothills (LCT 224)

SNH (2019) LCT	Farmed and Wooded Foothills (LCT 224)
Location and Baseline Description: Within the Study Area, this LCT covers relatively narrow extents between the eastern shores of Loch Ness and the straths (Stratherrick and Strath Nairn) located further east. Key characteristics include: • <i>"Low rocky hills with a complex and irregular landform of steep sided slopes, rocky ridges and peaks, with some small corries, short glens and lochs.</i> • <i>Open summits with heather moorland, crags and rough pasture, contrasting with mid and lower slopes of forests and woodlands interspersed with rough and improved pasture.</i> • <i>A diverse mix of woodland, agricultural land use and open moorland creating a balanced but complex range of open and enclosed spaces.</i> • <i>Small farms, crofts and farming settlements scattered on the mid to lower slopes, with a network of narrow roads, stone dykes and hedgerows field boundaries.</i> • <i>Many archaeological relics from prehistoric to 18th-19th Century periods.</i>	

SNH (2019) LCT	Farmed and Wooded Foothills (LCT 224)
<i>Contrast between the panoramic views of the open, exposed upper slopes and summits, and the sheltered and enclosed lower, slopes with conifer forests and woodlands.</i> <i>A sense of care and prosperity in settled and farmed parts due to active agricultural land management."</i> There are no existing wind farm developments within this LCT.	
THC Onshore Wind SG (2017) LCAs	LN16: Farmed and Wooded Foothills, Loch Tarff to Loch Duntelchaig
The LCT is identified as LN16: Farmed and Wooded Foothills, Loch Tarff to Loch Duntelchaig in the Highland Council SG. LN16 shares the same boundary as LCT 224. LN16 is considered in combination with LN17, which are noted as forming the skyline in views from the Loch shore and strong intervisibility between contrasting landscape character types. The sensitivity of LN16 to wind energy development of the type and scale proposed is considered to be high.	
Sensitivity: Given the topographical variety and complex landscape pattern, in addition to presence of small and vernacular developments, sensitivity to wind energy development of the type and scale proposed is considered to be high. The majority of this LCT is located within the Loch Ness and Duntelchaig SLA. The landscape value is therefore considered to be high. Considering the judgements of susceptibility and value, overall sensitivity is judged to be high.	
Magnitude of Change and Significance of Landscape Effects: The Development will be located entirely outside this LCT, therefore any effects will be limited to indirect effects experienced through views of the Development from within the LCT. Figure 6.6b indicates widespread theoretical visibility within 10 km to the north-west of the Development within the Farigaig Forest. However, actual visibility will be limited by intervening forestry and woodland cover and localised undulations in the terrain. Within 15 km theoretical visibility is indicated from elevated landform and rocky hills to the west of the Development including Murligan Hill, Beinn a'Bhacaidh, Meall Targaid and Creag Mhor. The Development will often be seen alongside wind turbines of the Operational Corriegarth Wind Farm. Figure 6.9 illustrates relatively limited extents of introduced visibility resulting from the introduction of the Development near Ashie Moor, to the west of Loch Ruthven and to the west of Loch Knockie. However, actual visibility from these locations will be limited by intervening forestry and woodland. From areas of elevated landform and small rocky hills, from which characteristic panoramic views are afforded, the Development will often appear in combination with Operational Corriegarth Wind Farm and within successive views of other operational wind farm development, including Dunmaglass and Stronelaig Wind Farms. Figure 6.32 (VP 12: B862 North of Torness) illustrates potential views towards the Site from the northern extents of the LCT. From this location the wind turbines forming the Development will be mostly screened by intervening landform with some blade tips seen against the skyline. The hubs of two turbines in the west of the cluster (T1, T16) will be seen backclothed by more distant landform. Taking into account the presence of existing wind farm development in outward views from the LCT and the limited proportion of the views from the LCT occupied by the wind turbines of the Development, the introduction of the Development will result in a small scale change to the landscape character of the LCT. Given the forested and wooded nature of the LCT, and further screening of outward views by localised undulations in landform, the geographical extent of similar views, and of resultant landscape effects, is considered to be small. The magnitude of change is considered to be low and taking account of the high sensitivity is judged to result in a minor (adverse) and not significant landscape effect.	
Potential for Future Cumulative Effects (Scenario 1):	

SNH (2019) LCT	Farmed and Wooded Foothills (LCT 224)
There are no operational, under construction or consented wind farms located within this LCT, however views of wind farms in adjacent LCTs will be afforded from localised extents of the LCT. As much of the LCT is wooded, outward views towards other wind farm developments are generally screened by intervening vegetation. However, as illustrated by Figure 6.32 (VP12: B862 North of Torness), the consented Aberarder Wind Farm will be seen in long-distance views in combination with the operational Dunmaglass Wind Farm, as a separate and distinct cluster to the development. Wind turbine blade tips of the consented Dell Wind Farm will be barely perceptible beyond intervening landform in successive views south. The introduction of the Development will result in a small scale change to this cumulative assessment scenario. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	
Potential for Future Cumulative Effects (Scenario 2): No other proposed wind energy developments will be perceptible in views from the LCT therefore no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.	

Table 6.15: Operational Effects on Broad Steep-Sided Glen (LCT 225)

SNH (2019) LCT	Broad Steep-Sided Glen (LCT 225)
Location and baseline description: Within the Study Area, this LCT extends across the Great Glen, from the southern to northern shores of Loch Ness. The LCT covers the shores and lower-lying areas around Loch Ness and includes the A9, and settlements of Fort Augustus, Invermoriston and Drumnadrochit. Key characteristics include: • <i>"A clearly defined, broad, linear, steep sided, v-shaped glen and deep loch cutting through mountains and hills, with limited areas of flatter ground.</i> • <i>Large-scale conifer forests with small areas of open moorland covering most of the glen sides, particularly the lower slopes.</i> • <i>Small patches of broad leaved woodlands, mostly in side glens and close to the shore.</i> • <i>Agricultural land on less steep slopes, glen intersections and alluvial plains.</i> • <i>A few settlements, with a well-defined core, located at glen intersections and on gentler slopes, separated by long stretches of relatively uninhabited land.</i> • <i>Contrast between the busy trunk road and larger settlements on the west side and the quiet minor road on east side which has fewer settlements separated by large undeveloped areas.</i> • <i>Strong evidence of past settlement in the number and diversity of archaeological and historic sites from prehistoric times to the 20th Century.</i> • <i>Contrast between the visual and seasonal diversity of broadleaf woodland and bright, open pockets of farmland and the forested and moorland surroundings.</i> • <i>Contrast between the smaller scale landscapes of settled, lower slopes and the large scale moorland and forested backdrop.</i> • <i>A simple linear and enclosed visual composition of bands of land, water and sky, with long skylines of even height, and the glen and loch as unifying features.</i> • <i>Visual focus directed along the linear route of the glen or across the water to the opposite shore and up to the skyline."</i> There are no existing wind farm developments within this LCT.	
THC Onshore Wind SG (2017) LCAs	LN19: Area directly around Loch Ness, Broad Steep-Sided Glen
The LCT is identified as LN19: Area directly around Loch Ness, Broad Steep-Sided Glen in the Highland Council SG. LN19 shares the same boundary as LCT 225. The SG notes the high value of LN19, given the location of the LCA within the Loch Ness and Duntelchaig SLA, and the complexity of the landscape. The sensitivity of LN19 to wind energy development of the type and scale proposed is considered to be high.	
Sensitivity:	

SNH (2019) LCT	Broad Steep-Sided Glen (LCT 225)
	The dramatic topography, contrasting landscape pattern and highly visible skylines indicate a higher susceptibility whilst the presence of modern development in parts of the LCT indicates a lower susceptibility. Overall susceptibility to wind energy development of the type and scale proposed is considered to be high. The majority of this LCT is located within the Loch Ness and Duntelchaig SLA. The landscape value is therefore considered to be high. Considering the judgements of susceptibility and value, overall sensitivity is judged to be high.
	Magnitude of Change and Significance of Landscape Effects: The Development will be located entirely outside this LCT, therefore any effects will be limited to indirect effects experienced through views of the Development from within the LCT. Figure 6.6b indicates theoretical visibility within 15 km to the west and north-west of the Development along the western shore of Loch Ness between Portclair and Drumnadrochit. Within 20 km to the north-west of the Development, theoretical visibility is indicated on elevated slopes to the north of Drumnadrochit. However, actual visibility will be reduced by intervening forestry on the lower glen slopes and woodland cover along the shores of the loch. Where outward views toward the Site are afforded, wind turbines forming the Development will be seen alongside those of the Operational Corriegarth Wind Farm. Figure 6.9 indicates very limited introduced visibility of wind turbines resulting from the introduction of the Development. Figures 6.28 (VP 8: Great Glen Way, East of Creag Dhearg) and Figure 6.30 (VP 10: A82 Achnahannet) illustrate potential views towards the Site from the central extents of the LCT within 15 km of the Development. Given the elevated location of VP 8, open views into the Site are afforded and all wind turbines of the Development will be visible, seen slightly increasing the horizontal extent of the Operational Corriegarth Wind Farm. Given the forested nature of the lower slopes of the glen, similar open and elevated views are experienced from relatively limited extents within the LCT. From VP 10, wind turbines forming the Development will appear in longer-distance views alongside wind turbines of the Operational Corriegarth Wind Farm, partially screened by intervening forested landform. Outward views from the A82 are often foreshortened by intervening woodland, thus the geographical extents of similar views is considered to be small. Where open and elevated views are afforded within the LCT, the introduction of the Development will result in a medium scale change. However, given the small geographical extent of such views within the LCT, the Development is unlikely to significantly affect or alter the key characteristics of the LCT. The overall magnitude of change is considered to be low. Taking account of the high sensitivity and the low magnitude of change, the Development will result in a minor (adverse) and not significant landscape effect.
	Potential for Future Cumulative Effects (Scenario 1): There are no operational, under construction or consented wind farms located within this LCT, however views of wind farms in adjacent LCTs will be afforded from localised extents of the LCT. The consented Aberarder and Dell Wind Farms will be seen in successive long-distance views from the LCT beyond intervening landform. Whilst consented wind turbines will occasionally interrupt the skyline in views across the Great Glen, these developments will be seen in combination with operational wind farms and will appear as separate and distinct to the Development. The introduction of the Development will result in a small scale change to this cumulative assessment scenario. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.
	Potential for Future Cumulative Effects (Scenario 2): There are no operational, under construction, consented or proposed wind farms located within this LCT. The wind turbine blade tips of Cloiche Wind Farm (at application) will be barely perceptible above intervening landform in long-distance views from the LCT. The introduction of the Development will result in a small scale change to this cumulative assessment scenario. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.

6.9.4 Operational Visual Effects

The assessment of visual effects from the 19 viewpoints selected to represent views of the Development are set out below in Tables 6.16-6.34 (as listed in Table 6.5 above and shown on Figure 6.3a). This assessment assumes that all effects are long-term, during the proposed 35- year operational lifespan of the Development, and reversible, unless stated otherwise.

Accompanying visualisations for each assessment viewpoint are contained in Volume 2c: NatureScot Visualisations and Volume 2d: The Highland Council (THC) Visualisations of the EIA Report prepared in accordance with the methodology set out in Appendix A6.2.

Table 6.16: Viewpoint 1 - Gorthleck

Viewpoint 1: Gorthleck		Grid Reference	252920, 819575
LCT	LCT 227 – Farmed Strath - Inverness	Designated landscape or WLA	None
Direction of view	South-east	Distance to nearest turbine	6.5 km
Theoretical Visibility⁷⁸	Hubs: 1 Blades: 4	Figure Number	6.21
Viewpoint location and existing view	This viewpoint is located on the B862 near the named property of South Murnich. The viewpoint is representative of views experienced by road users and similar views experienced from nearby residential properties and the public hall at Lyne of Gorthleck, and the section of the B862 which passes the Stratherrick War Memorial to the north of the viewpoint. Views looking north, west and south-west are filtered by roadside vegetation. Open views beyond the field boundary gate are afforded looking east to south-east across Loch Mhor. The foreground of the view looking south-east comprises pastoral fields and rough grassland, backclothed by woodland lining the western shore of Loch Mhor. The loch is seen in filtered views beyond intervening vegetation. Longer-distance views comprise the rising rolling uplands and the landform of Beinn Bhuraich, Beinn Mheadhoin, Carn Choire Riabhaich and Carn Liath, which form the skyline of views in this direction. The Site is screened by intervening landform, including Beinn Bhuraich, Beinn Mheadhoin and Carn Choire Riabhaich, in views south-east. The Operational Corriegarth Wind Farm is screened by intervening landform in views south-east, with the movement of the wind turbine blade tip of one turbine barely perceptible beyond intervening landform. There are no views of existing wind farm development from this location.		
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of lower susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point or promoted view. The value of the view is considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational Corriegarth Wind Farm⁷⁹	Slight magnitude of change; Moderate/Minor (not significant) effect		

⁷⁸ Theoretical visibility of turbine hubs and blades informed by ZTV and wireline images.

⁷⁹ As identified within the LVA (July 2007) for the operational development and subsequent Section 36 Application: Supporting Environmental Report (June 2013)

Viewpoint 1: Gorthleck		Grid Reference	252920, 819575
Assessment of Visual Effects	The hub of one wind turbine will be seen just above the skyline with blade tips seen against the skyline, and the partial blades of a further three wind turbines will be visible beyond intervening landform in views south-east. Given screening of the Development and the Operational Corriegarth Wind Farm by intervening landform, wind turbines will occupy a relatively small proportion of the available view, however the Development will slightly increase the perceptibility of wind turbines in views looking south-east. The scale of wind turbines does not overwhelm that of the adjacent landform. Similar views, from which the Development will be perceived to introduce wind turbines into the view, will be experienced from relatively localised extents within Stratherrick. The geographical extent of similar views is considered to be small. The introduction of the Development will result in a medium scale change to the view. The overall magnitude of change is judged to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.		
Potential for Future Cumulative Effects (Scenario 1 and 2)	No other consented or proposed wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for either cumulative assessment scenario.		

Table 6.17: Viewpoint 2 - Boleskine Parish Church

Viewpoint 2: Boleskine Parish Church		Grid Reference	250719, 818235
LCT	LCT 227 – Farmed Strath - Inverness	Designated landscape or WLA	None
Direction of view	South-east	Distance to nearest turbine	7.0 km
Theoretical Visibility	Hubs: 3 Blades: 8	Figure Number	6.22
Viewpoint location and existing view	The viewpoint is located at the car park of Boleskine Parish Church, near the named farmstead of Bailebeag adjacent to the B862. This viewpoint is representative of views experienced by visitors to the church and similar views experienced by nearby residential receptors. The foreground of views looking south-east comprises pastoral fields enclosed by post and wire fencing, with mixed woodland and conifer forestry at Bunkegiovie seen beyond. Residential properties at Corriegarth Lodge and Cullintyre are seen in middle distance views, backclothed by rising landform and occasional pockets of woodland. The existing access track to Corriegarth Wind Farm is seen ascending landform in the middle distance of views. The landform of Carn na Glaice Moire and Carn Choire Riabhaich form prominent features in the middle ground of the view. Rolling plateau moorland forms the skyline of views beyond. Wind turbine blade tips and hubs of the Operational Corriegarth Wind Farm are seen against the skyline beyond intervening landform in views south-east. The Site is screened by the containing ridgeline formed by Carn Ruighe na Gaoithe, Carn na Saobhaidhe and Carn Fluich-bhaid in views south-east. Views west are partially screened and filtered by intervening vegetation, however the summit of Meall Fuar-mhonaidh is seen in longer-distance views to the north-west. Wind turbines of the operational Dunmaglass Wind Farm are seen in longer-distance views to the north-east, partially screened by intervening landform.		
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view.		

Viewpoint 2: Boleskine Parish Church		Grid Reference	250719, 818235
	The viewpoint is not located within a designated landscape or a recognised stopping point or promoted view. The value of the view is considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational Corriegarth Wind Farm	Substantial magnitude of change; Major/Moderate (significant) effect		
Assessment of Visual Effects	The hubs and blade tips of three wind turbines and the blade tips of a further five wind turbines will be seen against the skyline in views south-east. The Development will be seen in combination with the Operational Corriegarth Wind Farm and will slightly increase the horizontal extent of wind farm development further south. Wind turbines forming the Development improve the composition of the Operational Corriegarth Wind Farm by filling in some of the existing gaps and uneven spacing between turbines. Wind turbines in the north of the cluster will be screened by the intervening landform of Carn na Glaice Moire. Whilst the scale of wind turbines will be slightly larger than that of the Operational Corriegarth Wind Farm, wind turbines will not form a new focal feature in the view given the existing presence of wind farm development. Operational Dunmaglass wind farm is seen in views further north-east. Given the existing presence of the Operational Corriegarth Wind Farm in the view, the introduction of the Development will result in a small scale change to the view. Similar views will be afforded from relatively localised geographical extents within Stratherrick. The overall magnitude of change is judged to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.		
Potential for Future Cumulative Effects (Scenario 1)	The consented Millennium South Wind Farm will be seen as a relatively distant feature in successive views south-west. Wind turbines will appear as part of the operational Millennium Wind Farm. Given the intervening distance between the Millennium South Wind Farm and the Development and the cohesion of both schemes with the existing pattern of wind farm development, the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.		
Potential for Future Cumulative Effects (Scenario 2)	No other proposed wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.		

Table 6.18: Viewpoint 3 - B862 West of Corriegarth Lodge

Viewpoint 3: B862 West of Corriegarth Lodge		Grid Reference	249664, 817270
LCT	LCT 227 – Farmed Strath - Inverness	Designated landscape or WLA	None
Direction of view	South-east	Distance to nearest turbine	7.2 km
Theoretical Visibility	Hubs: 11 Blades: 16	Figure Number	6.23
Viewpoint location and existing view	This viewpoint is located on the B862 to the north of the junction with the B852, west of Corriegarth Lodge. This viewpoint is representative of views experienced by road users on the B862.		

Viewpoint 3: B862 West of Corriegarth Lodge	Grid Reference	249664, 817270
	The foreground of views looking south-east comprises rough grazing bound by post and wire fencing. Wood pole distribution line is seen crossing rough grazing in the middle distance of the view, backclothed by mixed woodland along Allt an Loin. Residential properties at Corriegarth Lodge are seen partially screened by woodland. Views are channelled along the River E valley looking towards the site of the Development, where the existing access track to the Operational Corriegarth Wind Farm is seen passing on valley sides. Longer-distance views comprise rolling uplands between Beinn Sguarrach and Beinn Dubhcharaidh, which form the skyline of views. The Site is screened by the containing ridgeline formed by Carn Ruighe na Gaoithe, Carn na Saobhaidhe and Carn Fluich-bhaid in views south-east. Views west and north-west are screened by intervening vegetation. Wind turbine hubs and blade tips of the Operational Corriegarth Wind Farm are seen skylined in views south-east. The existing substation is seen on the slopes of Carn na Saobhaidhe in views to the south-east, backclothed by landform and the operational turbines beyond. Wind turbine blade tips of operational Dunmaglass Wind Farm are barely perceptible beyond intervening landform in views north-east.	
Sensitivity	Road users are considered to be of lower susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point or promoted view. The value of the view is considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be medium.	
Visual Effect assessed for Operational Corriegarth Wind Farm	Substantial magnitude of change; Major/Moderate (significant) effect	
Assessment of Visual Effects	The hubs and blade tips of 11 wind turbines and the blade tips of a further five wind turbines will be seen against the skyline in long-distance views south-east. The Development will be seen in combination with the Operational Corriegarth Wind Farm, slightly increasing the horizontal extent of wind farm development. The scale of proposed wind turbines will be perceptibly larger than that of operational wind turbines, most notably for wind turbines that will extend to the north of the cluster (T9 to T13). Given the slight dip in the 'bowl'-like topography along the eastern site boundary, relatively direct views into the Site are afforded from this location. However, views into the Site from elsewhere within Stratherrick are often screened by intervening landform or vegetation. The geographical extent of similar views is considered to be small. Taking into consideration the existing presence of the Operational Corriegarth Wind Farm, on balance with the perceptibly larger proposed turbine size and slight increase in horizontal extent, the Development will result in a medium scale change to the view. The overall magnitude of visual change is considered to be medium and taking account of the medium sensitivity will result in a moderate (adverse) and significant visual effect.	
Potential for Future Cumulative Effects (Scenario 1 and 2)	No other consented or proposed wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for either cumulative assessment scenario.	

Table 6.19: Viewpoint 4 - South Loch Ness Trail, North of Whitebridge

Viewpoint 4: South Loch Ness Trail, north of Whitebridge		Grid Reference	248861, 816336
LCT	LCT 227 – Farmed Strath - Inverness	Designated landscape or WLA	Loch Ness and Duntelchaig SLA
Direction of view	East	Distance to nearest turbine	7.5 km
Theoretical Visibility	Hubs: 5 Blades: 9	Figure Number	6.24
Viewpoint location and existing view	The viewpoint is located on the unclassified road that runs north from the B862 towards Dell Farm. The South Loch Ness Trail follows the alignment of the road from the junction with the B862 towards Dell Farm, where the road turns into track leading through forestry towards Foyers. The viewpoint is representative of views experienced by nearby residential receptors and recreational receptors on the promoted trail. The foreground of the view looking east comprises pastoral fields bound by post and wire fencing. The woodland-lined River Fechlin is seen bisecting the middle distance of view, backclothed by further pastoral fields and coniferous forestry to the east of the B862. A wood pole distribution line and telecommunications tower are seen in the middle distance of the view, backclothed by coniferous forestry. The rocky summit of Beinn Sgurrach is seen in longer-distance views, backclothed by Leac nan Cisteachan and Carn Gairbhthinn. This landform and the surrounding uplands form the skyline of views east. The residential property of Dell Lodge is seen in filtered close-distance views west between intervening woodland. Longer-distance views west are foreshortened by woodland and intervening landform. The Site is screened by the intervening landform in views east. Wind turbine blade tips of the Operational Corriegarth Wind Farm are barely perceptible above the skyline in views east.		
Sensitivity	Residential and recreational receptors are considered to be of high susceptibility to changes in the view. The viewpoint is not located at a recognised stopping point or promoted view. This viewpoint is located within the Loch Ness and Duntelchaig SLA; however, the view does not include any notable features or strongly display special qualities of the SLA. The view is representative of open views experienced from a relatively limited section of the South Loch Ness Trail. The value of the view is considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational Corriegarth Wind Farm	Visual effects from this viewpoint not considered in original LVIA for Corriegarth Wind Farm.		
Assessment of Visual Effects	The hubs and blade tips of five wind turbines and the blade tips of a further four wind turbines will be apparent on the skyline of long-distance views east from this location. The majority of the Development will be partially screened with blade tips barely perceptible above intervening landform, however wind turbines in the north of the Site (T9 - T13) appear prominently on the skyline. The movement of wind turbine blade tips of Operational Corriegarth Wind Farm are barely perceptible beyond intervening landform. The Development will increase the horizontal extent and prominence of wind turbines in views east. Similar views will be afforded from relatively localised extents; outward views from Whitebridge and the South Loch Ness Trail are often screened		

Viewpoint 4: South Loch Ness Trail, north of Whitebridge	Grid Reference	248861, 816336
	by intervening landform. The geographical extent of similar views is considered to be small. Given the turbine blade tips of Operational Corriegarth Wind Farm are barely perceptible in the view, the introduction of the Development will result in a medium scale change. The overall magnitude of visual change is considered to be medium and taking account of the high sensitivity will result in a moderate (adverse) and significant visual effect.	
Potential for Future Cumulative Effects (Scenario 1)	No consented wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.	
Potential for Future Cumulative Effects (Scenario 2)	Long-distance successive views south towards the Cloiche Wind Farm (at application) will be screened by intervening vegetation from this location. No other proposed farms will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.	

Table 6.20: Viewpoint 5 - Errogie

Viewpoint 5: Errogie		Grid Reference	255535, 822146
LCT	LCT 227 – Farmed Strath - Inverness	Designated landscape or WLA	None
Direction of view	South	Distance to nearest turbine	7.8 km
Theoretical Visibility	Hubs: 3 Blades: 9	Figure Number	6.25
Viewpoint location and existing view	The viewpoint is located on the B862 on the north-western shore of Loch Mhor near the small hamlet of Errogie. The viewpoint is representative of views experienced by road users travelling on the B862 and nearby residential receptors within the settlement, and visitors to the Stratherrick War Memorial to the south of the viewpoint. The foreground comprises rough grazing and descending landform, bordered by mixed woodland along the shore of Loch Mhor. The loch is seen in glimpsed views between and beyond intervening woodland. Pastoral fields bound by low stone wall are seen on the opposite side of the strath, with occasional pockets of woodland. Steep slopes rise to Maol Chnoc, Meall Donn and Creag a Chliabhain, and further rolling uplands seen in views further south-east, which form the skyline of views. Views of the Site are screened by the ridgeline formed by Beinn Bhuraich, Coire Meurach and Beinn Mheadhoin in views south. Views west are foreshortened by intervening landform, vegetation and residential development. Wind turbine blade tips of Operational Corriegarth Wind Farm are seen against the skyline in views south beyond intervening landform.		
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of lower susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point or promoted view. The value of the view is considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		

Viewpoint 5: Errogie	Grid Reference	255535, 822146
Visual Effect assessed for Operational Corriegarth Wind Farm	Substantial magnitude of change; Major (significant) effect for residential receptors, Major/Moderate (significant) effect for local walkers and road users	
Assessment of Visual Effects	The hubs and blade tips of three wind turbines and the blade tips of a further six wind turbines will be seen against the skyline in long-distance views south. The Development will be partially screened by intervening landform, with wind turbines slightly increasing the horizontal extent of the Operational Corriegarth Wind Farm. Wind turbines forming the Development are perceptibly larger in scale than operational wind turbines. Outward views east from the B862 in Strath Errick are often screened by intervening vegetation along the shores of Loch Mhor. The geographical extent of similar views is considered to be small. Taking into consideration the existing presence of wind turbines on balance with the perceptibly larger scale of proposed wind turbines, the Development will result in a medium scale change to the view. The overall magnitude of visual change is considered to be medium and taking account of the high sensitivity will result in a moderate (adverse) and significant visual effect.	
Potential for Future Cumulative Effects (Scenario 1 and 2)	No other consented or proposed wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for either cumulative assessment scenario.	

Table 6.21: Viewpoint 6 - Beinn Bhreac Mhor

Viewpoint 6: Beinn Bhreac Mhor		Grid Reference	267785, 819786
LCT	LCT 221 – Rolling Uplands - Inverness	Designated landscape or WLA	None
Direction of view	South-west	Distance to nearest turbine	10.4 km
Theoretical Visibility	Hubs: 5 Blades: 8	Figure Number	6.26
Viewpoint location and existing view	This viewpoint is located on the hill summit of Beinn Bhreac Mhor (807m AOD) in the Monadhliath Mountains to the north-east of the Site. The viewpoint is representative of views experienced by recreational receptors (hill walkers). The Site is screened by intervening landform in longer-distance views looking south-west. Wind turbine blade tips of Operational Corriegarth Wind Farm are barely perceptible in views south-west, seen just above the skyline beyond intervening landform. Wind turbines of the operational Dunmaglass Wind Farm are prominent in views west, south-west, with wind turbine hubs and blade tips seen against the skyline. Beinneun Wind Farm, its extension and Millennium Wind Farm are discernible in longer distance views beyond Dunmaglass but appear as a separate development due to the intervening distance between the schemes. The two turbines forming operational Auchmore and Auchmore Extension Wind Farms are barely perceptible in long-distance views north-west. Operational Stronelairg Wind Farm is barely perceptible in longer-distance views south-west with turbines seen backclothed by landform.		

Viewpoint 6: Beinn Bhreac Mhor	Grid Reference	267785, 819786
	In successive views north-east, under construction Kyllachy Wind Farm, operational Farr Wind Farm and Moy Wind Farm are seen in longer-distance views, backclothed by landform.	
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point or promoted view, however views are afforded across WLA 20: Monadhliath. The value of the view is considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.	
Visual Effect assessed for Operational Corriegarth Wind Farm	Slight magnitude of change; Moderate (not significant) effect	
Assessment of Visual Effects	The hubs and blade tips of five wind turbines and the blade tips of a further three wind turbines will appear as a relatively distant feature against the skyline in long-distance views south-west. Wind turbines are partially screened by intervening landform, which screens most of the Operational Corriegarth Wind Farm. The Development will be seen in combined and successive views with a number of operational wind farms. Dunmaglass Wind Farm is a prominent feature in the middle distance of views looking west, south-west with turbine hubs and blade tips seen against the skyline. Millennium Wind Farm, Beinneun and Extension are barely perceptible in longer-distance views south-west beyond Dunmaglass. The Development will be seen at a further distance than Dunmaglass extending in views further south-west, with Stronelairst seen in longer-distance views south. Whilst the Development slightly increases the prominence of the Operational Corriegarth Wind Farm, proposed wind turbines will be seen within a view with an existing presence of wind farm development. Given the existing presence of wind farm development, the introduction of the Development will result in a small scale change in the view. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.	
Potential for Future Cumulative Effects (Scenario 1)	The consented Dell Wind Farm will be barely perceptible in long-distance combined views south-west beyond the Development. The consented Millennium South Wind Farm will be seen in successive long-distance views south-west and will appear as part of the cluster of the operational Millennium, Beinneun and Beinneun Extension Wind Farms, beyond Dunmaglass Wind Farm. The consented Aberarder Wind Farm will be prominent in the middle distance of successive views west north-west and will increase the horizontal extent of wind farm development further north from Dunmaglass Wind Farm. In combination with Dunmaglass Wind Farm, Aberarder Wind Farm will occupy a wide angle of the view with the hubs and blade tips of wind turbines seen partially against the skyline. Whilst the presence of wind turbines will be more prominent and extend across a wider angle of the view under this scenario, the Development will be seen as a relatively distant feature in successive views compared to the more prominent Aberarder and Dunmaglass Wind Farms. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	

Viewpoint 6: Beinn Bhreac Mhor	Grid Reference	267785, 819786
Potential for Future Cumulative Effects (Scenario 2)	The Cloiche (at application) and Glenshero (at PLI) Wind Farms will appear as relatively distant features in combined and successive views south-west. The horizontal extent of wind farm development will be slightly increased beyond that of the operational Stronelairg and consented Dell Wind Farms. The Development will appear as a separate cluster of wind turbines closer to the viewpoint, in combination with the Operational Corriegarth Wind Farm. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	

Table 6.22: Viewpoint 7 - General Wade's Military Road

Viewpoint 7: General Wade's Military Road		Grid Reference	244961, 810545
LCT	LCT 221 – Rolling Uplands - Inverness	Designated landscape or WLA	Loch Ness and Duntelchaig SLA
Direction of view	North-east	Distance to nearest turbine	10.9 km
Theoretical Visibility	Hubs: 8 Blades: 13	Figure Number	6.27
Viewpoint location and existing view	This viewpoint is located on General Wade's Military Road near the promoted Suidhe viewpoint and stopping area alongside the B862. A short path extending approximately 600 m to the west, south-west of this location leads to the craggy summit of Carn an t-Suidhe and is a popular walk with visitors to this stopping area. The viewpoint represents views experienced by road users, tourists, and recreational receptors on NCN Route 78, within the Loch Ness and Duntelchaig SLA. The foreground of the view looking north-east comprises the road, backclothed by rough grassland and descending landform. Rolling landform with occasional rocky outcrops, blocks of forestry and riparian woodland form the middle ground of the view. The rocky moorland summits of Meall an Tarsaid, Beinn Mheadoin and Meall nan Aighean Mor are seen beyond and with more distant summits form the skyline of views north-east. Views north are channelled along the B862 corridor looking towards Stratherrick and Loch Mhor. Wind turbine hubs and blade tips of the Operational Corriegarth Wind Farm are seen in a dip between landform to the south of Beinn Mheadoin in longer-distance views north-east. Wind turbine hubs and blade tips of the operational Dunmaglass Wind Farm are seen skylined in longer-distance views north-east. In successive longer-distance views north-west, wind turbine blade tips and hubs of Bhlaraidd Wind Farm are seen against the skyline.		
Sensitivity	Road users are considered to be of lower susceptibility to changes in the view. Tourists and recreational receptors are considered to be of higher susceptibility to changes in the view. This viewpoint is located at a popular and promoted viewpoint within the Loch Ness and Duntelchaig SLA. The value of the view is therefore considered to be high. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational Corriegarth Wind Farm	Moderate magnitude of change; Major/Moderate (significant) effect for cyclists on NCN 78, Moderate (not significant) effect for local walkers and road users		

Viewpoint 7: General Wade's Military Road		Grid Reference	244961, 810545
Assessment of Visual Effects	The hubs and blade tips of eight wind turbines and the blade tips of a further five wind turbines will be seen in long-distance views north-east, partially screened by intervening landform. Whereas the Operational Corriegarth Wind Farm appears only to the east of Beinn Mheadhoin, the Development will extend on either side of the hill, increasing the horizontal extent of wind farm development towards Dunmaglass. Given the undulating nature of landform seen in views north-east, this increase in horizontal extent perceptibly decreases the gap between wind farm developments, with wind turbines appearing continuously in the angle of view from Dunmaglass to the Operational Corriegarth Wind Farm. The Development will be seen in combination with operational Dunmaglass Wind Farm, which is seen in longer-distance views further north-east. Operational Bhlaraidh Wind Farm is seen as a relatively distant feature against the skyline in successive views north-west looking across the Great Glen. Similar views are afforded from a relatively short elevated section of the B862, before the road descends into Stratherrick where intervening landform and vegetation foreshorten views. The geographical extent of similar views is considered to be small. The introduction of the Development will result in a medium scale change to the view. The overall magnitude of visual change is considered to be medium, and taking account of the high sensitivity will result in a moderate (adverse) and significant visual effect		
Potential for Future Cumulative Effects (Scenario 1)	The consented Aberarder Wind Farm will appear in combined long-distance views north-east, in combination with the operational Dunmaglass Wind Farm. The addition of Aberarder Wind Farm will be barely perceptible, with the blade tips of two wind turbines seen within the angle of the view occupied by Dunmaglass Wind Farm. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.		
Potential for Future Cumulative Effects (Scenario 2)	No other proposed wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.		

Table 6.23: Viewpoint 8 - Great Glen Way, East of Creag Dhearg

Viewpoint 8: Great Glen Way, East of Creag Dhearg		Grid Reference	246953, 821103
LCT	LCT 225 – Broad Steep-Sided Glen	Designated landscape or WLA	Loch Ness and Duntelchaig SLA
Direction of view	South-east	Distance to nearest turbine	11.7 km
Theoretical Visibility	Hubs: 16 Blades: 16	Figure Number	6.28
Viewpoint location and existing view	This viewpoint is located on the Great Glen Way as the route passes to the north of Invermoriston, east of Creag Dhearg. The viewpoint is representative of views experienced by recreational receptors on the Great Glen Way. The foreground of the views to the south, south-east comprises forested landform descending steeply to Loch Ness. The wooded eastern shore of the loch and the forested landform of Carn Dearg are seen beyond. Residential properties and conifer forestry are seen in longer-distance views located at the southern base of Carn Choire Riabhaich and Carn na Glaice Moire. The rolling uplands of Beinn Bhuraich, Carn a Choire Sheillich and Carn na Lاراiche Maoile form the skyline beyond. From this slightly elevated location, the Site forms part of the skyline in views looking south-east to the opposite side of the Great Glen.		

Viewpoint 8: Great Glen Way, East of Creag Dhearg	Grid Reference	246953, 821103
	Wind turbine hubs and blade tips of Operational Corriegarth Wind Farm are seen partially backclothed and partially against the skyline in views south-east. Wind turbine hubs and blade tips of the southern extents of the operational Dunmaglass Wind Farm are seen in long-distance views east beyond intervening landform, however much of the wind turbine cluster is screened by intervening landform.	
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. This viewpoint is located within the Loch Ness and Duntelchaig SLA and represents typical views from the elevated and open, but relatively limited, sections of the Great Glen Way. The value of the view is therefore considered to be high. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.	
Visual Effect assessed for Operational Corriegarth Wind Farm	Major/Moderate (significant) effect ⁸⁰	
Assessment of Visual Effects	The hubs and blade tips of all 16 wind turbines of the Development will be seen in long-distance views south-east looking across the Great Glen. Wind turbines will slightly increase the horizontal extent and prominence of Operational Corriegarth Wind Farm; however, spacing between clusters of operational wind farm development will be maintained. Proposed wind turbines will improve the composition of the operational layout by filling in some of the existing gaps and uneven spacing between wind turbines. The Development will appear in successive views with a number of operational wind farms, including Farr and Kyllachy (under construction) Wind Farms in long-distance views to the north-east and Dunmaglass Wind Farm in long-distance views east. Wind turbine blade tips of Stronelairg Wind Farm are barely perceptible beyond intervening landform in long-distance views south-east. Whilst the horizontal extent of wind farm development will be slightly increased, gaps between clusters of wind farm development will be maintained and coalescence will be avoided. Within the Study Area, the Great Glen Way passes through forestry and woodland, which screens outward views from the route. The geographical extent of similar views is therefore considered to be small. The scale of change resulting from the introduction of the Development is considered to be small. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.	
Potential for Future Cumulative Effects (Scenario 1)	The consented Aberarder and Dell Wind Farm will be seen in successive long-distance views north-east and south-east, respectively. Both wind farms will appear as relatively distant features. Aberarder Wind Farm will increase the horizontal spread and prominence of the operational Dunmaglass Wind Farm, as wind turbine hubs and blade tips will be visible against the skyline in views further north-east. Dell Wind Farm will be partially screened by intervening landform however, wind turbine blade tips will be slightly more visible than those of the operational Stronelairg Wind Farm.	

⁸⁰ The LVA for the Operational Corriegarth Wind Farm does not assess visual effects from this viewpoint, however effects for the Great Glen Way are noted as 'major/moderate' for '7km of this route between Creag Dhearg and the densely forested area immediately south of Drumnadrochit'. This viewpoint was added for the assessment within the SER, which notes that the Proposed Extension will 'result in limited additional effects.'

Viewpoint 8: Great Glen Way, East of Creag Dhearg	Grid Reference	246953, 821103
	The introduction of the Development will result in a slight increase in horizontal extent of the Operational Corriegarth Wind Farm. Whilst this will slightly decrease the gap between clusters of wind turbines, the pattern of existing development will be maintained. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	
Potential for Future Cumulative Effects (Scenario 2)	The blade tips of wind turbines forming Cloiche Wind Farm (at application) will be barely visible just above intervening landform in long-distance successive views south-east. Where visible, blade tips will slightly increase the horizontal extent further south of the operational Stronelairg and Dell Wind Farms. The addition of Cloiche Wind Farm will result in a relatively small scale of change to views. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	

Table 6.24: Viewpoint 9 - Carn Sgulain

Viewpoint 9: Carn Sgulain		Grid Reference	268305, 805814
LCT	LCT 125 – Rolling Uplands – Cairngorms	Designated landscape or WLA	Cairngorms NP WLA 20 Monadhliath
Direction of view	North-west	Distance to nearest turbine	11.6 km
Theoretical Visibility	Hubs: 8 Blades: 12	Figure Number	6.29
Viewpoint location and existing view	This viewpoint is located on the Munro summit of Carn Sgulain (920 m AOD) within the Monadhliath WLA and on the boundary of the CNP. The viewpoint is representative of views experienced by recreational receptors in the WLA. From this elevated location, open and panoramic views are afforded. Views are focused on the adjacent rolling uplands and distant summits. The Site is partially screened by intervening landform in longer-distance views north-west. Wind turbine hubs and blade tips of the Operational Corriegarth Wind Farm are seen backclothed by landform in longer-distance views north-west. Wind turbines of the operational Bhlaraidh Wind Farm are seen as a relatively distant feature in views north-west. Wind turbine hubs and blade tips of the operational Dunmaglass Wind Farm are seen against the skyline in longer-distance views north, north-east. Wind turbine blade tips of the Auchmore and Auchmore Extension Wind Farms are barely perceptible in longer-distance views north, north-east, appearing as a slight extension to Dunmaglass Wind Farm. Wind turbines of operational Kyllachy, Farr and Moy Wind Farms are seen as distant feature in views north-east. Wind turbines of operational Beinneun and Millennium Wind Farms are seen as distant features in long distance views west. Operational Tom Nan Clach is barely visible in long-distance views north-east.		
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. This viewpoint is located within WLA 20 Monadhliath and on the boundary of the CNP. The value of the view is therefore considered to be high. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for	Slight magnitude of change; Moderate (not significant) effect		

Viewpoint 9: Carn Sgulain		Grid Reference	268305, 805814
Operational Corriegarth Wind Farm			
Assessment of Visual Effects	The hubs and blade tips of 8 wind turbines and the blade tips of a further two wind turbines will be seen in long-distance views north-west, backclothed by distant landform. The wind turbines will appear as a relatively distant feature, and slightly increase the horizontal extent and prominence of the Operational Corriegarth Wind Farm. The Development will appear in successive long-distance views with a number of operational wind farms. Operational Bhlaraidh Wind Farm is partially screened by intervening landform in long-distance views north-west, with wind turbines appearing more distant than those of Operational Corriegarth Wind Farm and the Development. Operational Dunmaglass Wind Farm extends across the horizon in long-distance views north, with some wind turbine hubs and blade tips seen against the horizon. Spacing between other operational clusters of wind farm development will be maintained. Similar views will be afforded from hill summits within the Monadhliath WLA and along the Cairngorms NP boundary. The geographical extent of similar views is considered to be medium. The scale of change resulting from the introduction of the Development is considered to be small. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.		
Potential for Future Cumulative Effects (Scenario 1)	The consented Aberarder Wind Farm will be seen in successive long-distance views north alongside the operational Dunmaglass Wind Farm. The horizontal extent of wind turbines will be slightly increased, however, a gap between clusters of wind farm development will be maintained. The consented Dell and Millennium South Wind Farms will be seen in successive long-distance views west. Wind turbines will be seen as a distant feature, in combination with the operational Beinneun and Millennium Wind Farms. Whilst a number of wind farms will be visible in the view under this scenario, the Development will largely be seen as part of the existing pattern of wind farm development. As such the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.		
Potential for Future Cumulative Effects (Scenario 2)	The Cloiche Wind Farm (at application) will be seen in successive long-distance views south-west. Other wind farm development within this cluster, including operational Stronelairg and consented Dell Wind Farms, will be screened by intervening landform. However, given the intervening distance and partial screening of wind turbines forming Cloiche Wind Farm, there will be a relatively small scale change to the view. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.		

Table 6.25: Viewpoint 10 - A82 Achnahannet

Viewpoint 10: A82 Achnahannet		Grid Reference	251277, 826100
LCT	LCT 225 – Broad Steep-Sided Glen	Designated landscape or WLA	Loch Ness and Duntelchaig SLA
Direction of view	South, south-east	Distance to nearest turbine	13.0 km
Theoretical Visibility	Hubs: 5 Blades: 9	Figure Number	6.30

Viewpoint 10: A82 Achnahannet	Grid Reference	251277, 826100
Viewpoint location and existing view	This viewpoint is situated on the A82, approximately 3.2 km south of Strone near the named property of Achnahannet. The viewpoint is representative of views experienced by road users travelling on the A82 through the Loch Ness and Duntelchaig SLA. Views from this section of the A82 are relatively open looking north-east to south-east across Loch Ness. The foreground of the view looking south-east comprises rough grazing bound by post and wire fencing. Pockets of gorse and riparian woodland are seen in the middle distance of the view, with open views across Loch Ness beyond. Farigaig Forest is seen in longer-distance views on the opposite side of the loch. The forested landform rising above the eastern shore of Loch Ness and more distant rolling upland landform forms the skyline of the view looking south-east. The Site is screened by intervening landform in views looking south-east. Hubs and blade tips of wind turbines in the centre of the Operational Corriegarth Wind Farm are seen against the skyline beyond intervening landform. Turbines in the north of the cluster are partially screened by intervening landform. Wind turbine hubs and blade tips of Dunmaglass Wind Farm are seen above the wooded skyline in a dip between landform in longer-distance views east south-east.	
Sensitivity	Road users are considered to be of lower susceptibility to changes in view. This viewpoint is located within the Loch Ness and Duntelchaig SLA and the value of the view is therefore considered to be high. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be medium.	
Visual Effect assessed for Operational Corriegarth Wind Farm	Moderate magnitude of change; Moderate (not significant) effect	
Assessment of Visual Effects	Wind turbines will occupy a small proportion of long-distance views south, south-east, with much of the Development screened by the intervening ridgeline formed by Beinn Bhuraich and Beinn Mheadhoin (555 m AOD). The hubs and blade tips of five wind turbines will be seen against the skyline in dips between intervening landform and will appear comparable in size to turbines forming the Operational Corriegarth Wind Farm. The blade tips of a further six turbines will be seen just above intervening landform. Wind turbines in the south-west of the cluster will be mostly screened by forested landform at Farigaig Forest. Visibility of wind turbine blade tips in the north of the cluster will slightly increase the horizontal extent of Development beyond that of the Operational Corriegarth Wind Farm. However, given the limited visibility of these wind turbines due to screening by intervening landform, the perceived increase in horizontal extent will be minimal. Operational Dunmaglass Wind Farm appears in successive views long-distance views south-east with wind turbine hubs and blade tips seen against the skyline, framed in a dip between intervening landform. Outward views from A82 are largely screened by intervening vegetation, and similar views will be afforded from relatively localised extents of the road. The geographical extent of similar views is therefore considered to be small. The scale of change resulting from the introduction of the Development is considered to be small. The overall magnitude of visual change is considered to be low and taking account of the medium sensitivity will result in a minor (adverse) and not significant visual effect.	

Viewpoint 10: A82 Achnahannet	Grid Reference	251277, 826100
Potential for Future Cumulative Effects (Scenario 1)	Long-distance successive views of wind turbine blade tips of the consented Dell Wind Farm will be screened by intervening vegetation in views from this location. No other consented wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.	
Potential for Future Cumulative Effects (Scenario 2)	Long-distance successive views of wind turbine blade tips of the proposed Cloiche Wind Farm (at application) will be screened by intervening vegetation in views from this location. No other proposed wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.	

Table 6.26: Viewpoint 11 - Meall Fuar-mhonaigh

Viewpoint 11: Meall Fuar-mhonaidh		Grid Reference	245892, 822187
LCT	LCT 222 – Rocky Moorland Plateau - Inverness	Designated landscape or WLA	Loch Ness and Duntelchaig SLA
Direction of view	South-east	Distance to nearest turbine	13.2 km
Theoretical Visibility	Hubs: 16 Blades: 16	Figure Number	6.31
Viewpoint location and existing view	This viewpoint is located on the eastern cairn at the summit of Meall Fuar-mhonaidh (699 m AOD), a popular hill summit within the Loch Ness and Duntelchaig SLA. The viewpoint represents views experienced by recreational receptors. From this location, the foreground of the view east descends to Loch Ness in the middle distance of the view. The wooded shore and forested elevated landform form the eastern border to the loch, with views afforded of Stratherrick beyond. Loch Mhor is seen in the base of the strath in longer-distance views at the western base of Carn Choire Riabhaich and Carn na Glaice Moire. More distant rolling landform of the Monadhliath Mountains forms the background of views south-east. Given the elevated nature of this viewpoint, longer-distance views into the Site are afforded from this location. Wind turbine hubs and blade tips of the Operational Corriegarth Wind Farm are seen in longer-distance views south-east from this location. Wind turbines of the operational Dunmaglass Wind Farm appear as a more distant feature in views further north, north-east. Wind turbines of the operational Stronelaig Wind Farm are seen in between dips in landform in longer-distance views east. Millennium and Beinneun Wind Farms are seen in views to the south, south-west across Glen Moriston. Wind turbine hubs and blade tips of Bhlaraidh Wind Farm are seen backclothed in views south-west beyond the western summit cairn.		
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. This viewpoint is located on a popular summit within the Loch Ness and Duntelchaig SLA. The value of the view is therefore considered to be high. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational Corriegarth Wind Farm	Slight magnitude of change; Moderate (not significant) effect		

Viewpoint 11: Meall Fuar-mhonaidh	Grid Reference	245892, 822187
Assessment of Visual Effects	The hubs and blade tips of all 16 wind turbines of the Development will be seen in long-distance views south-east, partially backclothed by landform. The hubs and blade tips of wind turbines located at higher elevation in the north-east of the cluster (T8, T9, T10) will appear against the skyline. Proposed wind turbines will slightly increase the horizontal extent of the Operational Corriegarth Wind Farm however, the Development will appear as a coherent extension within an angle of the view with an existing presence of wind farm development. Wind turbines will appear slightly larger than operational turbines, however the difference will be barely perceptible given the intervening distance. The Development will appear in successive views with a number of operational wind farms, including Farr, Tom Nan Clach and Kyllachy (under construction) Wind Farms in long-distance views to the north-east, Dunmaglass Wind Farm in long-distance views east and Stronelairg Wind Farm in long-distance views south-east. Operational Bhlaraidh Wind Farm is apparent in long-distance views south-west. Millennium and Beinneun Wind Farms are seen as a distant feature against the skyline in views further south-west. Whilst the horizontal extent of the Operational Corriegarth Wind Farm will be slightly increased, gaps between clusters of wind farm development will be maintained. The Development will be seen in an angle of the view with an existing presence of wind farm development; further encirclement of the view by wind farm development will be avoided. Similar views will be afforded from elevated east-facing slopes to the west of Loch Ness. Outward views from lower slopes of the Great Glen are generally screened by forestry and woodland. The geographical extent of similar views is considered to be medium. The scale of change resulting from the Development is considered to be small. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.	
Potential for Future Cumulative Effects (Scenario 1)	The consented Aberarder Wind Farm will be seen in long-distance successive views north-east in combination with the operational Dunmaglass Wind Farm. Aberarder Wind Farm will slightly increase the horizontal extent of development further north-east, with a number of wind turbine blade tips and hubs seen against the skyline. The consented Dell Wind Farm will be seen in long-distance successive views south-east in combination with the operational Stronelairg Wind Farm. Wind turbines will slightly increase the prominence of the Stronelairg Wind Farm due to the additional wind turbine hubs and blade tips that will be seen against the skyline, however the pattern of existing development will be maintained. The consented Millennium South Wind Farm will be seen in long-distance successive views south-west in combination with the operational Millennium and Beinneun Wind Farms. Wind turbines will form a relatively distant feature with some hubs and blade tips seen against the skyline. Whilst a number of wind farms will be visible in the view under this scenario, the Development will largely be seen as part of the existing pattern of wind farm development. As such the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	
Potential for Future Cumulative Effects (Scenario 2)	Cloiche Wind Farm (at application) will be seen in long-distance successive views south-east. Wind turbines will extend across a wide angle of the view, increasing horizontal extent on either side of the operational Stronelairg and consented Dell Wind Farms. Wind turbines will be largely backclothed by landform, with some blade tips seen against the skyline. Whilst the gap between operational wind farm development will be slightly decreased with the introduction of Cloiche Wind Farm and the	

Viewpoint 11: Meall Fuar-mhonaidh	Grid Reference	245892, 822187
	Development, an evident gap will remain between clusters of development. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	

Table 6.27: Viewpoint 12 - B862 North of Torness

Viewpoint 12: B862 North of Torness		Grid Reference	257595, 827908
LCT	LCT 224 – Farmed and Wooded Foothills	Designated landscape or WLA	Loch Ness and Duntelchaig SLA
Direction of view	South	Distance to nearest turbine	13.3 km
Theoretical Visibility	Hubs: 2 Blades: 9	Figure Number	6.32
Viewpoint location and existing view	This viewpoint is located on the U1004 minor road near the junction with the B862, to the north-west of Torness and south-west of Loch Ceo Glais. The viewpoint is representative of views experienced by road users travelling on the B862 within the Loch Ness and Duntelchaig SLA. The foreground of the view comprises rough grazing and rocky moorland with occasional pockets of woodland and blocks of conifer forestry. A wood pole distribution line is seen extending across the middle distance of successive views looking east to south. The forested landform of Creag Innis an Daimh Dhuibh is seen beyond, partially foreshortening longer-distance views south-east. More distant summits to the east and south form the skyline of views. Overhead electricity lines and pylons are seen extending across successive close-distance to long-distance views looking south-west to north-east. The Site is screened by intervening landform in views south. Wind turbine blade tips of four turbines of the Operational Corriegarth Wind Farm are seen against the skyline in views south. Intervening landform screens the majority of the operational wind turbines. Wind turbine hubs and blade tips of the southern and northern extents of Dunmaglass Wind Farm are seen against the skyline in middle-distance views south-east. Wind turbines in the centre of the cluster are screened by intervening landform.		
Sensitivity	Road users are considered to be of lower susceptibility to changes in view. This viewpoint is located within the Loch Ness and Duntelchaig SLA, however the view does not include any notable features or strongly display special qualities of the SLA. The value of the view is therefore considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be medium.		
Visual Effect assessed for Operational Corriegarth Wind Farm	Negligible magnitude of change; Moderate/Minor (not significant) effect for cyclists on NCN 78, Minor (not significant) effects for local walkers and road users		
Assessment of Visual Effects	The hubs and blade tips of two wind turbines and the blade tips of a further seven wind turbines will be seen in long-distance views south, partially screened by intervening landform. Whilst wind turbine hubs of two turbines in the west of the Site (T1, T16) will be seen backclothed by landform, blade tips will be seen just above the skyline. Wind turbines will appear as a coherent extension of comparable turbine size to the Operational Corriegarth Wind Farm.		

Viewpoint 12: B862 North of Torness		Grid Reference	257595, 827908
	The operational Dunmaglass Wind Farm appears in successive views to the south-east, with wind turbines apparent against the skyline. Whilst the horizontal extent of the Operational Corriegarth Wind Farm will be slightly increased, a perceptible gap will still exist between the Development and Dunmaglass to the north. Wind turbines will occupy a relatively small proportion of a wider view with an existing presence of wind farm development and overhead electricity infrastructure. Similar views will be afforded from relatively localised extents on the B862 near Loch Ceo Glais. The geographical extent of similar views is considered to be small. The scale of change resulting from the introduction of the Development is considered to be small. The overall magnitude of visual change is considered to be low and taking account of the medium sensitivity will result in a minor (adverse) and not significant visual effect.		
Potential for Future Cumulative Effects (Scenario 1)	Wind turbine blade tips of the consented Dell Wind Farm will be barely perceptible beyond intervening landform in successive views south. The consented Aberarder Wind Farm will be seen in long-distance successive views east south-east. The horizontal extent of the operational Dunmaglass Wind Farm will be increased further north-east, and wind turbine hubs and blade tips will be seen against the skyline. However, the gap between development will be maintained. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.		
Potential for Future Cumulative Effects (Scenario 2)	No other proposed wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.		

Table 6.28: Viewpoint 13 - Geal Charn

Viewpoint 13: Geal Charn		Grid Reference	256139, 798771
LCT	LCT 221 – Rolling Uplands - Inverness	Designated landscape or WLA	Cairngorms NP WLA 20 Monadhliath
Direction of view	North	Distance to nearest turbine	13.3 km
Theoretical Visibility	Hubs: 6 Blades: 13	Figure Number	6.33
Viewpoint location and existing view	The viewpoint is located on the summit of Geal Charn (926 m AOD), located within the Monadhliath WLA and on the boundary of the CNP. The viewpoint represents views experienced by recreational receptors (hill walkers). From this elevated location, open and panoramic views are afforded. Views are focused on the adjacent rolling uplands and distant summits. Wind turbines of the operational Stronelairg wind farm extend across the middle distance of the view and form a key focal feature, backclothed by landform, looking north to north-west. Wind turbines of Bhlaraidh Wind Farm are seen beyond Stronelairg Wind Farm in long-distance views north-west. Millennium Wind Farm, Beinneun Wind Farm and its extension are barely perceptible in long-distance views west, north-west. Wind turbines forming the Operational Corriegarth Wind Farm are barely perceptible in long-distance views north. Wind turbine hubs and blade tips of Dunmaglass Wind Farm appear as a distant feature against the skyline in long-distance views north-east. Blade tips of the two wind turbines forming Auchmore and Auchmore Extension Wind Farms are barely perceptible on the skyline in views north north-west.		

Viewpoint 13: Geal Charn		Grid Reference	256139, 798771
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. This viewpoint is located within WLA 20: Monadhliath and the value of the view is therefore considered to be high. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational Corriegarth Wind Farm	Slight magnitude of change; Moderate (not significant) effect		
Assessment of Visual Effects	The hubs and blades of six wind turbines and the blade tips of a further seven wind turbines will be seen against the skyline in long-distance views north. Wind turbines in the west of the Site will be mostly screened by intervening landform, with blade tips just visible above the skyline. Wind turbines located at higher elevation in the east of the Site (T8, T9, T10) will appear more prominently, and will slightly increase the horizontal extents of the Operational Corriegarth Wind Farm towards Dunmaglass Wind Farm. However, a gap between wind farm developments will be maintained. The Development will be seen in combined views north with operational Stronelairg Wind Farm, which appears closer to the viewpoint and forms a prominent feature in middle-distance views north and successive views north-west. Wind turbines of the Development will occupy a relatively small proportion of a view that is already influenced by wind farm development. Similar views will be afforded from hill summits within the Monadhliath WLA and along the Cairngorms NP boundary, however visibility from areas directly east of the CNP boundary is limited due to intervening landform of the Monadhliath Mountains. The geographical extent of similar views is considered to be medium. Given the existing presence of wind farm development and the relatively small proportion of the view that the proposed wind turbines will occupy, the introduction of the Development will result in a small scale change in the view. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.		
Potential for Future Cumulative Effects (Scenario 1)	The consented Dell Wind Farm will be seen in successive views north-west, in combination with the operational Stronelairg Wind Farm. Wind turbine hubs and blade tips will be backclothed by landform, with the operational Bhlairaidh Wind Farm seen beyond. The consented Millennium South Wind Farm will be barely perceptible in long-distance successive views west north-west in combination with operational Millennium, Beinneun and Beinneun Extension Wind Farms. The consented Aberarder Wind Farm will be seen in long-distance views north-east in combination with operational Dunmaglass Wind Farm. Wind turbine hubs and blade tips will be seen against the skyline within the angle of view occupied by operational wind turbines. Whilst a number of wind farms will be visible in the view under this scenario, the Development will largely be seen as part of the existing pattern of wind farm development. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.		
Potential for Future Cumulative Effects (Scenario 2)	Glenshero (at PLI) and Cloiche (at application) Wind Farms will be evident in combined and successive views with the Development, occupying a wide angle of views looking north-west to north. Wind turbines will extend		

Viewpoint 13: Geal Charn	Grid Reference	256139, 798771
	from the middle distance of the view to long-distance views, in combination with the consented Dell Wind Farm and operational Stronelaig and Bhlaraidh Wind Farms. The introduction of the Development to this cumulative scenario will result in a relatively small scale change, given the intervening distance and presence of existing and proposed wind farm development located closer to the viewpoint and occupying a much larger proportion of the view. Whilst a number of wind farms will be visible in the view under this scenario, the Development will largely be seen as part of the existing pattern of wind farm development. As such the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	

Table 6.29: Viewpoint 14 - Corrieyairack Hill

Viewpoint 14: Corrieyairack Hill		Grid Reference	242818, 799737
LCT	LCT 221 – Rolling Uplands - Inverness	Designated landscape or WLA	None
Direction of view	North-east	Distance to nearest turbine	18.2 km
Theoretical Visibility	Hubs: 10 Blades: 16	Figure Number	6.34
Viewpoint location and existing view	The viewpoint is located on Corrieyairack Hill (896 m AOD), a hill summit located to the south-west of the Site. The viewpoint is representative of views experienced by recreational receptors (hill walkers). The hill summit is often ascended as part of a circuit in combination with the neighbouring Corbett summit of Garbeinn (896 m AOD), located approximately 3.3 km to the east, south-east of the viewpoint. From this elevated location, open and panoramic views are afforded. Loch an Aonaich Odhair and the Glendoe Reservoir are seen in the middle distance of view north-east. Views are focused on more distant summits, including the hills of the Monadhliath to the north-east and east. Views across the Braerory, Glenshirra and Creag Meagaidh WLA (19) are afforded to the south, south-west, with the summit of Ben Nevis (1344 m AOD) visible in long distance views beyond. A number of operational wind farms are seen in views from this location. Stronelaig appears nearest the viewpoint and wind turbine hubs and blade tips are seen backclothed extending through the middle distance of views north-east. The Operational Corriegarth Wind Farm is seen in longer-distance views north-east in combination with Stronelaig Wind Farm. Wind turbine hubs and blade tips of Bhlaraidh Wind Farm are seen backclothed in long-distance views north-west. Millennium Wind Farm, Beinneun Wind Farm and its extension are seen in long-distance views west.		
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point or promoted view. The value of the view is considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational Corriegarth Wind Farm	Negligible magnitude of change; Moderate/Minor (not significant) effect		

Viewpoint 14: Corrieyairack Hill	Grid Reference	242818, 799737
Assessment of Visual Effects	The hubs and blades of 10 wind turbines and the blades of a further six wind turbines will be seen partially backclothed by landform in long-distance views north-east. Wind turbines of the Development will slightly increase the influence of wind farm development in long-distance views however, a large proportion of the existing view is influenced by the wind turbines of the operational Stronelaig Wind Farm. The Development will be seen in combination with the Operational Corriegarth Wind Farm and Dunmaglass, which appear in similar long-distance views. The Development will appear in combined and successive views with operational Stronelaig Wind Farm, which appears prominently in the middle distance of the view north-east to east, north-east. The geographical extent of similar views will be localised, limited to the hill summit and north-facing slopes of elevated landform to the north-east of the viewpoint. Given the presence of existing wind farm development and the small proportion of the view occupied by wind turbines of the Development, the introduction of the Development will result in a small scale change to the view. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.	
Potential for Future Cumulative Effects (Scenario 1)	The consented Dell Wind Farm will be seen in combined long-distance views with the Development, appearing backclothed by landform closer to the viewpoint than the Operational Corriegarth Wind Farm and the Development. Dell Wind Farm will increase the horizontal extent of Stronelaig Wind Farm appearing as a discrete extension to the west, north-west, however, wind turbines will appear in an angle of the view where the Operational Corriegarth and Dunmaglass Wind Farms are seen beyond. The consented Aberarder Wind Farm will be seen in combined long-distance views with the Development, appearing at a greater distance from the viewpoint with wind turbines appearing barely perceptible against the skyline. At this distance, the Aberarder Wind Farm, along with the operational Dunmaglass and Corriegarth Wind Farms and the Development will appear as one cluster of wind farms. Whilst a number of wind farms will be visible in the view under this scenario, the Development will largely be seen as part of the existing pattern of wind farm development. As such the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	
Potential for Future Cumulative Effects (Scenario 2)	Glenshero Wind Farm (at PLI) will be seen in long-distance successive views east north-east. Wind turbines will increase the horizontal extent of operational Stronelaig Wind Farm further east. Wind turbines forming Glenshero will be partially screened by intervening landform and backclothed by landform. Whilst the horizontal extent of wind turbines will be slightly increased under this scenario, the Development will be seen as part of the existing pattern of wind farm development and will occupy an angle of the view with an existing presence of wind farm development. Cloiche Wind Farm (at application) will be seen in the middle distance of the view north-east, in combination with the Development. Wind turbines forming Cloiche Wind Farm will appear more prominently than operational wind turbines at Stronelaig Wind Farm, slightly increasing the horizontal extents of wind farm development and bringing wind turbines closer to the viewpoint location. Whilst the presence of wind turbines will be more prominent and extend across a wider angle of the view under this scenario, the Development will be seen as a relatively distant feature beyond Cloiche, Dell and Stronelaig Wind Farms within the existing pattern of wind farm development.	

Viewpoint 14: Corrieyairack Hill	Grid Reference	242818, 799737
	The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant .	

Table 6.30: Viewpoint 15 - Carn na Leitire

Viewpoint 15: Carn na Leitire		Grid Reference	254695, 834464
LCT	LCT 222 – Rocky Moorland Plateau - Inverness	Designated landscape or WLA	None
Direction of view	South	Distance to nearest turbine	20.1 km
Theoretical Visibility	Hubs: 13 Blades: 16	Figure Number	6.35
Viewpoint location and existing view	The viewpoint is located on the hill summit, located to the north-west of the Great Glen. The Great Glen Way passes within 600 m to the south and west of the viewpoint. The summit is often accessed via the Abriachan Forest trails to the west and north-west, which feature sculptures and other interpretive materials for visitors. The viewpoint is representative of views experienced by recreational receptors. From this elevated location, open and panoramic views are afforded. The foreground of views south comprises descending moorland with occasional forestry, backclothed by the lower eastern slopes of Meall na h-Eilrig. Landform screens views into the Great Glen, and the landform of Carn an Fheadain and forested slopes are seen in the middle distance beyond. The more distant landform of the rolling uplands forms the skyline in views south. The south-western extents of the Site are seen in views south. The northern extents of the Site are partially screened by the ridgeline formed by Carn Choire Riabhach and Carn na Glaise Moire. Views east are focused on Loch Duntelchaig and the uplands beyond, which form the skyline of views in this direction. Wind turbine hubs and blade tips of the Operational Corriegarth Wind Farm are seen mostly backclothed by more distant landform in views south. Wind turbine hubs and blade tips of operational Dunmaglass Wind Farm are seen partially against the skyline and partially backclothed by landform in longer-distance views south-east. Wind turbine hubs and blade tips of Farr are seen in longer-distance views east against the skyline. Moy Wind Farm is barely perceptible in longer-distance views, but wind turbine hubs and blade tips are seen against the skyline. Stronelairg Wind Farm is a distant feature in long-distance views south, extending across the upland slopes but largely backclothed by landform. Bhlaraidh Wind Farm is seen in views south-west with wind turbine hubs and blade tips appearing partially against the skyline.		
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The viewpoint is not located within a designated landscape however the summit is a promoted and popular viewpoint from which views are afforded across the Great Glen and the Loch Ness and Duntelchaig SLA. The value of the view is considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational	Slight magnitude of change; Moderate (not significant) effect		

Viewpoint 15: Carn na Leitire		Grid Reference	254695, 834464
Corriegarth Wind Farm			
Assessment of Visual Effects	The hubs and blade tips of 13 wind turbines and the blade tips of a further three wind turbines will be seen partially backclothed and partially against the skyline in long-distance views south. Turbines in the north-east of the Site will be partially screened by intervening landform with wind turbine hubs sitting just above the skyline. The Development will slightly increase the horizontal extents of the Operational Corriegarth Wind Farm however, a discernible gap will still exist between the Development and operational Dunmaglass and Stronelairg Wind Farms. The larger scale of the wind turbines and location of wind turbines on higher elevation slopes within the containing "bowl" of the Site will result in a slightly more prominent appearance of the Development in combination with the Operational Corriegarth Wind Farm. However, wind turbines of the Development will occupy a small proportion of the long-distance view. Operational Dunmaglass Wind Farm is seen in successive views south-east with wind turbines appearing slightly more perceptible than those of the Development. Operational Stronelairg Wind Farm is seen in long-distance views south. Similar views will be limited to elevated south-facing slopes and hill summits in the north, north-western extents of the Study Area. The geographical extent of similar views is considered to be small. The scale of change resulting from the introduction of the Development is considered to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.		
Potential for Future Cumulative Effects (Scenario 1)	The consented Aberarder Wind Farm will be seen in successive long-distance views south-east. Wind turbine hubs and blade tips will be seen against the skyline, increasing the horizontal extent of the operational Dunmaglass Wind Farm further north-east. The consented Dell Wind Farm will be a relatively distant feature in long-distance successive views south. Wind turbine blade tips will be seen against the skyline beyond intervening landform, within the same angle of view as the operational Stronelairg Wind Farm. These developments in combination with the introduction of the Development will result in a small scale change to the view, given the existing pattern of wind farm development will be maintained. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.		
Potential for Future Cumulative Effects (Scenario 2)	Glenshero (at PLI) and Cloiche (at application) Wind Farms will be seen in long-distance successive views south, in combination with the operational Stronelairg and consented Dell Wind Farms. The horizontal extent of development will be slightly extended further south-west however, wind turbines will form a relatively distant feature and the gap between clusters of wind turbines will remain. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.		

Table 6.31: Viewpoint 16 - North Kessock - A9 northbound picnic area

Viewpoint 16: North Kessock - A9 northbound picnic area		Grid Reference	265470, 848026
LCT	LCT 345 – Farmed and Forested Slopes – Ross & Cromarty	Landscape designation	None

Viewpoint 16: North Kessock - A9 northbound picnic area		Grid Reference	265470, 848026
Direction of view	South	Distance to nearest turbine	34.4 km
Theoretical Visibility	Hubs: 4 Blades: 11	Figure Number	6.36
Viewpoint location and existing view	This viewpoint is located at the picnic area off the northbound A9 in North Kessock. The viewpoint is representative of views experienced by road users and visitors to this popular stopping point on the A9. Whilst views are generally contained and filtered by intervening vegetation, intermittent glimpsed views between intervening vegetation looking across the Beaully Firth are afforded from this location. This viewpoint is slightly elevated above residential properties to the south. The foreground of the view south comprises a wooded descending slope, with residential buildings and Main Street/Point Road seen beyond. The Beaully Firth extends through the middle distance of the view. The forested landforms of Craig Phadrig and Craig Dunain are seen rising above the southern shore of the firth and form the skyline in views south, south-west. Distant landform forms the skyline of longer-distance views looking south. The Site is screened by intervening landform in longer-distance views south. Kyllachy and Farr Wind Farms are barely perceptible in longer-distance views south-east. Wind turbines of Dunmaglass Wind Farm also appear in longer-distance views south.		
Sensitivity	Recreational receptors, including tourists, whose attention is focused on their surroundings are considered to be of higher susceptibility to changes in the view. Road users are considered to be of low susceptibility to changes in the view. The viewpoint is a recognised stopping point with visitor facilities. However, the viewpoint is not located within a designated landscape. The value of the view is considered to be medium. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational Corriegarth Wind Farm	Visual effects from this viewpoint not considered in original LVIA for Corriegarth Wind Farm.		
Assessment of Visual Effects	The hubs and blade tips of four wind turbines and the blade tips of a further seven wind turbines will appear barely perceptible beyond intervening forested landform in long-distance views south. Wind turbines will occupy a very small proportion of the available view. Where wind turbines are perceptible, the Development will slightly increase the horizontal extent of the Operational Corriegarth Wind Farm, however a gap will be maintained between the Development and Dunmaglass Wind Farm. Similar views will be afforded from a relatively short section of the A9, between Kessock Bridge and North Kessock. The geographical extent of similar views is considered to be small. The scale of change resulting from the introduction of the Development is considered barely perceptible. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a negligible (adverse) and not significant visual effect.		

Viewpoint 16: North Kessock - A9 northbound picnic area	Grid Reference	265470, 848026
Potential for Future Cumulative Effects (Scenario 1)	Wind turbines forming the consented Aberarder Wind Farm will be seen against the skyline in long-distance views south in combination with the operational Dunmaglass Wind Farm. The horizontal extent of development will be slightly increased further north-east, however the gap between clusters of wind turbines will be maintained. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant .	
Potential for Future Cumulative Effects (Scenario 2)	No other proposed wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for this cumulative assessment scenario.	

Table 6.32: Viewpoint 17 - Ben Tee

Viewpoint 17: Ben Tee		Grid Reference	224027, 797264
LCT	LCT 239 – Interlocking Sweeping Peaks - Lochaber	Landscape designation	Loch Lochy and Loch Oich SLA
Direction of view	North-east	Distance to nearest turbine	35.2 km
Theoretical Visibility	Hubs: 12 Blades: 16	Figure Number	6.37
Viewpoint location and existing view	This viewpoint is located at the summit of Ben Tee (904 m AOD) located on the north-western boundary of the Loch Lochy and Loch Oich SLA. The viewpoint is representative of elevated views across the SLA and the Great Glen experienced by recreational receptors (hill walkers) on the Corbett summit. From this elevated location, open and panoramic views are afforded looking along the length of the Great Glen, from Ben Nevis seen in longer-distance views to the south to Loch Ness seen in longer-distance views along the Great Glen to the north-east. The foreground of the view north-east comprises steeply descending slopes, with the enclosing upland to the west of the Great Glen seen beyond. Views are focused on the linear fault of the Great Glen, with the distant upland plateau of the Monadhliath Mountains forming the background of views to the north-east, east. Given the open and panoramic views afforded from this location, a number of operational wind farms are seen in longer-distance views. Beinneun Wind Farm and extension appear nearest the viewpoint and are seen in long distance views north, with turbines backclothed by landform. Wind turbines forming Millennium Wind Farm are seen backclothed in long distance views north, north-east and Bhlaraidh Wind Farm appears further north as a relatively distant feature. Blade tips of the two wind turbines forming Auchmore and Auchmore Extension Wind Farms are barely perceptible in views north and appear as part of Bhlaraidh Wind Farm. Operational wind farms to the east of the Great Glen are barely perceptible, with wind turbines of Moy, Farr, Tom Nan Clach, Kyllachy (under construction), Dunmaglass, the Operational Corriegarth and Stronelairg wind farms seen as distant features in views north-east.		
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The viewpoint is located within the Loch Lochy and Loch Oich SLA and elevated views across and north-east along the Great Glen are afforded from this location. The value of the view is considered to be high. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for	Visual effects from this viewpoint not considered in original LVIA for Corriegarth Wind Farm.		

Viewpoint 17: Ben Tee	Grid Reference	224027, 797264
Operational Corriegarth Wind Farm		
Assessment of Visual Effects	The hubs and blade tips of 12 wind turbines and the blade tips of a further four wind turbines will be seen in long-distance views north-east, occupying a small proportion of the wider available view. Wind turbines in the north of the cluster will be mostly backclothed by landform. A number of operational wind farms are seen in combined and successive views north to south-east from this location. The Beinneun and Beinneun Extension Wind Farms appear prominently in middle-distance successive views north, and wind turbines forming Millennium Wind Farm and Bhlaraidh Wind Farm extend through middle to long-distance views north, north-east. The Development will be seen in combined views with Dunmaglass Wind Farm, and proposed wind turbines will extend across the slight existing gap between Dunmaglass Wind Farm and the Operational Corriegarth Wind Farm. However, given the intervening distance, this existing gap is barely perceptible. Stronelairg Wind Farm is seen in successive views east, north-east. The general pattern of spacing between the Operational Corriegarth Wind Farm and Stronelairg Wind Farm will be maintained. Similar views will be limited to nearby hill summits in the south-west of the Study Area, along the north-western boundary of the Loch Lochy and Loch Oich SLA. The geographical extent of similar views is considered to be small. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.	
Potential for Future Cumulative Effects (Scenario 1)	The consented Millennium South Wind Farm will be evident in long-distance successive views north north-east. Wind turbine hubs and blade tips will be seen backclothed by landform, in combination with the operational Millennium Wind Farm. In views from this location, the consented Aberarder, operational Dunmaglass and Operational Corriegarth Wind Farms will be seen in combined views with the Development. Wind turbines will appear as a relatively distant cluster of development, with Aberarder Wind Farm and the Development occupying an angle of the view with an existing presence of wind farm development. The consented Dell Wind Farm will be seen in combined long-distance views east north-east beyond intervening landform. Wind turbines will slightly increase the horizontal extent of development closer to the Development, however a gap between clusters of wind turbines will be maintained. Whilst a number of wind farms will be visible in the view under this scenario, the Development will largely be seen as part of the existing pattern of wind farm development and will result in a small scale change to long-distance views. As such the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	
Potential for Future Cumulative Effects (Scenario 2)	Glenshero (PLI) and Cloiche (at application) Wind Farms will be seen in successive long-distance views east north-east. Wind turbines will appear as a relatively distant feature alongside the operational Stronelairg Wind Farm. Wind turbines forming the Glenshero Wind Farm will slightly increase the horizontal extent of development further south, however given the intervening distance this will form a relatively small scale change in the view. The cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.	

Table 6.33: Viewpoint 18 - Toll Creagach

Viewpoint 18: Toll Creagach		Grid Reference	219452, 828264
LCT	LCT 230 – Interlocking Sweeping Peaks - Inverness	Designated landscape or WLA	Glen Affric NSA, Strathconon, Monar and Mullardoch SLA, Central Highlands WLA
Direction of view	East, south-east	Distance to nearest turbine	39.3 km
Theoretical Visibility	Hubs: 16 Blades: 16	Figure Number	6.38
Viewpoint location and existing view	This viewpoint is located on the summit of Toll Creagach (1054 m AOD), on the northern boundary of the Glen Affric NSA, the southern boundary of the Strathconon, Monar and Mullardoch SLA and within the Central Highlands WLA. The viewpoint is representative of views experienced by recreational receptors (hill walkers) visiting the popular Munro summit. From this elevated location views are open and panoramic, and include views of Loch Mullardoch to the north, Glen Affric to the south and longer-distance views to the surrounding hill summits in all directions. The foreground of the view east south-east comprises the rocky moorland summit, with the summit of Beinn a' Mheadhoin seen beyond. The forested slopes of Glen Affric and the settled landscape of Strath Glass are seen in the middle distance of the view, with the enclosing uplands on either side of the Great Glen seen beyond. Distant summits form the background of longer-distance views east, south-east. From this elevated location, a number of operational wind farms are seen in long distance views. Corrimony and Bhlaraidh wind farms are seen nearest the viewpoint in views east, south-east, however turbines appear as relatively distant features backclothed by landform. Wind turbines forming the Operational Corriegarth Wind Farm are barely perceptible in longer-distance views east south-east. Moy, Kyllachy and Farr wind farms are seen as distant features in views north-east, Dunmaglass Wind Farm is seen in long distance views east, with wind turbine hubs and blade tips barely perceptible against the skyline. Wind turbines forming Stronelairg wind farm are seen as distant features in views south-east. Beinneun Wind Farm and extension and Millennium Wind Farm are seen in views south, south-east backclothed by landform.		
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The viewpoint is located on the boundaries of the Glen Affric NSA and Strathconon, Monar and Mullardoch SLA and is within the Central Highlands WLA. The value of the view is therefore considered to be high. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Visual Effect assessed for Operational Corriegarth Wind Farm	Visual effects from this viewpoint not considered in original LVIA for Corriegarth Wind Farm.		
Assessment of Visual Effects	Hubs and blade tips of all 16 turbines of the Development will be seen in long-distance views east, south-east, occupying a small proportion of the wider view. Wind turbines will slightly increase the horizontal extent of the Operational Corriegarth Wind Farm however, the Development will appear as a cohesive extension with wind turbines backclothed by landform. A number of other operational wind farms are seen in long-distance successive views north-east to south-east, including Moy, Farr, Dunmaglass and Stronelairg. Operational Corrimony and Bhlaraidh wind farms appear slightly closer to the viewpoint than the Development. Whilst		

Viewpoint 18: Toll Creagach		Grid Reference	219452, 828264
	the introduction of the Development will slightly increase the horizontal extent, the pattern of existing spacing between wind turbine clusters will be maintained. The Development will be seen within the same angle of view as the operational Bhlaraidh Wind Farm however, the wind turbines of Bhlaraidh Wind Farm are closer to the viewpoint, appearing more prominently and extending further south across the view towards Stronelaig Wind Farm. The introduction of the Development will result in a small scale change in view. Similar views will be limited to elevated summits within the Glen Affric NSA, Strathconon, Monar and Mullardoch SLA and Central Highlands WLA at a distance of over 30 km to the west and north-west from the outermost wind turbines of the Development. The geographical extent of similar views is considered to be small. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.		
Potential for Future Cumulative Effects (Scenario 1)	The consented Aberarder, Dell and Millennium South Wind Farms will be seen as relatively distant features in long-distance successive views from this location. Wind turbines will be seen in combination with operational schemes. Aberarder Wind Farm will slightly increase the horizontal extent of development further north-east, however given the intervening distance this will result in a relatively small scale change in the view. Whilst a number of wind farms will be visible in the view under this scenario, the introduction of the Development will maintain the existing pattern of wind farm development and will result in a small scale change to long-distance views. As such the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant.		
Potential for Future Cumulative Effects (Scenario 2)	Glenshero (at PLI) and Cloiche (at application) Wind Farms will be seen in long-distance successive views south-east. Wind turbines will form a relatively distant feature, seen in combination with operational Stronelaig Wind Farm. Given the intervening distance and relatively small scale change to the view resulting from the developments considered under this scenario, the cumulative magnitude of change to views will be low. The additional and total cumulative visual effect will be minor (adverse) and not significant.		

Table 6.34: Viewpoint 19 - Ptarmigan Restaurant, Cairngorm

Viewpoint 19: Ptarmigan Restaurant, Cairngorm		Grid Reference	300459, 804888
LCT	LCT 122 – Mountain Massif - Cairngorms	Designated landscape or WLA	Cairngorms NP, Cairngorm Mountains NSA, Cairngorms WLA
Direction of view	West, north-west	Distance to nearest turbine	41.8 km
Theoretical Visibility	Hubs: 5 Blades: 13	Figure Number	6.39
Viewpoint location and existing view	This viewpoint is located at the Ptarmigan Restaurant near the funicular railway to the summit of Cairn Gorm. The viewpoint is representative of views experienced by recreational receptors, tourists and visitors on the western boundary of the Cairngorms NP and Cairngorms Mountains NSA. From this elevated location, long-distance open views are afforded to the north and west. Ski slopes and associated infrastructure are seen in close to middle distance views. The north-western slopes of Cairn Gorm descend towards Loch Morlich and the Glenmore Forest Park, comprising		

Viewpoint 19: Ptarmigan Restaurant, Cairngorm	Grid Reference	300459, 804888
	extensive coniferous forestry and contained to the north by Creagan Gorm and Meall a' Bhuachaille. The settlement of Aviemore is seen in longer-distance views further west of the loch. Longer-distance views include rolling uplands and forested slopes, with the Monadhliath Mountains seen beyond. Wind turbines of the Operational Corriegarth Wind Farm are barely perceptible beyond intervening landform in longer-distance views west, north-west. A number of additional operational wind farms are barely perceptible in longer-distance views from this location. This includes Moy Wind Farm to the north, north-west, Auchmore, Auchmore Extension, Kyllachy (under construction) and Farr Wind Farms to the north-west, Dunmaglass Wind Farm to the west, north-west and Stronelaig Wind Farm to the west.	
Sensitivity	Recreational receptors and tourists, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The viewpoint is located near the boundary for the CNP and is within the Cairngorms Mountains NSA. The value of the view is therefore considered to be high. On balance, taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.	
Visual Effect assessed for Operational Corriegarth Wind Farm	Negligible magnitude of change; Minor (not significant) effect	
Assessment of Visual Effects	The hubs and blade tips of five wind turbines and blade tips of a further eight wind turbines will be barely perceptible, seen partially backclothed by landform and partially against the skyline in long-distance views west, north-west. The introduction of the Development will slightly increase the horizontal extent of the Operational Corriegarth Wind Farm however, the Development will appear as a cohesive extension and the existing pattern of spacing between clusters of wind farm development will be maintained. A number of operational wind farms are seen in successive views west, north-west to north from this location, including Dunmaglass, Farr and Moy Wind Farms. These clusters of wind turbines are seen in long-distance views at a similar distance as the Development. The scale of change resulting from the introduction of the Development is considered to be barely perceptible. Similar views will be experienced from elevated summits in the north-western plateau of the Cairngorms NP at a distance of over 40 km from the outermost wind turbines of the Development. The geographical extent of similar views is considered to be small. The overall magnitude of visual change is considered to be low and taking account of the high sensitivity will result in a negligible (adverse) and not significant visual effect.	
Potential for Future Cumulative Effects (Scenario 1)	The consented Aberarder Wind Farm will be barely perceptible in long-distance views west, north-west, seen in combination with the operational Dunmaglass Wind Farm. Given the intervening distance and relatively small scale change to the view resulting from the developments considered under this scenario, the cumulative magnitude of change to views will be low. The additional and total cumulative visual effect will be minor (adverse) and not significant.	

Viewpoint 19: Ptarmigan Restaurant, Cairngorm	Grid Reference	300459, 804888
Potential for Future Cumulative Effects (Scenario 2)	Wind turbine blade tips of Glenshero (at PLI) and Cloiche (at application) Wind Farms are barely perceptible beyond intervening landform in long-distance views west. Given the intervening distance and relatively small scale change to the view resulting from the developments considered under this scenario, the cumulative magnitude of change to views will be low. The additional and total cumulative visual effect will be minor (adverse) and not significant.	

6.9.5 Operational Effects on Views from Settlements

Receptors who will experience views from settlements are assumed in most instances to be local residents at their residential properties and curtilages who will regularly experience the available views. Residential receptors are therefore considered to have a high susceptibility to changes in the view. The settlements to be assessed were identified through analysis of the ZTV shown on Figure 6.3b, which indicates that visibility of the Development from settlements in the surrounding area is limited to the settlement of Gorthleck. Visual effects resulting from the introduction of the Development for the settlement of Gorthleck are assessed in Table 6.35 below.

Table 6.35: Gorthleck

Gorthleck			
Representative Viewpoint	VP 1: Gorthleck (Figure 6.21)	Distance to nearest turbine	6.5 km
Settlement description and existing view	Gorthleck is a small hamlet located in Stratherrick. The hamlet is located on the north-western shore of Loch Mhor and is accessed by the B862. The hamlet is linear and relatively low-density, comprising scattered residential properties primarily located to the west of the B862 and includes the village of Lyne of Gorthleck. Principal views oriented east and south-east from residential properties are often screened and filtered by intervening vegetation, however occasional open views are afforded looking east across Loch Mhor. The rolling uplands form the skyline and background of views looking north-east to south-east. Longer-distance views west are foreshortened by intervening landform and vegetation, however occasional glimpsed views beyond intervening landform of summits to the west of the Great Glen, including Meall Fuar-mhonaidh, are afforded from areas in the west of the hamlet. Wind turbine blade tips of the Operational Corriegarth Wind Farm are barely visible above the skyline in views south-east from this hamlet.		
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Gorthleck is not located within a designated landscape however open views are afforded looking across Loch Mhor and towards the hills of the Monadhliath. The value of the view is considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this settlement is judged to be high.		
Assessment of visual effects	The ZTV (Figure 6.3a) indicates widespread theoretical visibility across the settlement. However, actual visibility will be limited by intervening vegetation, which screens outward views east and south-east from much of the settlement. Where outward views are afforded, the hub of one wind turbine will be seen just above the skyline with blade tips seen against the skyline, and the blade tips of a further three wind turbines will be visible beyond intervening landform in views south-east. Wind turbine blade tips of the Operational Corriegarth Wind Farm are barely perceptible in views		

Gorthleck	
	from the settlement and the Development will slightly increase the perceptibility of wind farm development in outward views. As summarised within Table 6.16, a low magnitude of change has been identified for VP 1: Gorthleck, which represents views experienced from near the southern edge of the settlement. However, the geographical extent of similar views within the settlement is considered to be small as the Development will be less visible in views from elsewhere within the settlement. Overall, the magnitude of visual change will be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect.
Potential for Future Cumulative Effects (Scenario 1 and 2)	No other consented or proposed wind energy developments will be perceptible in views from this location therefore no additional or total cumulative visual effects are predicted to occur for either cumulative assessment scenario.

6.9.6 Operational Effects on Views from Routes

Sequential visual effects are assessed through considering the likely effects of the Development both in isolation, and in the context of other existing, consented and proposed wind energy developments on key routes through the study area. The routes to be assessed were identified through analysis of the ZTV shown on Figure 6.3b and informed by consultation with statutory consultees. The assessment of likely effects on sequential views from these routes is detailed in Table 6.36 to Table 6.40 6.40 below.

Table 6.36: Route Assessment A82

A82			
Representative Viewpoint	VP 10: A82 Achnahannet (Figure 6.30)	Distance to nearest turbine	11.1 km
Description of Route and existing view	The A82 is a major road that runs from Glasgow to Inverness. The road crosses the Study Area on a south-west to north-east alignment and enters the Study Area to the north of Spean Bridge, passing along the eastern shore of Loch Lochy. The road then crosses to the western shore of Loch Oich, passing through Invergarry to Fort Augustus. The road passes along the western shore of Loch Ness passing the settlements of Invermoriston and Drumnadrochit. The A82 continues through the Great Glen towards Inverness, ending at the junction with the A9 near the Longman Industrial Estates. Oblique outward views from the road are often screened and filtered by woodland and forestry; however, occasional outward views looking north-east to south-east are afforded between breaks in vegetation. Outward views westwards are screened by vegetation and landform. The A82 is identified as key route within The Highland Council SG, with receptors on the route noted as local residents, road users from the wider highland area and tourists. Whilst intervening vegetation and the steep landform of the glen sides typically screens views of operational wind farms, glimpsed long-distance views of Dunmaglass Wind Farm are afforded from short sections of the road.		
Sensitivity	Road users are considered to be of lower susceptibility to changes in the view. Within the Study Area the road passes through the Loch Ness and Duntelchaig SLA, as such views from the road are considered to be high in value.		

A82	
	Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this settlement is judged to be medium .
Assessment of visual effects	The ZTV (Figures 6.3a to 6.5) indicates: • Within 15 km theoretical visibility from the A82 as the route follows the western shore of Loch Ness to the north-east of Invermoriston to Strone Point; • Within 20 km theoretical visibility for a short section of the road to the north of Drumnadrochit near the named property of Tychat; • Within 30 km theoretical visibility between Dochgarroch and the Dunain Park Hotel to the south-west of Inverness. However, actual visibility will be limited by intervening vegetation, which screens outward views from much of the road as it passes the western shore of Loch Ness. The following viewpoint is located on this road and is representative of views likely to be experienced: • VP 10: Achnahannet represents views experienced from a section of the road from which outward views east across the loch are afforded, and for which a low magnitude of change was identified. From this section of the road, the Development will be seen in long-distance oblique views from short sections of the road from which the Operational Corriegarth Wind Farm is already seen. The scale of change resulting from the Development is considered to be small and the geographical extent of similar views is considered to be small. The magnitude of visual change will be low and taking account of the medium sensitivity will result in a minor (adverse) and not significant visual effect for localised extents of the road near Achnahannet. Beyond this section of the road the magnitude of visual change will be low resulting in a negligible and not significant visual effect.
Potential for Future Cumulative Effects (Scenario 1)	The viewpoint assessment for VP10: A82 Achnahannet identified no additional or total cumulative visual effects predicted to occur for this cumulative assessment scenario.
Potential for Future Cumulative Effects (Scenario 2)	The viewpoint assessment for VP10: A82 Achnahannet identified no additional or total cumulative visual effects predicted to occur for this cumulative assessment scenario.

Table 6.37: Route Assessment B862

B862			
Representative Viewpoint	VP 1: Gorthleck (Figure 6.21) VP 3: B862 West of Corriegarth Lodge (Figure 6.23) VP 5: Errogie (Figure 6.25) VP 7: General Wade's Military Road (Figure 6.27) VP 12: B862 North of Torness (Figure 6.32)	Distance to nearest turbine	6.6 km
Description of Route and existing view	The B862 crosses the Study Area on a south-west to north-east alignment from Fort Augustus to the B865 at Inverness. From Fort Augustus, the road passes south and east, ascending the lower glen slopes. Outward views from the road are screened and filtered by intervening blocks of forestry, woodland and localised landform. Outward views looking west are afforded as the road passes Loch Tarff. Open and		

B862	panoramic views are afforded as the road passes the promoted Suidhe viewpoint (illustrated by VP 7: General Wade's Military Road, Figure 6.27) before descending into Stratherrick. Within Stratherrick the road passes a number of scattered residential properties and farmsteads. Outward views are often screened by blocks of forestry and woodland, however occasional oblique views north-east to south-east towards the rolling uplands are afforded from sections of the road near Loch Mhor. The B862 forms part of NCN Route 78 between Fort Augustus and Whitebridge. The B862 is identified as key route within The Highland Council SG, with receptors on the route noted as local residents, recreational users and tourists. From elevated sections of the road near the Suidhe viewpoint, oblique long distance views are afforded of Operational Corriegarth Wind Farm and operational Dunmaglass Wind Farm. Where the road ascends the glen sides to the north-east of Fort Augustus, long distance oblique views of Beinneun Wind Farm and extension and Millennium Wind Farm are afforded. Wind turbine hubs and blade tips of operational Bhlaraidh Wind Farm are seen in oblique long-distance views west from the road near Loch Tarff.
Sensitivity	Road users are considered to be of lower susceptibility to changes in the view. Within the Study Area the road passes through the Loch Ness and Duntelchaig SLA, as such views from the road are considered to be high in value. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this settlement is judged to be medium.
Assessment of visual effects	The ZTV (Figures 6.3a to 6.5) indicates: • Within 10 km theoretical visibility indicated from the route as it passes through Startherrick between Whitebridge and Errogie; • Within 15 km theoretical visibility indicated from elevated sections of the route near the Suidhe viewpoint. However, actual visibility will be limited by intervening vegetation along the western shore of Loch Mhor, which occasionally screens outward views from the road. The following viewpoints are located on this road and are representative of views likely to be experienced: • VP 1: Gorthleck which represents views south-east for which a medium magnitude of change was identified; • VP 3: B862 West of Corriegarth Lodge which represents views south-east for which a medium magnitude of change was identified; • VP 5: Errogie which represents views south for which a medium magnitude of change was identified; • VP 7: General Wade's Military Road which represents views north-east experienced by road users within the Loch Ness and Duntelchaig SLA, for which a medium magnitude of change was identified; and • VP 12: B862 North of Torness which represents views looking south experienced by road users within the Loch Ness and Duntelchaig SLA, for which a low magnitude of change was identified. The Development will be seen in long-distance views from the road, partially screened by intervening landform. Proposed wind turbines will often be seen alongside the Operational Corriegarth Wind Farm, but at times the Development will slightly increase the horizontal extent and prominence of wind turbines in views afforded from the road. The scale of change resulting from the introduction of the Development is considered to be medium. The geographical extent of similar views is considered to be medium.

B862	
	The magnitude of visual change will be medium and taking account of the high sensitivity will result in a moderate (adverse) and significant visual effect for the short extents of the road between the Suidhe viewpoint and Errogie. Beyond this section of the road, the magnitude of change will reduce to low, resulting in a minor (adverse) and not significant visual effect.
Potential for Future Cumulative Effects (Scenario 1)	The viewpoint assessment for VP 1: Gorthleck, VP 3: B862 West of Corriegarth Lodge, VP 5: Errogie and VP 12: B862 North of Torness identified no significant additional or total cumulative visual effects, as there are no other consented wind farm developments perceptible in views from these locations. The viewpoint assessment for VP 7: General Wade's Military Road identified an overall low cumulative magnitude of change resulting in the additional and total cumulative visual effect of minor (adverse) and not significant. Similar sequential views of wind farm development will be limited to relatively localised extents of the B862 under this cumulative assessment scenario.
Potential for Future Cumulative Effects (Scenario 2)	The viewpoint assessment for VP 1: Gorthleck, VP 3: B862 West of Corriegarth Lodge, VP 5: Errogie, VP 7: General Wade's Military Road and VP 12: B862 North of Torness identified no additional or total cumulative visual effects under this cumulative assessment scenario, as no other proposed wind energy development will be perceptible in views from these locations.

Table 6.38: Route Assessment NCN Route 78

NCN Route 78 - The Caledonia Way			
Representative Viewpoint	VP 7: General Wade's Military Road (Figure 6.27)	Distance to nearest turbine	7.2 km
Description of Route and existing view	NCN Route 78 (The Caledonia Way) is a long-distance cycle route that extends 234 miles between Campbeltown and Inverness. Within the Study Area, the route passes between Loch Lochy to Inverness. Within 15 km of the Development, the route passes on the B862 from the east of Fort Augustus to the B852, where the route follows the southern shore of Loch Ness. Where the route follows the B862, views are occasionally screened and filtered by vegetation, however outward open views looking north-east and east are afforded from sections of the route, including near and to the north-east of the promoted Suidhe viewpoint and near Whitebridge. Outward views from the route as it follows the B852 are often screened by intervening forestry and woodland. Operational Corriegarth Wind Farm and operational Dunmaglass Wind Farm are seen partially screened by intervening landform in sequential long-distance oblique views north-east and east as the route passes on the B862 near the Suidhe viewpoint and near the junction of the B862 and B852. Wind turbine hubs and blade tips of operational Bhlaraidh Wind Farm are seen in oblique long-distance views west from the route near Loch Tarff.		
Sensitivity	Recreational receptors, including cyclists, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The route passes within the Loch Ness and Duntelchaig SLA. The value of the view is therefore considered to be high. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		

NCN Route 78 - The Caledonia Way	
Assessment of visual effects	The ZTV (Figures 6.3a to 6.5) indicates: • Within 12 km theoretical visibility where the route follows the alignment of the B862 near the Suidhe viewpoint; and • Within 7 km theoretical visibility near the junction of the B862 and B852. However, visibility will be occasionally limited by intervening woodland and vegetation. The following viewpoint is located on the route and is representative of views likely to be experienced: • VP 7: General Wade's Military Road which represents elevated views north-east experienced by cyclists within the Loch Ness and Duntelchaig SLA, for which a medium magnitude of change was identified. From this location, the Development will be seen in long-distance oblique views alongside the Operational Corriegarth Wind Farm. However, proposed wind turbines will slightly increase the horizontal extent of development further north towards Dunmaglass Wind Farm. Given the undulating nature of intervening landform, which screens the gap between the Development and Dunmaglass Wind Farm, the introduction of the Development will result in the perception of continuous wind farm development within the angle of view between Dunmaglass Wind Farm to the Operational Corriegarth Wind Farm. The Development will also be seen in views east from the section of the road to the south of the B852 and B862 junction. Wind turbines will be seen alongside the Operational Corriegarth Wind Farm, slightly increasing the horizontal extent and prominence of wind turbines in the view. However, perceived coalescence between clusters of wind farm development is avoided here. The Development will result in a medium scale change to the view, experienced from relatively localised geographical extents near the Suidhe viewpoint on the B862. The magnitude of change from this location is considered to be medium, resulting in a moderate (adverse) and significant visual effect. Beyond this section of the road, the magnitude of visual change will be low resulting in a minor (adverse) and not significant visual effect.
Potential for Future Cumulative Effects (Scenario 1)	The viewpoint assessment for VP 7: General Wade's Military Road identified an additional and total cumulative visual effect of minor (adverse) and not significant. Similar sequential views of wind farm development will be limited to relatively localised extents of NCN Route 78 under this cumulative assessment scenario.
Potential for Future Cumulative Effects (Scenario 2)	In sequential views from NCN Route 78 within the Study Area, views of other proposed wind energy development will be screened by intervening landform and vegetation. The viewpoint assessment for VP 7: General Wade's Military Road identified no additional or total cumulative visual effects under this cumulative assessment scenario.

Table 6.39: Route Assessment Great Glen Way

Great Glen Way			
Representative Viewpoint	VP 8: Great Glen Way, East of Creag Dhearg (Figure 6.28)	Distance to nearest turbine	11.7 km
Description of Route and existing view	The Great Glen Way is a long distance footpath extending 125 km in length from Fort William to Inverness. Designated as one of Scotland's		

Great Glen Way	Great Trails⁸¹, the route passes through the Great Glen, following the western shores of Loch Lochy, Loch Oich and Loch Ness. Within the Study Area, the route passes from Invergarry to Inverness. Terrain is varied but the route broadly follows the loch shores, with the high route option of the trail ascending onto the glen sides. Within 15 km, the route passes from Invermoriston to Drumnadrochit. From Invermoriston to the named property of Alltsigh, the route follows forestry track and footpaths running broadly parallel to the A82. The high route ascends the north-eastern slopes of Glen Moriston and follows forestry track running broadly parallel to the main route, passing through coniferous forestry and woodland. North-west of the named property of Alltsigh, the high and main routes converge and pass through coniferous forestry and sections of rough grazing. This section of the route follows the alignment of the minor road running between Grottaig and Drumnadrochit. Much of the route passes through coniferous forestry and woodland, however occasional outward views from sections of the route are glimpsed between breaks in intervening vegetation, including on the High Route east of Creag Dhearg (VP 8) and on the minor road between Grottaig and Ancarraig. Where open views are afforded from the route, views are focused looking east across Loch Ness and towards the rolling uplands and Monadhliath Mountains beyond. Wind turbine hubs and blade tips of the Operational Corriegarth Wind Farm are seen in glimpsed long-distance views between intervening vegetation from elevated sections of the route. Dunmaglass Wind Farm is seen in glimpsed longer-distance views from elevated sections of the route.
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The Great Glen Way passes within the Loch Ness and Duntelchaig SLA. The value of the view is therefore considered to be high. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.
Assessment of visual effects	The ZTV (Figures 6.3a to 6.5) indicates: • Within 15 km theoretical visibility from the route between Invermoriston and Drumnadrochit; and • Within 20 km theoretical visibility from the route between Drumnadrochit and Abriachan Forest. However, actual visibility will be limited from intervening forestry and woodland, which screens outwards views from much of the route as it passes to the west of Loch Ness. The following viewpoint is located on this route and is representative of views likely to be experienced: • VP 8: Great Glen Way, East of Creag Dhearg represents views from a section of the route from which open views east are afforded, for which a low magnitude of change was identified. From this section of the route, the Development will be seen in oblique long-distance views for a relatively short section of the route, before the trail passes into forestry. Similar views will be afforded from a relatively localised section of the route and from a further distance as the route ascends the slopes to the south-east of Carn na Leitire near the Abriachan Forest. The geographical extent of similar views is considered to be small. Given the existing presence of wind farm development in views from the route, the introduction of the Development will result in a small scale change.

⁸¹ <https://www.scotlandsgreattrails.com/trail/great-glen-way/>

Great Glen Way	
	The magnitude of visual change will be low and taking account of the high sensitivity will result in a minor (adverse) and not significant visual effect for sections of the route near Creag Dhearg and to the south-east of Carn na Leitire. Beyond these sections of the route, the level of effect will reduce to negligible (adverse) and not significant.
Potential for Future Cumulative Effects (Scenario 1)	The viewpoint assessment for VP8: Great Glen Way, East of Creag Dhearg identified an additional and total cumulative visual effect of minor (adverse) and not significant. Similar sequential views will be afforded from localised extents between Invermoriston and Drumnadrochit and north of Drumnadrochit to Abriachan Forest.
Potential for Future Cumulative Effects (Scenario 2)	The viewpoint assessment for VP8: Great Glen Way, East of Creag Dhearg identified an additional and total cumulative visual effect of minor (adverse) and not significant. Similar sequential views will be afforded from localised extents between Invermoriston and Drumnadrochit.

Table 6.40: Route Assessment South Loch Ness Trail

South Loch Ness Trail			
Representative Viewpoint	VP 4: South Loch Ness Trail, north of Whitebridge (Figure 6.24) VP 7: General Wade's Military Road (Figure 6.27)	Distance to nearest turbine	7.4 km
Description of Route and existing view	The South Loch Ness Trail broadly follows the eastern shore of Loch Ness, forming part of the Loch Ness 360 circular route from Fort Augustus to Inverness via Whitebridge, Inverfarigaig and Dores. Within 10 km of the Development, the trail broadly follows the alignment of the B862 to the junction with the B852, where the trail turns north-west to follow the B852 to Inverfarigaig. This section of the route passes through conifer forestry and woodland, however outward views are afforded near the named property of Knockcarrach and to the north of Whitebridge near Dell Farm. The foreground of views from this section of the route comprises pastoral fields with occasional pockets of woodland. Scattered residential properties and farmsteads are seen in the middle distance of view. The rolling uplands, including the summits of Carn na Glaise Moire, Carn Choire Riabhaich and Meall an Tarsaid, are seen in middle to longer-distance views and form the skyline in views to the east and south-east. Wind turbine hubs and blade tips of the Operational Corriegarth Wind Farm are seen against the skyline in glimpsed views east, south-east from the route, partially screened by intervening landform. Glimpsed long-distance views of Dunmaglass Wind Farm are afforded from elevated sections of the route near Carn an t-Suidhe.		
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. This route passes within the Loch Ness and Duntelchaig SLA and the value of the view is therefore considered to be high. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.		
Assessment of visual effects	The ZTV (Figures 6.3a to 6.5) indicates: • Within 10 km theoretical visibility indicated to the north-west of Whitebridge as the route passes Dell Farm to the west of the Site; • Within 15 km intermittent theoretical visibility indicated as the route passes through the Farigaig Forest to the north-west of the Site and		

South Loch Ness Trail	from elevated sections of the route near the Suidhe viewpoint to the south-west of the Site. However, actual visibility will be limited by intervening vegetation, which often screens outwards views from the route. The following viewpoints are located on this route and is representative of views likely to be experienced: • VP 4: South Loch Ness Trail, north of Whitebridge represents views experienced from the route and nearby residential properties, and for which a medium magnitude of change was identified. From this location the Development will increase the prominence of the barely perceptible Operational Corriegarth Wind Farm. • VP 7: General Wade's Road represents views experienced from the promoted Suidhe viewpoint, for which a medium magnitude of change was identified. From this location, the Development will appear in combined views with the Operational Corriegarth Wind Farm and Dunmaglass Wind Farm. From these locations, the Development will be seen increasing the prominence and horizontal extent of the Operational Corriegarth Wind Farm. The proposed wind turbines appear of a larger scale than operational wind turbines with hubs and blade tips seen against the skyline. Similar views will be experienced from relatively short sections of the route. The geographical extent of similar views is considered to be small. The introduction of the Development will result in a medium scale change in views from localised extents of the route. The magnitude of change is considered to be medium, resulting in a moderate (adverse) and significant visual effect for sections of the route north of Whitebridge and near the Suidhe viewpoint. Beyond these sections of the route, the magnitude of change will reduce to low, resulting in a minor (adverse) and not significant visual effect.
Potential for Future Cumulative Effects (Scenario 1)	The viewpoint assessment for VP4: South Loch Ness Trail, north of Whitebridge identified no additional or total cumulative visual effects predicted to occur for this cumulative assessment scenario. The viewpoint assessment for VP 7: General Wade's Military Road identified an overall low cumulative magnitude of change resulting in the additional and total cumulative visual effect of minor (adverse) and not significant. Similar sequential views of wind farm development will be limited to relatively localised extents of the trail under this cumulative assessment scenario.
Potential for Future Cumulative Effects (Scenario 2)	The viewpoint assessment for VP4: South Loch Ness Trail, north of Whitebridge and VP 7: General Wade's Military Road identified no additional or total cumulative visual effects under this cumulative assessment scenario, as no other proposed wind energy development will be perceptible in views from these locations.

6.9.7 Potential Implications for Designated Landscapes and Wild Land

A designated landscape is an area of landscape identified as being of importance at an international, national, or regional/local level, either defined by statute or identified in LDPs or other documents. Landscapes are designated in relation to their special qualities or features which warrant protection through the planning system.

Designated Landscapes within 40 km of the Development are illustrated on Figure 6.7a. The assessment in Table 6.41 describes the likely effects on the special qualities and key qualities of designated landscapes resulting from the introduction of the Development during the operational phase and a consideration of likely cumulative landscape effects arising in conjunction with other existing, consented and/or proposed wind farms. The

assessment is limited to those designated landscapes where likely significant effects are considered possible, as detailed in Table 6.3.

The assessment of effects on the special landscape qualities (AESLQ) of the Cairngorms NP is included in Appendix A6.3. The assessment of effects on the key attributes and wild land qualities of the Monadhliath Wild Land Area (WLA 20) is included in Appendix A6.4.

Table 6.41: Loch Ness and Duntelchaig SLA

Loch Ness and Duntelchaig SLA
Location and baseline description: The Loch Ness and Duntelchaig SLA lies within approximately 7.3 km of the outermost wind turbines of the Development at its closest point. The designation encompasses the area surrounding Loch Ness, from Fort Augustus to Lochend, and also includes Loch Duntelchaig and Loch Ruthven. The Special Qualities of the SLA that may potentially be affected by the Development include the following: The Dramatic Great Glen • <i>"The imposing steep-sided landform trench, formed by a large strike-slip fault which slices through the centre of the Highlands, creates a dramatic linear landscape which is relatively easily to access and readily appreciated. The very striking profile of the glen is typically best appreciated from either end, or from the water, although good views are also obtained from elevated viewpoints upon the loch-side ridges and hill tops."</i> • <i>"The steep sided slopes of the glen are often deeply incised by watercourses, including the notable Falls of Foyers. These slopes are also flanked by a diverse mix of woodland and forests and form an open smooth moorland skyline ridge."</i> • <i>"There are distinctive views of grand proportions and long vistas along a vast expanse of the loch, with the detail of foreground features gradually diminishing to distant silhouettes"</i> • <i>"The landscape is typically experienced from the B852, B851 and the A82. From these routes, however, the loch is viewed at an oblique angle and thus these do not reveal the striking 'v' shape of the glen that is visible at either end. High numbers of walkers and cyclists also view the landscape from the Great Glen Way, while others see it from a high number of boats on the loch, some travelling the length of the Caledonian Canal. From elevated locations along the glen, it is easier to appreciate the simple line, large scale and great expanse of the loch although, even from these places, it is typically difficult to see all of the loch in one view due to its great length. It is also difficult to perceive the scale of the landscape due to a lack of size indicators. From elevated viewpoints, the glen can be seen within its context of a landscape of elevated plateaux and hills"</i> • <i>"Most of the hills and high points along the enclosing ridges are indistinct in character, however Meall Fuar-mhonaidh is one example of a distinct hill peak, nearly 700m high, it stands out as a landmark clearly visible from both ends of the loch, and is even prominent in views southwest from the castle in Inverness. Meall Fuar-mhonaid is a good vantage point from which to appreciate the massive scale and alignment of the Great Glen fault within a backdrop of the Monadhliath massif to the south and the Balnacann and Affric mountain interior to the north west, both areas which possess wilderness qualities."</i> Contrasting Intimate Plateau • <i>"An undulating moorland plateau of rocky knolls flanked by small-scale woods and forests, patches of pastures and sporadic farmsteads, and interspersed with a sequence of tranquil lochs, that creates an intimate mix of landscape elements of changing visual interest."</i> Overall, and taking account of the value assigned to the relevant LCTs within the SLA, the landscape value is considered to be medium. In terms of sensitivity to change, the SLA citation notes: • The area is <i>"generally sensitive to any additional large features upon the side slopes or ridge lines of the glen"</i> • <i>"The introduction of tall man made structures on the hill sides may compromise the sense of containment within the glen and diminish the sense of the vast scale of the landscape."</i> • <i>"Combinations of developments which would result in a series of linear or point features may distract from the sequential experience when travelling along the loch."</i> There are no operational wind farms located within the SLA; however, views of operational wind farm developments, including the Operational Corriegarth, Dunmaglass, Stronelairg, Millennium, Beinneun and Bhlaraidh Wind Farms, are afforded from Meall Fuar-mhonaidh, on the western boundary of the SLA.

Loch Ness and Duntelchaig SLA

Given the topographical variety and landscape pattern found across the SLA, in addition to the absence of existing wind energy developments, sensitivity to the type and scale of development proposed is considered to be high.

Discrete areas of the SLA which are already influenced by operational wind farm development are judged to be of lower sensitivity. However, considering the judgements of susceptibility and value, overall sensitivity is judged to be **medium**.

Potential for the Development to affect the Special Qualities of the SLA

The Development is located entirely outside of the SLA therefore any effects will be limited to indirect effects experienced through views of the Development from within the SLA.

The ZTV on Figure 6.7b indicates potential theoretical visibility across the SLA. Figure 6.6b indicates potential theoretical visibility across the LCTs within the SLA which include the following:

- Broad Steep-Sided Glen (LCT 225): theoretical visibility indicated from the western shore of Loch Ness, however actual visibility will be limited by intervening vegetation and woodland;
- Rocky Moorland Plateau – Inverness (LCT 222): theoretical visibility indicated from very limited extents of the LCT within the SLA;
- Farmed and Wooded Foothills (LCT 224): theoretical visibility indicated within 10km from Farigaig Forest, however actual visibility will be limited by intervening vegetation and forestry;
- Flat Moorland Plateau with Woodland (LCT 223): theoretical visibility indicated from limited extents of the LCT within the SLA, at a distance of over 15km;
- Rugged Massif – Inverness (LCT 220): theoretical visibility indicated from very limited extents of the LCT within the SLA;
- Farmed Strath – Inverness (LCT 227, **host**): theoretical visibility indicated from very limited extents of the LCT within the SLA;
- Rolling Uplands – Inverness (LCT 221, **host**): theoretical visibility indicated from very limited extents of the LCT within the SLA.

The assessment of effects on landscape character find no significant effects on the key characteristics of these LCTs or potential for future cumulative effects given the containment of the Development within the broad topographical 'bowl' landform of the Site, and the existing influence of wind farm development in views from these LCTs.

Assessment viewpoints located within the SLA include:

- VP 4: South Loch Ness Trail, north of Whitebridge represents views experienced from the route and nearby residential properties, and for which a medium magnitude of change was identified;
- VP 7: General Wade's Military Road represents views north-east experienced by road users within the Loch Ness and Duntelchaig SLA, for which a medium magnitude of change was identified;
- VP 8: Great Glen Way, East of Creag Dhearg represents views from a section of the route from which open views east are afforded, for which a low magnitude of change was identified;
- VP 10: A82 Achnahannet represents views experienced from a section of the road from which outward views east across the loch are afforded, and for which a low magnitude of change was identified;
- VP 11: Meall Fuar-mhonaidh represents views experienced by recreational receptors looking south-east across the Great Glen and Loch Ness, for which a low magnitude of change was identified
- VP 12: B862 North of Torness represents views looking south experienced by road users within the Loch Ness and Duntelchaig SLA, for which a low magnitude of change was identified.

The introduction of the Development will not significantly compromise the above stated special qualities of the SLA as the proposed wind turbines will typically be seen alongside the Operational Corriegarth Wind Farm, which serves as an existing scale indicator, with turbines contained to a relatively compact proportion of the view beyond the containing ridgeline. Although visibility of the Development will be possible from the SLA, including from the landmark hill of Meall Fuar-mhonaidh (VP11), the promoted Suidhe viewpoint on General Wade's Military Road (VP7) and sections of the Great Glen Way (VP8), the turbines will be seen in the context of and as a coherent and logical extension to the existing Operational Corriegarth Wind Farm. The ZTVs in Figure 6.9 indicate limited introduced visibility resulting from the Development. None of the special qualities of the SLA will be significantly affected by the introduction of the Development.

Effects on the Loch Ness and Duntelchaig SLA are considered to be **minor** (adverse) and **not significant**.

Given that existing wind farms, including the Operational Corriegarth Wind Farm are already present in views from the Loch Ness and Duntelchaig SLA, and as there will be no direct effects on key

Loch Ness and Duntelchaig SLA landscape features, it is considered that the Development will not significantly affect the integrity of the SLA by adversely impacting on the qualities for which it has been designated. Potential for Future Cumulative Effects (Scenario 1): There are no consented wind farm developments that will be located within the SLA. The Development will be seen in successive long-distance views with the consented Aberarder, Dell and Millennium South Wind Farms from relatively localised extents of the SLA, including elevated landform and lower sides of the glen. Whilst a number of wind farms will be visible in the view under this scenario, the Development will be seen as a relatively distant feature within the existing pattern of wind farm development. As such the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant. The Development will not significantly affect the integrity of the SLA when considered in this cumulative scenario by adversely impacting on the qualities for which it has been designated. Potential for Future Cumulative Effects (Scenario 2): No proposed wind farm developments are located within the SLA. The Development will be seen in long-distance views with Glenshero (at PLI) and Cloiche (at application) Wind Farms from relatively localised extents of the SLA, largely limited to the elevated landform of Meall Fuar-Mhonaigh. Where visible with proposed schemes, the Development will be seen within the existing pattern of wind farm development and the encirclement of views from the SLA by wind farm development will be avoided. As such the cumulative magnitude of change to views will be low and the additional and total cumulative visual effect will be minor (adverse) and not significant. The Development will not significantly affect the integrity of the SLA when considered in this cumulative scenario by adversely impacting on the qualities for which it has been designated.

6.10 MITIGATION AND RESIDUAL EFFECTS

As set out in the methodology (Technical Appendix A6.1), mitigation of landscape and visual effects has been undertaken through design modifications and input to the design process. The design evolution is set out in **Chapter 3: Site Selection and Design** of the EIA Report. As all mitigation for landscape and visual effects is embedded within the final design for the Development, all effects identified in this Chapter are residual effects.

6.11 CUMULATIVE EFFECTS

Cumulative landscape and visual effects are considered within the assessment of effects set out above. The section which follows below summarises the key potential effects which will arise through relationships between the Development, and the existing Operational Corriegarth Wind Farm, and other particular wind farm developments or groups of developments considered in the two cumulative scenarios (Scenario 1 and Scenario 2, as detailed in para 6.7.2).

6.11.1 Summary Observations

Table 6.8 lists operational and under construction, consented, at appeal and application wind farms within 40 km of the Development. Figure 6.8a indicates other wind farm developments within 60 km and Figure 6.8b indicates other wind farms within 40km with which the Development is more likely to interact. Figures 6.9 to 6.16 provide combined ZTVs of schemes likely to interact with the Development.

General summary observations about the existing baseline of operational wind farm developments, consented developments and those at application stage are described in Section 6.7 Other Wind Farm Developments.

There are two emerging clusters of wind farm development within 15 km of the Site within the Rolling Uplands – Inverness (LCT 221). As noted in Table 6.8, these include the Dunmaglass (operational) and Aberarder (consented) Wind Farms and the Stronelaire (operational), Dell (consented), Glenshero (at PLI) and Cloiche (application) Wind Farms. The Operational Corriegarth Wind Farm is located between these two clusters of wind farm development.

6.11.2 Summary Observations - Current Baseline

Figure 6.9 indicates that the Development will be visible from similar areas as operational wind farm development, with very limited areas of introduced visibility indicated within 5 km to the east and south-east of the Site within WLA 20, within 5-10 km to the south-west of the Site within Stratherrick and within 15 km to the north of the Site near Loch Ruthven. Combined, successive and sequential views of the Development with other operational wind farms will be largely limited to close proximity elevated positions within 10 km and longer distance views from elevated landform and summits within the Study Area.

6.11.3 Summary Observations - Possible Future Baseline

Consented and proposed wind farm developments within the Study Area generally result in similar areas of theoretical visibility as the existing operational baseline, with some additional visibility and further prominence of wind farm development within WLA 20: Monadhliath and from elevated landform and summits.

Under cumulative assessment Scenario 1 (which considers consented developments in addition to the baseline conditions of operational and under construction wind farms), potential additional and total cumulative effects are considered to be minor and not significant, as wind farm developments will appear within the existing pattern of development with discrete clusters located at an even interval of spacing.

Cumulative assessment Scenario 2 (which considers proposed developments in addition to operational, under construction and consented) will result in similar visibility as Scenario 1, with the addition of Cloiche (at application) and Glenshero (at PLI) Wind Farms notably increasing the prominence of development in combination with the operational Stronelaire and consented Dell Wind Farms. This change will be experienced from elevated landform and summits to the south and east of the Site, from which the Development will be seen as a relatively discrete extension to the Operational Corriegarth

Wind Farm in long-distance views. As such, the potential additional and total cumulative effects are considered to be minor and not significant.

6.12 SUMMARY OF EFFECTS

Table 6.42 provides a summary of the effects detailed within this chapter.

Table 6.42 Summary of Effects

Receptor	Sensitivity of Receptor	Magnitude of Change	Residual Effect
Construction Effects			
The Site	Medium	Medium	Moderate (adverse), significant
Operational Effects on Landscape Character			
The Site	Medium	Medium	Moderate (adverse), significant
LCT 221 – Rolling Uplands - Inverness	Medium	Medium locally, Low for LCT as a whole	Minor (adverse), not significant
LCT 125 – Rolling Uplands - Cairngorms	High	Low	Minor (adverse), not significant
LCT 227 – Farmed Strath - Inverness	High	Low	Minor (adverse), not significant
LCT 224 – Farmed and Wooded Foothills	High	Low	Minor (adverse), not significant
LCT 225 – Broad Steep-Sided Glen	High	Low	Minor (adverse), not significant
Operational Effects on Views and Visual Amenity			
Viewpoint 1: Gorthleck (residential receptors, road users)	High	Low	Minor (adverse), not significant
Viewpoint 2: Boleskine Parish Church (residential receptors)	High	Low	Minor (adverse), not significant
Viewpoint 3: B862 West of Corriegarth Lodge (road users, residential receptors)	Medium	Medium	Moderate (adverse), significant
Viewpoint 4: South Loch Ness Trail, north of Whitebridge (recreational and residential receptors)	High	Medium	Moderate (adverse), significant
Viewpoint 5: Errogie (road users, residential receptors)	High	Medium	Moderate (adverse), significant
Viewpoint 6: Beinn Bhreac Mhor (recreational receptors)	High	Low	Minor (adverse), not significant

Receptor	Sensitivity of Receptor	Magnitude of Change	Residual Effect
Viewpoint 7: General Wade's Military Road (road users, recreational receptors including tourists)	High	Medium	Moderate (adverse), significant
Viewpoint 8: Great Glen Way, East of Creag Dhearg	High	Low	Minor (adverse), not significant
Viewpoint 9: Carn Sgulain (recreational receptors)	High	Low	Minor (adverse), not significant
Viewpoint 10: A82 Achnahannet (road users)	Medium	Low	Minor (adverse), not significant
Viewpoint 11: Meall Fuar-mhonaidh (recreational receptors)	High	Low	Minor (adverse), not significant
Viewpoint 12: B862 North of Torness (road users)	Medium	Low	Minor (adverse), not significant
Viewpoint 13: Geal Charn (recreational receptors)	High	Low	Minor (adverse), not significant
Viewpoint 14: Corrieyairack Hill (recreational receptors)	High	Low	Minor (adverse), not significant
Viewpoint 15: Carn na Leitire (recreational receptors)	High	Low	Minor (adverse), not significant
Viewpoint 16: North Kessock - A9 northbound picnic area (road users, including tourists)	High	Low	Negligible (adverse), not significant
Viewpoint 17: Ben Tee (recreational receptors)	High	Low	Minor (adverse), not significant
Viewpoint 18: Toll Creagach (recreational receptors)	High	Low	Minor (adverse), not significant
Viewpoint 19: Ptarmigan Restaurant, Cairngorm	High	Low	Negligible (adverse), not significant

Receptor	Sensitivity of Receptor	Magnitude of Change	Residual Effect
(recreational receptors)			
Operational Effects on Settlements			
Gorthleck	High	Low	Minor (adverse), not significant
Operational Effects on Routes			
A82 (road users)	Medium	Low	Minor (adverse), not significant locally; Negligible (adverse), not significant for the road as a whole
B862 (road users)	Medium	Medium locally; Low for the road as a whole	Moderate (adverse), significant locally; Minor (adverse), not significant for the road as a whole
NCN Route 78 - The Caledonia Way (cyclists/recreational receptors)	High	Medium locally; Low for the route as a whole	Moderate (adverse), significant locally; Minor (adverse), not significant for the route as a whole
Great Glen Way (recreational receptors)	High	Low	Minor (adverse), not significant locally; Negligible (adverse), not significant for the route as a whole
South Loch Ness Trail (recreational receptors)	High	Medium locally; Low for the route as a whole	Moderate (adverse), significant locally; Minor (adverse), not significant for the route as a whole
Operational Effects on Designated Landscapes			
Cairngorms National Park ⁸²	High	Low	Minor (adverse), not significant
Loch Ness and Duntelchaig Special Landscape Area	Medium	Low	Minor (adverse), not significant
Operational Effects on Wild Land Areas			
WLA 20 Monadhliath ⁸³	High (Wild Land Quality 4) Medium (Wild Land Quality 1-3)	Low	Minor (adverse), not significant

⁸² Assessment of effects on special landscape qualities of Cairngorms National Park detailed in Appendix A6.3

⁸³ Assessment of effects on WLA 20 Monadhliath detailed in Appendix A6.4

6.13 STATEMENT OF SIGNIFICANCE

This Landscape and Visual Impact Assessment (LVIA) has been prepared by Chartered Landscape Architects (CMLI) from LUC which assesses the likely significant landscape and visual effects of the Development during construction, operation and decommissioning, with reference to mitigation which was developed during the design and planning process.

The LVIA also considers the possible cumulative effects arising from Corriegarth 2 Wind Farm in conjunction with other approved, under construction and proposed wind farms in the local area.

Landscape Effects

The landscape character of the Study Area is varied and includes open areas of rolling moorland plateau contrasted with intimate glens and straths. The Site is located within the Rolling Uplands – Inverness (LCT 221) and Farmed Strath – Inverness (LCT 227). Proposed wind turbines are only located in LCT 221; the existing access track is located within LCT 227.

The LCTs listed below are considered in the detailed assessment of landscape effects:

- LCT 221 – Rolling Uplands – Inverness;
- LCT 125 – Rolling Uplands – Cairngorms;
- LCT 227 – Farmed Strath – Inverness;
- LCT 224 – Farmed and Wooded Foothills; and
- LCT 225 – Broad Steep-Sided Glen.

The Development will result in moderate (adverse) and significant direct landscape effects within localised extents of the Site. Given the existing presence of wind farm development within LCT 221 – Rolling Uplands – Inverness, effects on this LCT as a whole are considered to be minor (adverse) and not significant. Indirect effects on other LCTs within the Study Area are considered to be not significant.

Visual Effects

Potential visual receptors within the Study Area include:

- Residents, including views from isolated properties, scattered communities or defined settlements;
- Road users (including tourists);
- Those engaged in recreational activities (e.g. hill walkers and cyclists); and
- People at their place of work, including agricultural workers.

The comparative ZTV shown in Figure 6.2 illustrates areas of existing visibility of the Operational Corriegarth Wind Farm, areas of theoretical visibility of the Development and areas where both wind farms will be visible. As indicated by the ZTV, the Development will typically be seen in combination with the Operational Corriegarth Wind Farm and will result in limited areas of introduced visibility.

During the operational phase, moderate (adverse) and significant visual effects will be experienced from four of the 19 representative viewpoints located within 10.9 km of the Development. These viewpoints are listed below:

- Viewpoint 3: B862 West of Corriegarth Lodge;
- Viewpoint 4: South Loch Ness Trail, north of Whitebridge;
- Viewpoint 5: Errogie;
- Viewpoint 7: General Wade's Military Road.

From these locations, the Development will be seen slightly increasing the horizontal extent and prominence of the Operational Corriegarth Wind Farm in views experienced by receptors considered to be of medium to high sensitivity. From other viewpoint

locations considered in the assessment, the Development will be seen as a discrete extension to the Operational Corriegarth Wind Farm, typically in views with an existing presence of wind farm development. Whilst the Development will slightly increase the horizontal extent of the Operational Corriegarth Wind Farm, spacing between existing clusters of wind farm development will be maintained.

Whilst moderate (adverse) and significant effects will be experienced from localised sections of the B862, NCN Route 78 and the South Loch Ness Trail, an overall minor (adverse) and not significant effect will be experienced from each of these routes.

Whilst a moderate (adverse) and significant effects will be experienced by residential receptors from VP1: Gorthleck, this represents a worst-case scenario from relatively limited extents of the settlement. An overall minor (adverse) and not significant effect will be experienced for the settlement of Gorthleck as a whole.

Designated Landscapes and Wild Land

The Site itself is not located within a designated landscape or wild land area; however, there are a number located within the 40 km Study Area. Potential effects upon the Loch Ness and Duntelchaig Special Landscape Area (SLAs), the Cairngorms National Park and Monadhliath Wild Land Area (WLA 20) were considered within the assessment.

The Loch Ness and Duntelchaig Special Landscape Area (SLA) is located approximately 7.3 km from the nearest wind turbine of the Development. The ZTV indicates visibility of the Development from within the SLA within 7-20 km of the Development. Whilst localised moderate (adverse) and significant effects are anticipated from locations within the SLA (VP4: South Loch Ness Trail North of Whitebridge, VP7: General Wade's Military Road), the introduction of the Development will not significantly affect or alter the Special Qualities of the SLA. An overall minor (adverse) and not significant effect was identified for the SLA. Given that existing wind farms, including the Operational Corriegarth Wind Farm are already present in views from the Loch Ness and Duntelchaig SLA, and as there will be no direct effects on key landscape features, it is considered that the Development will not significantly affect the integrity of the SLA by adversely impacting on the qualities for which it has been designated.

The Cairngorms National Park (CNP) is located approximately 9.7 km from the nearest wind turbine of the Development. An Assessment of the Special Landscape Qualities of the CNP is included in Appendix A6.3. The assessment of SLQs has established that the Development will not compromise any of the defined SLQs of the CNP. The Development will lead to indirect effects experienced from a relatively small geographical area of the CNP, exclusively affecting these elevated areas and summits, from where the turbines of the Development would appear consistent with the existing pattern of wind energy development in the landscapes outside the CNP and as a coherent extension to the existing Operational Corriegarth Wind Farm. The adverse effects on the SLQs of the CNP identified within the assessment are judged not to undermine the objectives for its protection, and the overall integrity of the CNP will not be compromised by the introduction of the Development.

The Monadhliath Wild Land Area (WLA 20) is located less than 1 km from the nearest wind turbine of the Development. A Wild Land Impact Assessment is included in Appendix A6.4. The existing influence of wind farm development to the south-west, west and north-west of the WLA 20 is acknowledged, with additional effects resulting from the Development judged to be very localised in their extent. Large areas of the WLA will remain unaffected by the influence of wind farm development. The adverse effects on the wild land qualities identified within the assessment are judged not to undermine the objectives for its protection, and the overall integrity of the WLA will not be compromised by the introduction of the Development.

Cumulative Effects

Operational wind farms and those under construction including the Operational Corriegarth Wind Farm are included as part of the baseline for the LVIA and considered as part of the primary LVIA assessment. Scenario 1 of the Cumulative Landscape and Visual Impact Assessment (CLVIA) considers the addition of the Development to a landscape with operational, under construction and consented wind farms. Scenario 2 of the CLVIA considers the addition of the Development to a landscape with operational, under construction, consented and undetermined valid planning applications. No significant cumulative effects were identified in the CLVIA. In general, other developments considered as part of both cumulative scenarios will introduce wind farm development into the existing pattern of development, maintaining a perceptible gap between clusters of wind turbines. The cumulative effects resulting from the introduction of the Development will typically be minor (adverse) and not significant, and in some instances no additional or total cumulative effects are predicted to occur.

Summary

As a result of siting and design of the Development as a discrete extension to the Operational Corriegarth Wind Farm, significant landscape and visual effects are limited to relatively localised extents of the Study Area. All significant effects are judged to be fully reversible; following decommissioning of the Development at the end of the operational phase, when the wind turbines and ancillary infrastructure would be removed, and the Site fully restored.

6.14 APPRAISAL OF DEVELOPMENT AGAINST THC SG LANDSCAPE & VISUAL CRITERIA

THC Onshore Wind SG sets out ten landscape and visual criteria that the Council will use as a framework for assessing proposals. The criteria do not set absolute requirements but seek to ensure that developers are aware of key constraints to development, which should be taken account of when progressing assessment and design of wind energy proposals. An assessment of the Development against the ten criteria is set out in Table 6.43 below and replicated in the Planning Statement (Table 4.2) which accompanies the Section 36 Application.

Table 6.43: Appraisal of Development against THC SG Landscape & Visual Criteria

Criterion	Measure	Evaluation
Criterion 1		
Relationship between Settlements/Key locations and wider landscape respected	The extent to which the proposal contributes to perception of settlements or key locations being encircled by wind energy development.	Settlements nearest the Development include a number of small villages located within Stratherrick. The location of wind turbines within the topographical 'bowl' of the Site and the relatively wooded/forested nature of Stratherrick will limit visibility of the Development from nearby settlements. Where views of the Development are afforded from settlements (illustrated by Figure 6.21 VP1: Gorthleck), wind turbines will be seen as a discrete extension to the Operational Corriegarth Wind Farm.
Development should seek to achieve a threshold where:	Turbines are not visually prominent in the majority of views within or from settlements/Key Locations or from the majority of its access routes.	Views of other operational, consented and proposed wind farms from settlements within Stratherrick will be limited as intervening topography typically screens views of these developments. Where views are afforded of operational Dunmaglass Wind Farm, wind turbines form a relatively distant feature

Criterion	Measure	Evaluation
		beyond intervening landform. The Development, in combination with the Operational Corriegarth Wind Farm, will appear as a separate and distinct cluster to Dunmaglass Wind Farm. Given this separation and the limited visibility of Dunmaglass Wind Farm, the perception of settlements within Stratherrick being encircled by wind energy development will be avoided. Access to settlements within Stratherrick is afforded from the B862. Whilst occasional oblique views of the Development will be afforded from the road (Figure 6.23 VP3: B862 West of Corriegarth Lodge, and Figure 6.27 VP7: General Wade's Military Road), the Development is unlikely to form a key focal feature in views from the road or overwhelm the relatively small scale and landscape setting of the settlements within Stratherrick.
Criterion 2		
Key Gateway locations and routes are respected	The extent to which the proposal reduces or detracts from the transitional experience of key Gateway Locations and routes.	The SG identifies the following Key Routes for LN6: Monadhliath ridge and tops, Rolling Uplands: • B862 Stratherrick (theoretical visibility indicated within 7-9 km of the Development) • A9 (very limited theoretical visibility indicated at a distance of over 26 km from the Development, therefore not considered within the assessment)
Development should seek to achieve a threshold where:	Wind Turbines or other infrastructure do not overwhelm or otherwise detract from landscape characteristics which contribute the distinctive transitional experience found at key gateway locations and routes.	The SG does not identify any Gateway locations for LN6. A medium magnitude of change has been identified for localised extents of the B862. However, this will be limited to areas within the vicinity of the Suidhe viewpoint (Figure 6.27 VP 7: General Wade's Military Road), near the junction with the B852 (Figure 6.23 VP3: B862 West of Corriegarth Lodge) and Errogie (Figure 6.25 VP5: Errogie) in views with an existing presence of operational wind farm development. From these locations, the Development will be seen in oblique views from short extents of the road and will not significantly affect the overall sequential experience of road users travelling on the B862. Given screening by intervening vegetation and landform, the Development will result in a minor and not significant visual effect for the B862 as a whole.
Criterion 3		
Valued natural and cultural landmarks are respected	The extent to which the proposal affects the fabric and setting of valued natural and cultural landmarks.	The Great Glen is located approximately 9 km from the nearest wind turbine of the Development. The setting and characteristics of this natural feature, including the dramatic and linear nature of the landform, will not be affected by the Development.
Development should seek to achieve a threshold where:	The development does not, by its presence, diminish the prominence of the landmark or disrupt its relationship to its setting.	Where views of the Development are afforded within the Great Glen (Figure 6.28 VP8: Great Glen Way, East of Creag Dhearg, and Figure 6.30 VP10: A82 Achnahannet), wind turbines will appear as a relatively distant feature beyond intervening landform and alongside the Operational Corriegarth Wind Farm. General Wade's Military Road (B862) passes within approximately 7 km of the nearest wind turbine of

Criterion	Measure	Evaluation
		the Development. In views from the Suidhe viewpoint (Figure 6.27 VP 7: General Wade's Military Road), the Development will be seen extending across the angle of the view between the Operational Corriegarth Wind Farm and Dunmaglass Wind Farm. Given the existing presence of wind farm development in the view, the introduction of the Development will be unlikely to result in additional disruption to the setting of the promoted viewpoint. The Development will be less visible in views experienced from elsewhere on this historic route and is unlikely to disrupt the setting of the road to the landscape as it passes through Stratherrick. Cultural landmarks are discussed in Chapter 9: Archaeology and Cultural Heritage.
Criterion 4		
The amenity of key recreational routes and ways is respected	The extent to which the proposal affects the amenity of key recreational routes and ways (e.g. Core Paths, Munros and Corbett's, Long Distance Routes etc.).	Key recreational routes that pass within in the Study Area, from which theoretical visibility of the Development is indicated, include the following: • Great Glen Way; • South Loch Ness Trail (Including Core Paths IN25.01, IN17.09, IN17.05); and • NCN Route 78 - The Caledonia Way; Whilst localised significant effects have been identified for the South Loch Ness Trail (Figure 6.24 VP4: South Loch Ness Trail, north of Whitebridge) and NCN Route 78 (Figure 6.27 VP7: General Wade's Military Road), the overall amenity of these routes will not be significantly affected by the introduction of the Development. The Development will be seen as a discrete extension to the Operational Corriegarth Wind Farm from these routes. A number of Munro, Corbett and smaller local hill summits form key recreational locations within the Study Area. From these elevated locations, the Development will be seen within the context of the operational wind farm development within the Study Area (Figure 6.29 VP9: Carn Sgulain, Figure 6.31 VP11: Meall Fuar-mhonaidh, Figure 6.33 VP13: Geal Charn, Figure 6.34 VP14: Corrieyairack Hill, Figure 6.35 VP15: Carn na Leitire, Figure 6.37 VP17: Ben Tee, and Figure 6.38 VP 18: Toll Creagach). Spacing between wind farm development will be maintained, and the Development will be seen as a relatively distant feature alongside the Operational Corriegarth Wind Farm.
Development should seek to achieve a threshold where:	Wind Turbines or other infrastructure do not overwhelm or otherwise significantly detract from the visual appeal of key routes and ways.	
Criterion 5		
The amenity of transport routes is respected	The extent to which the proposal affects the amenity of transport routes (tourist routes as well as rail, ferry routes and local road access)	Theoretical visibility of the Development is indicated for the A82 between Invermoriston and Drumadrochit at distances of 11-15 km to the west and north-west of the Development. Within the Study Area, views east from the road are typically screened by intervening vegetation, however occasional views are afforded looking across Loch

Criterion	Measure	Evaluation
Development should seek to achieve a threshold where:	Wind Turbines or other infrastructure do not overwhelm or otherwise significantly detract from the visual appeal of transport routes	Ness (Figure 6.30 VP 10: Achnahannet). Proposed wind turbines will form a relatively distant feature in oblique views from the road and will be seen as a discrete extension to the Operational Corriegarth Wind Farm. A low magnitude of change has been identified for this section of the A82, resulting in a minor and not significant visual effect. For the road as a whole, the level of effect will reduce to negligible and not significant. Whilst a moderate and significant visual effect has been identified for localised extents of the B862, this will be limited to short sections of the road from which glimpsed oblique views of the Development will be afforded. For the road as a whole, the Development will result in a minor and not significant effect.
Criterion 6		
The existing pattern of Wind Energy Development is respected	The degree to which the proposal fits with the existing pattern of nearby wind energy development, considerations include: • Turbine height and proportions, • Density and spacing of turbines within developments, • Density and spacing of developments, • Typical relationship of development to the landscape. • Previously instituted mitigation measures • Planning Authority stated aims for development of area	The Development is designed as an extension to the Operational Corriegarth Wind Farm and will be located within the interior of the wider plateau, similar to other operational, consented and proposed schemes located within the Rolling Uplands – Inverness (LCT 221). Where views of wind turbines will be afforded from lower-lying landscapes to the west of the site, the Development will appear beyond the containing ridgeline of the uplands. As such, the scale of the Development will not overwhelm the scale of more intimate and enclosed landscapes located to the west of the site. The layout of proposed wind turbines will be deeper along the axis perpendicular to the Great Glen, limiting the horizontal extent of the Development as seen in views experienced from elevated locations looking east across the Great Glen (Figure 6.31 VP 11: Meall Fuar-mhonaidh). The Development will appear as a discrete extension to the Operational Corriegarth Wind Farm in views from these locations. Overall composition, in conjunction with the Operational Corriegarth Wind Farm, will maintain simple and balanced spacing between wind turbines with minimal overlapping of wind turbine blades. Whilst the proposed turbine size of the Development will be slightly larger than that of the Operational Corriegarth Wind Farm, differences in wind turbine height and rotor diameter will only be discernible from locations in relatively close proximity to the Development. The blade tip height of the proposed wind turbines will be below 150 m, avoiding the introduction of visible aviation lighting to wind turbines within the Study Area.
Development should seek to achieve a threshold where:	The proposal contributes positively to existing pattern or objectives for development in the area.	
Criterion 7		
The need for separation between developments and/ or clusters is respected	The extent to which the proposal maintains or affects the spaces between existing developments and/ or clusters.	The pattern of operational, consented and proposed wind farm development within the Study Area comprises distinct clusters of wind farm development, located within the interior of the plateaux on either side of the Great Glen. Nearest

Criterion	Measure	Evaluation
Development should seek to achieve a threshold where:	The proposal maintains appropriate and effective separation between developments and/ or clusters.	the Development, this includes clusters of wind farm development comprising: • Dunmaglass (operational) and Aberarder (consented) Wind Farms located 5.4 km to the north-east of the Development; • Stronelaig (operational), Dell (consented), Glenshero (at PLI) and Cloiche (application) Wind Farms located 7.2 km south-west of the Development; and • Kyllachy (under construction) and Farr (operational) Wind Farms located 18.7 km to the north-east of the Development. The Development will appear as a discrete extension to the Operational Corriegarth Wind Farm, which is located between the operational Stronelaig and Dunmaglass Wind Farms. Spacing of approximately 5-7 km between clusters of operational, consented and proposed wind farms will be maintained. Successive views of wind farm development within the Study Area are typically limited to elevated landform and summits. In these views, separation between clusters of wind farm development will be maintained (Figure 6.31 VP 11: Meall Fuar-mhonaidh and Figure 6.35 VP 15: Carn na Leitire).
Criterion 8		
The perception of landscape scale and distance is respected	The extent to which the proposal maintains or affects receptors' existing perception of landscape scale and distance.	In views from Stratherrick to the west of the site, proposed wind turbines will be set back from the edge of the uplands so as to avoid undermining the smaller scale of this landscape. The Development is located within a landscape of large scale with few scale indicators, apart from operational wind farm development.
Development should seek to achieve a threshold where:	The proposal maintains the apparent landscape scale and/or distance in the receptors' perception.	In views from hill summits within the WLA 20: Monadhliath, wind turbines will appear at a similar distance from the viewpoint as the Operational Corriegarth Wind Farm. Given the large landscape scale of the Monadhliath and existing presence of operational wind farms in views, wind turbines will not overwhelm the scale and perceived depth of the WLA 20 area beyond effects already experienced as a result of operational wind farms.
Criterion 9		
Landscape setting of nearby wind energy developments is respected	The extent to which the landscape setting of nearby wind energy developments is affected by the proposal.	The Development will be located within the topographical 'bowl' of the site, appearing as a discrete extension to the Operational Corriegarth Wind Farm within the larger-scale landscape of the Rolling Uplands – Inverness (LCT 221). In a limited number of views, the Development will slightly increase the prominence of the Operational Corriegarth Wind Farm, however this increase in prominence will typically be experienced in long-distance views with an existing presence of wind farm development, resulting in a relatively small scale change to the view.
Development should seek to achieve a threshold where:	Proposal relates well to the existing landscape setting and does not increase the perceived visual prominence of surrounding wind turbines.	

Criterion	Measure	Evaluation
Criterion 10		
Distinctiveness of Landscape character is respected	The extent to which a proposal affects the distinction between neighbouring landscape character types, in areas where the variety of character is important to the appreciation of the landscape.	The Development will be located within the Rolling Uplands – Inverness (LCT 221). There is an existing presence of wind farm development within this LCT, of which operational wind farms are typically located within the interior of the plateau so as to avoid visibility from more sensitive neighbouring landscape character types. Visibility of wind turbines from the nearby Broad Steep-Sided Glen (LCT 225), which is located within the Loch Ness and Duntelchaig Special Landscape Area (SLA), will be minimised due to intervening topography and to the location of proposed wind turbines within the interior of the plateau. Where visible, the Development will be seen in views with an existing presence of wind farm development, appearing comparable in scale and horizontal extent to the operational wind farms. Whilst the Development will be visible from the adjacent smaller-scale Farmed Strath – Inverness (LCT 227), the wooded nature of this LCT minimises visibility, and the Development will typically appear as a discrete extension to the Operational Corriegarth Wind Farm, partially screened by intervening landform in views with an existing presence of wind farm development.
Development should seek to achieve a threshold where:	Integrity and variety of Landscape Character Areas are maintained.	Given that existing wind farms, including the Operational Corriegarth Wind Farm are already present in views from the Loch Ness and Duntelchaig SLA, and as there will be no direct effects on key landscape features, it is considered that the Development will not significantly affect the integrity of the SLA by adversely impacting on the qualities for which it has been designated. The Development will be evident in views from elevated areas of the Cairngorms National Park (CNP), including from the edge of THC authority area at the eastern edge of the Monadhliath Mountains. The Development will lead to indirect effects experienced from a relatively small geographical area of the CNP, exclusively affecting these elevated areas and summits, from where the turbines of the Development would appear consistent with the existing pattern of wind energy development in the landscapes outside the CNP and as a coherent extension to the existing Operational Corriegarth Wind Farm. The adverse effects on the Special Landscape Qualities (SLQs) of the CNP identified within the assessment are judged not to undermine the objectives for its protection, and the overall integrity of the CNP will not be compromised by the introduction of the Development. The assessment of effects on the SLQs of the CNP are presented in Appendix A6.3. The Monadhliath Wild Land Area (WLA 20) is located directly east of the Development. A Wild Land Impact Assessment is presented in Appendix A6.4, with additional effects resulting from the Development judged to be very localised in their extent whilst large areas of the WLA will remain unaffected by the influence of wind farm

Criterion	Measure	Evaluation
		development. The adverse effects on the wild land qualities identified within the assessment are judged not to undermine the objectives for its protection, and the overall integrity of the WLA will not be compromised by the introduction of the Development.

6.15 GLOSSARY

Acronym	Definition
AESLQs	Assessment of Effects on Special Landscape Qualities
AOD	Above Ordnance Datum
CLVIA	Cumulative Landscape and Visual Impact Assessment
CMLI	Chartered Member of the Landscape Institute
CNP	Cairngorms National Park
CNPA	Cairngorms National Park Authority
CZTV	Cumulative Zone of Theoretical Visibility
EIA	Environmental Impact Assessment
ECU	The Scottish Government Energy Consents Unit
GDL	Garden and Designed Landscape
GLVIA3	Guidelines for Landscape and Visual Impact Assessment Third Edition
LCA	Landscape Character Assessment
LVIA	Landscape and Visual Impact Assessment
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LDP	Local Development Plan
LI	Landscape Institute
LN	Loch Ness (referring to Landscape Character Areas in the Highland Council Onshore Wind Supplementary Guidance)
LUC	Land Use Consultants
LVIA	Landscape and Visual Impact Assessment
NCN	National Cycle Network
NSA	National Scenic Area
RVAA	Residential Visual Amenity Assessment
SLA	Special Landscape Area
SLQs	Special Landscape Qualities
SNH	Scottish Natural Heritage
THC	The Highland Council
VP	Viewpoint
WLA	Wild Land Area
WLIA	Wild Land Impact Assessment
ZTV	Zone of Theoretical Visibility

7 ECOLOGY

7.1 Introduction

This Chapter of the Environmental Impact Assessment (EIA) Report identifies and assesses the potential effects that the proposed Corriegarth 2 Wind Farm (the Development) may have on the ecological resources of the local environment. Analysis and assessment of baseline ecological data have enabled the identification of appropriate mitigation and compensation measures to prevent, reduce, or offset potential adverse ecological effects, as well as enhancement measures to provide beneficial effects, where possible. The assessment was undertaken by Laura Spence, Ecologist at Arcus Consultancy Services Ltd (Arcus) and Associate Member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and technically reviewed by Nicholas Wright, Principal Ecologist at Arcus, Full Member of CIEEM and Chartered Environmentalist. Further review was undertaken by Heather Kwiatkowski, Principal EIA Project manager at Arcus, and Stuart Davidson, Registered EIA Practitioner and Operational Director at Arcus.

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a Figures excluding LVIA:

- Figure 7.1: Ecological Designations;
- Figure 7.2 (a-f): Phase 1 and NVC Survey Results;
- Figure 7.3: Ground Water Dependent Terrestrial Ecosystems (GWDTEs); and
- Figure 7.4: Area Identified for Habitat Management Plan.

This Chapter of the EIA Report is supported by the following Technical Appendices presented in Volume 3:

- Technical Appendix A7.1: Habitats & Botany Surveys;
- Technical Appendix A7.2: Protected Species;
- Technical Appendix A7.3: Bat Survey Report; and
- Technical Appendix A7.4: Fisheries Habitat Survey

This Chapter is structured as follows:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Methods;
- Baseline Conditions;
- Assessment of Ecological Importance;
- Embedded Mitigation;
- Ecological Impact Assessment (EcIA);
- Residual Effects;
- Assessment of Cumulative Effects;
- Habitat Regulation Appraisal;
- Statement of Significance; and,
- Summary of Effects;

This Chapter contains a Habitat Regulation Appraisal (HRA) and includes; Stage 1: Screening (Section 7.12.1) and Stage 2: Shadow Appropriate Assessment (Section 7.12.2).

Potential ecological effects are often related to effects on ornithology, hydrology, and geology. This Chapter should, therefore, be read in conjunction with **Chapter 4: Development Description, Chapter 8: Ornithology, Chapter 12: Hydrology and Hydrogeology, and Chapter 13: Geology and Peat.**

Common vernacular species names are presented in this Chapter (except with reference to species without such) followed by the scientific name (upon first use of the common name only).

The following terms are used in this chapter to describe the Development and various associated study areas:

- The Development: the whole physical process involved in the development of Corriegarth 2 Wind Farm, including wind farm construction, operation and decommissioning (i.e. not a piece of land or an area);
- The Site: the application site boundary within which the land available for turbine development and associated wind farm infrastructure is located (shown as a red line boundary (the Site) in Figure 7.1);
- Desk Study Area (DSA): a variable radius around the Site in which pre-existing information and data have been considered; and
- Survey Area: the area in which any given ecology survey has been undertaken. Survey areas vary among surveys and are defined further in Section 7.4.2, as well as in the associated Technical Appendices and Figures; however, all surveys were carried out within the 250 metres (m) of the Site, which is defined as the Ecology Survey Area.

7.2 Legislation, Policy and Guidance

7.2.1 Legislation

The following is a summary of legislation of relevance to this chapter:

- Council Directive 92/43/EEC (the 'Habitats Directive')¹;
- Council Directive 2000/60/EC ('Water Framework Directive')²;
- Wildlife and Countryside Act 1981 (as amended)³;
- Conservation (Natural Habitats, & c) Regulations 1994 (the 'Habitat Regulations')⁴;
- Wildlife and Natural Environment (Scotland) Act 2011⁵;
- Protection of Badgers Act 1992⁶;
- Nature Conservation (Scotland) Act 2004⁷; and
- Salmon and Freshwater Fisheries Act 2003⁸.

¹ European Commission (1992) Council Directive 92/43/EEC the Conservation of Natural Habitats and of Wild Fauna and Flora [Online] Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31992L0043&from=EN> (Accessed 09/09/20)

² European Commission (2000) Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy [Online] Available at: https://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF (Accessed 09/09/20)

³ UK Government (1981) Wildlife and Countryside Act 1981, Chapter 69. Part 1 [Online] Available at: <http://www.legislation.gov.uk/ukpga/1981/69/section/1> (Accessed 09/09/20)

⁴ Scottish Government (1994) The Conservation (Natural Habitats, &c.) Regulations 1994 [Online] Available at: <http://www.legislation.gov.uk/ukSI/1994/2716/contents/made> (Accessed 09/09/20)

⁵ Scottish Government (2011) Wildlife and Natural Environment (Scotland) Act 2011 [Online] Available at: <http://www.legislation.gov.uk/asp/2011/6/contents/enacted> (Accessed 09/09/20)

⁶ UK Government (1992) Protection of Badger Act 1992 [Online] Available at: <http://www.legislation.gov.uk/ukpga/1992/51/contents> (Accessed 09/09/20)

⁷ Scottish Government (2014) Nature Conservation (Scotland) Act 2004 [Online] Available at: <http://www.legislation.gov.uk/asp/2004/6/contents> (Accessed 09/09/20)

⁸ Scottish Government (2003) Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003 [Online] Available at: <http://www.legislation.gov.uk/asp/2003/15/contents> (Accessed 09/09/20)

7.2.2 Policy and Guidance

The following is a summary of the general key policies and guidance relevant to this chapter:

- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine⁹;
- General Pre-application/ Scoping Advice to Developers of Onshore Wind Farms¹⁰;
- Decommissioning and Restoration Plans for wind farms¹¹;
- Good Practice During Wind Farm Construction¹²;
- Guidance on Assessing the Impacts of Windfarm Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems¹³;
- Planning Guidance on On-shore Windfarm Developments¹⁴;
- European Union (EU) Biodiversity Strategy¹⁵;
- 2020 Challenge for Scotland's Biodiversity¹⁶; and
- Scottish Biodiversity List (SBL)¹⁷.

In addition to the above, guidance relating to the ecology of species and habitats and to survey and assessment methods are cited in full, where appropriate, in the relevant parts of this chapter and associated Technical Appendices. Work has been carried out in accordance with BS 42020:2013 Biodiversity – Code of Practice for Planning and Development¹⁸ by ecologists working to the Chartered Institute of Ecology and Environmental Management (CIEEM) Code of Professional Conduct¹⁹.

⁹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine [Online] Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-Sept-2019.pdf> (Accessed 09/09/20)

¹⁰ NatureScot (2018) General pre-application/ scoping advice to developers of onshore wind farms [Online] Available at: <https://www.nature.scot/sites/default/files/2018-02/SNH%20General%20pre-application%20and%20scoping%20advice%20to%20developers%20of%20onshore%20wind%20farms.pdf> (Accessed 09/09/2020)

¹¹ NatureScot (2016) Decommissioning and Restoration Plans for Wind Farms [Online] Available at: <https://www.nature.scot/sites/default/files/2019-10/Guidance%20-%20Decommissioning%20and%20restoration%20plans%20for%20wind%20farms%20-%20Feb%202016.pdf> (Accessed 09/09/2020)

¹² Scottish Renewables, NatureScot, SEPA, Forestry Commission Scotland, Historic Environment Scotland (2015). Good Practice during Wind Farm Construction [Online] Available at: <https://www.nature.scot/sites/default/files/2019-05/Guidance%20-%20Good%20Practice%20during%20wind%20farm%20construction.pdf> (Accessed 09/09/2020)

¹³ SEPA (2017) Guidance on Assessing the Impacts of Windfarm Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Land Use Planning System SEPA Guidance Note 31. Version 3, [Online] Available at: <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf> (Accessed 09/09/2020)

¹⁴ SEPA (2014) Planning guidance on on-shore windfarm developments. Land Use Planning System SEPA Guidance Note 4. Version 9 [Online] Available at: <https://www.sepa.org.uk/media/136117/planning-guidance-on-on-shore-windfarms-developments.pdf> (Accessed 09/09/2020)

¹⁵ European Commission (2011) EU Biodiversity Strategy [Online] Available at: http://ec.europa.eu/environment/nature/biodiversity/strategy/index_en.htm (Accessed 09/09/2020)

¹⁶ Scottish Government (2015) Scotland's Biodiversity, a Route Map to 2020 [Online] Available at: <https://www.gov.scot/publications/scotlands-biodiversity-route-map-2020/> (Accessed 09/09/2020)

¹⁷ Scottish Government (2013) Scottish Biodiversity List [Online] Available at: <https://www2.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL> (Accessed 09/09/2020)

¹⁸ BSI Group (2013). BS 42020:2013 – a code of practice for biodiversity in planning and development. BSI.

¹⁹ CIEEM (2017). Code of Professional Conduct [Online] Available at: https://www.cieem.net/data/files/Website_Downloads/Code_of_Professional_Conduct.pdf (Accessed 09/09/2020)

7.3 Assessment Methodology and Significance Criteria

7.3.1 Scope of Assessment

In summary, the scope of the EcIA includes the following elements:

- Identification of designated sites of nature conservation interest;
- Identification of recent local records of rare, notable or protected species or habitats;
- Consideration of the likely significant effects on ecological features arising due to the Development;
- Description of measures required to mitigate adverse effects on ecological features within or adjacent to the Site, with the aim to avoid, reduce or compensate for the effect, or offer an opportunity for enhancement; and
- Identification of residual effects on ecological features, including those considered to be significant, taking into account the above mitigation.

The principal ecological issues considered in this EcIA include:

- Potential effects on sites designated for nature conservation;
- The harm and disturbance, both direct and indirect, to habitats and species arising from the construction, operation and decommissioning of the Development; and
- The potential legal implications of the above impacts.

7.3.2 Scoping Opinion and Consultation Response

Throughout the scoping exercises, and subsequently during the ongoing EIA process, relevant organisations have been contacted for advice and comment. Table 7.1 summarises the Scoping opinions and consultation responses received in relation to Ecology.

Table 7.1: Summary of Scoping Opinion and Consultation Response

Consultee	Details/Comment	Where Addressed in EIA Report
Marine Scotland Science (MSS) Scoping Response: 16/03/2020 Email	The following information should be presented in the EIA report: • results from site characterisation surveys and/or up to date data obtained from other sources to assess the presence and abundance of fish populations within and downstream of the proposed development area; • an outline of the proposed site-specific mitigation measures and details regarding proposed monitoring programmes for water quality and fish populations before, during and after construction and decommissioning; and • a consideration of the potential cumulative impacts on the water quality and fish populations as a result of adjacent developments with hydrological connectivity to the present proposal.	Section 7.6, 7.8 & 7.10 See also Technical Appendix A7.1 and A7.4

Consultee	Details/Comment	Where Addressed in EIA Report
NatureScot (formerly named Scottish Natural Heritage, SNH) Scoping Response: 18/03/2020 Email	Generally, satisfied with the scope of assessment identified however the following key issues will require assessment as part of the EIA process: • protected species: if any targeted surveys for bats, otter, water vole, red squirrel, badger and pine marten and wildcat, result in any of these species being confirmed within the Site then NatureScot advise that a Species Protection Plan should be included with the EIA report. • deer management: If wild deer are present on or will use the Site, an assessment of the potential impacts on deer welfare, habitats, neighbouring and other interests (e.g. access and recreation, road safety, etc.) should be presented within the EIA report. Where significant impacts may be caused, a draft Deer Management Plan will also be required to address the impacts.	Section 7.6 and 7.10. See also Technical Appendix A7.1 and A7.3
Scottish Environment Protection Agency (SEPA) Scoping Response: 19/03/2020 Email	GWDTEs Infrastructure avoid habitats M6, M23 and S11 (highly groundwater dependent) and M25 and MG10 (moderately groundwater dependent). Development provides a good opportunity for peatland restoration work which could have GWDTE and wider peatland habitat benefits, as well as benefits for carbon storage. If development avoids impacts on GWDTEs, SEPA are content peatland restoration could mitigate other habitat impacts. Watercourses 50 m buffers on all modified watercourses and all new access tracks. 20 m buffer from large-scale man-made drainage ditches. Using existing tracks within 50 m of watercourses is acceptable if pollution risk from improvement works are low. There are numerous watercourses on this Site and connecting tracks will need to be carefully considered to demonstrate how they minimise watercourse crossings and potential impacts to the water environment, especially on steep ground to the south.	Section 7.5, 7.6 and 7.8. See also Chapter 12 Hydrology and Hydrogeology, and Chapter 13 Geology and Peat.

Consultee	Details/Comment	Where Addressed in EIA Report
The Highland Council Scoping Response: 06/04/2020 Email	The likely impacts on the nature conservation interests of all the designated sites in the vicinity of the proposed development should be addressed. 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. A baseline survey of the animal (mammals, reptiles, amphibians, etc) interest on site should be provided. It needs to be categorically established which species are present on the site, and where. Further rare and threatened habitats, and those protected by European or UK legislation, or identified in national or local Biodiversity Action Plans should be recorded. Habitat enhancement and mitigation measures should be detailed, particularly in respect to blanket bog. An assessment of any GWDTEs should also be provided.	Section 7.5, 7.6, 7.8 and 7.9 See also Technical Appendices A7.2-A7.5 and Chapter 12 Hydrology and Hydrogeology.

In addition to the above consultation, information on the above was requested from the following organisations:

- Botanical Society of Britain and Northern Ireland (BSBNI);
- The Highland Biological Recording Group (HBRG);
- Inverness Bat Group;
- Ness District Salmon Fishery Board;
- Scottish Badgers;
- Scottish Wildcat Association (SWA); and
- Scottish Wildlife Trust (SWT).

Data was only received from the HBRG, but included information from a number of the above organisations.

7.3.3 Assessment Methodology

The approach taken to impact assessment follows guidance for EcIA²⁰ which sets out the process for assessment through the following stages:

- Identification and characterisation of ecological effects;
- Determining importance of ecological features, including identification of Important Ecological Features (IEFs);
- Incorporation of measures to mitigate identified effects;
- Assessment of significance of residual effects following mitigation;
- Identification of appropriate compensation to offset significant residual effects; and
- Identification of opportunities for ecological enhancement.

²⁰ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine [Online] Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-Sept-2019.pdf> (Accessed 09/09/20)

7.3.3.1 Determining Importance

One of the key challenges in EcIA is to decide which ecological features are important and should be subject to detailed assessment. Such ecological features will be those that are considered to be most important and potentially affected by the project. In EcIA, 'importance' of an ecological feature is a synonymous with 'sensitivity', and thus considers the baseline condition of the features, as well as the potential impacts of the development, to assign the level of sensitivity the feature has to the development. The determination of 'importance' therefore sets the context upon which the assessment on each feature is to be carried out with the EcIA.

Upon the identification of the potential direct and indirect effects from the Development, it was necessary to undertake a systematic determination of IEFs. IEFs are ecological features that could be 'significantly' affected by the Development, both negatively and positively.

In accordance with CIEEM guidance, the importance of an ecological feature was considered within a defined geographical context of between international to Site wide level. In this EcIA, only ecological features with regional importance and above (see Table 7.2) were considered as IEFs, and in accordance with CIEEM guidance, only these IEFs required assessment for potential significant effects.

Habitats and species of nature conservation importance are identified through policies and legislation. For example, habitats and species of international importance are listed on Annex I of the Habitats Directive. Where these are considered of principal importance for biodiversity in Scotland, these features are also listed in the Nature Conservation (Scotland) Act. Other features of importance may be listed on the Scottish Biodiversity List or as LBAP priorities. These elements provided a crucial starting point for the identification of IEFs requiring consideration in EcIA, however they did not solely determine the level of importance assigned, (with the exception of internationally designed Natura 2000 sites).

Expert judgement was applied to determine the level of importance and to identify IEFs. When determining the importance in the context of EcIA, contextual information regarding distribution and abundance of a given species was essential, and included population trends based on historical records. The scale within which importance is determined may also relate to a particular population and thus was considered when determining importance. Additionally, in accordance with CIEEM guidance, where a legally protected species was present within the zone of influence and there is potential for a breach of legislation, such species was considered to be an IEF.

Table 7.2: Geographic Context of Important Ecological Features

Level of Importance/ Sensitivity	Examples of Definitions
International	The population has little or no ability to absorb change without fundamentally altering its present character (e.g. a rare and sensitive species in substantial decline) An internationally designated site (e.g. a Special Area of Conservation (SAC)) or a site meeting criterion for international designations. Species in internationally important numbers (> 1 % of biogeographic populations).
National (i.e. Scotland)	The population has low ability to absorb change without fundamentally altering its present character (e.g. an uncommon or rare species in decline, or a common species in substantial decline) A nationally designated site (e.g. a Site of Special Scientific Interest (SSSI)) or a site meeting criterion for national designations. Species present in nationally important numbers (> 1 % Scottish population). Large areas of priority habitats listed on Annex I of the Habitats Directive and smaller areas of such habitats that are essential to maintain the viability of that ecological resource.
Regional (i.e. Inverness-shire)	The population has moderate capacity to absorb change without significantly altering its present character. (e.g. an uncommon or rare but stable species, or a common/widespread but declining species) Species present in regionally important numbers (> 1 % Scottish population). Sites not meeting criteria for SSSI selection but of greater than the regional criteria below. Priorities within the Inverness and Nairn Local Biodiversity Action Plans (LBAP), where they occur in sufficient abundance to maintain the local resource.
Local (i.e. within 10 km of the Site)	The population is tolerant of change without detriment to its character (a common/widespread species with a stable population status, or an uncommon species with an improving status) Scottish Wildlife Trust (SWT) Reserves and Local Nature Reserves (LNRs). Areas of habitat or species considered to appreciably enrich the ecological resource within the area local to the Site.
Less than Local (Site wide)	The population is resistant to change (e.g. a common/widespread species that is improving its range and abundance) Usually widespread and common habitats and species. Loss of such a species from the Site would not be detrimental to the ecology of the local area.

7.3.3.2 Characterising Magnitude of Ecological Impacts

The assessment within this chapter included consideration of potential impacts on each IEF from all phases of the Development (construction, operation and decommissioning), including direct, indirect and secondary impacts. Impacts and their effects on IEFs were fully considered, taking into account ecosystem structure and function.

The baseline conditions of IEFs were examined to determine how they will change as a result of the Development, taking embedded mitigation into account, and assessing the cumulative impacts of the Development in combination with other developments. The methods followed ensured that where identified, 'significant effects' would be assessed in

the context of predicted future baseline conditions within the zone of influence, throughout the lifetime of the Development.

The assessment described the relevant characteristics required to understand the ecological impact and to determine significance, including the following:

- Beneficial or adverse impact: determined according to whether or not the change is in accordance with nature conservation objectives and policy. A beneficial impact is a change that improves the quality of a feature and may include halting or slowing an existing decline in the quality of a feature. An adverse impact is a change that reduces the quality of a feature;
- Extent: the spatial or geographical area over which the impact may occur;
- Duration: defined in relation to ecological characteristics in addition to human timeframes. Impacts may be described as short-, medium-, long-term, permanent or temporary;
- Frequency and timing: this will take into account the number of times an activity will occur in a defined time period that may influence the resulting impact. The timing and frequency of an activity or change may result in an impact if it coincides with seasonal ecological elements (such as a protected species' breeding season); and
- Reversibility: in line with the CIEEM guidelines²¹, an irreversible impact is one from which recovery is not possible within a reasonable timescale, or there is no reasonable chance of action being taken to reverse it. A reversible impact is one from which spontaneous recovery is possible or which may be counteracted by mitigation.

The above characteristics combined to form a qualitative description of impact magnitude, as summarised in Table 7.3.

Table 7.3: Impact Magnitude Criteria

Effect Magnitude	Description
High	Impacts that will almost always affect the integrity or conservation status of an ecological feature. They are usually long-term and often permanent/irreversible.
Medium	Impact that may in some circumstances affect the integrity or conservation status of an ecological feature. They may be long-term but are potentially reversible.
Low	Impacts that do not usually affect the integrity or conservation status of an ecological feature. They are often short-term and/or reversible.
Negligible	Impacts with no perceptible effect on an ecological feature. As a guide, less than 1 % of the population or area will be predicted to be affected.

7.3.3.3 Determining Significance

For the purposes of EcIA, a 'significant effect' is defined as an effect that either supports or undermines biodiversity conservation objectives for IEFs, or for biodiversity in general. Conservation objectives may be specific, broad or wide-ranging; therefore, effects can be considered as significant at a wide range of scales from international (major) to local (negligible). Significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems, and the conservation status of habitats and species, including their distribution and abundance.

Where identified, significant effects were qualified with reference to an appropriate geographic scale. It is important to note that the scale of the significance of an effect, may

²¹ CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine [Online] Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-Sept-2019.pdf> (Accessed 09/09/20)

not be the same as the geographic context in which the feature is considered important. This enables consistency in scale when determining appropriate mitigation or compensation solutions.

For defined sites or ecosystems, significant effects encompass impacts on the structure and function of such systems. For designated sites, it is necessary to assess whether or not an impact will affect the integrity of a site or ecosystem (and is therefore significant). This is achieved through understanding whether the changes arising from the Development are likely to move the baseline conditions closer to, or further from, the condition which constitutes integrity for that specific system.

For habitats and species, consideration of conservation status is required to determine whether or not an effect on a habitat or species is likely to be significant.

For habitats, conservation status is determined by the sum of influences acting on the habitat that may affect its extent, structure and functions, in addition to its distribution and typical species composition within a given geographical area.

For species, conservation status is determined by the sum of influences acting on the species concerned, which may affect its abundance and distribution within a given geographical area. When assessing potential effects on conservation status, the known or likely background trends and variations in status are taken into account. Estimation is also given to the level of ecological resilience or conditions that would allow the population of a species or area of habitat to continue to exist at a given level, such as to increase along an existing trend or to reduce a decreasing trend.

Within this assessment, the significance of the potential effects on each identified IEF is determined through professional judgement, by considering both the nature conservation importance of each feature and the degree to which it may be affected (the effect magnitude) by the Development.

7.3.3.4 Cumulative Effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. Within EcIA, cumulative effects are particularly important as many ecological features are exposed to background levels of threat or pressure and may be close to reaching critical thresholds where further impact could cause irreversible decline. It is recognised that different actions can cause cumulative effects as follows:

- Additive/incremental effects: multiple activities/projects may give rise to a significant effect due to their proximity in time and space. These may be additive or synergistic effects; and
- Ancillary: ancillary developments may include different aspects of the project which may be authorised under different consent processes, these will be included as part of the cumulative assessment.

7.3.3.5 Residual Impacts

Following the assessment of effects, including incorporation of embedded mitigation, all attempts will be made to avoid and mitigate significant ecological impacts, through specific, applied mitigation, whereupon an assessment of residual effects will be undertaken to determine their significance. Where residual effects result in significant impacts or require application of compensatory measures, these will be considered against the relevant policy and legal objectives to determine the outcome of the application.

7.4 Baseline Methods

7.4.1 Desk Study

A desk study was conducted in September 2019 to obtain information about relevant designated nature conservation sites and records of habitats and species. The desk study searched for records of statutory and non-statutory sites of nature conservation, protected species, and priority habitats and species for nature conservation listed in the LBAP²² and the SBL¹⁷. The DSA comprised of a variety of areas around the Site, as follows:

- A radius of 10 km from the Site was searched for internationally designated statutory sites for nature conservation (e.g. SAC or Ramsar sites);
- A radius of 10 km from the Site was searched for nationally designated statutory sites (e.g. SSSIs);
- A radius of 2 km from the Site was searched for non-statutory sites;
- A radius of 5 km from the Site was searched for records of notable or protected species; and
- A radius of 2 km from the Site was searched for records of invasive, non-native species.

Information on the above was requested from conservation organisations (as detailed in Section 7.3.2), with additional information obtained from publicly available sources and is cited in the relevant parts of this chapter and Technical Appendices as necessary.

7.4.2 Baseline Surveys

Baseline ecology surveys were undertaken between May 2019 and March 2020. An overview of the survey methods is provided below and full details are presented in Appendices A7.1 through A7.4.

7.4.2.1 Extended Phase 1 Habitat Survey

A Phase 1 Habitat Survey of the Site, including a 250 m buffer for potential GWDTEs, was undertaken by Botaneco, on behalf of Arcus, between 16th September and 22nd October 2019, and followed standard Joint Nature Conservation Committee (JNCC) survey methods²³ (Appendix A7.1). Phase 1 Habitat Survey is a standard method for classifying and mapping British habitats.

In addition, the Phase 1 Habitat Survey aimed to identify wetland habitats in accordance with the habitat's descriptions given in 'A Functional Wetland Typology for Scotland' guidance²⁴. Where wetland habitats were identified further, more detailed, surveys were undertaken for identification of vegetation communities with potential groundwater dependency in accordance with SEPA guidance²⁵.

Due to changes in the Survey Area over the course of the design process, the whole Site boundary was not covered during the Phase 1 Survey. The survey covered 250 m of the turbine layout and associated infrastructure. The existing access track was not part of the scope of the 2019 Phase 1 Survey, but was mapped using habitats information gained from a previous survey of the Operational Corriegarth Wind Farm and through a review of aerial imagery.

²² The Highland Council (2004) The Inverness and Nairn Biodiversity Action Plan [Online] Available at: http://www.highlandbiodiversity.com/userfiles/file/acion-plans/inverness_nairn.pdf (Accessed 09/09/20)

²³ JNCC (2010) Handbook for Phase 1 Habitat Survey: A technique for environmental audit. 5th Edition

²⁴ SNIFFER (2009) WFD95: A Functional Wetland Typology for Scotland – Field Survey Manual. Version 1.

²⁵ SEPA (2009) Land Use Planning Systems SEPA Guidance Note 4 Planning Guidance on on-shore windfarms developments [Online] Available at: <https://www.sepa.org.uk/media/136117/planning-guidance-on-on-shore-windfarms-developments.pdf> (Accessed 29/11/19)

7.4.2.2 National Vegetation Classification Survey

A National Vegetation Classification (NVC) survey was undertaken on all wetlands and habitats of conservation value recorded during the Phase 1 Habitat survey. The NVC survey involved mapping distinct areas of homogenous vegetation and recording detailed descriptions of the vegetation communities, with reference to published community descriptions^{26,27,28}. Full survey methods are presented in Appendix A7.1.

7.4.2.3 Protected Species Survey (excluding bats)

Protected Species Surveys, with the exclusion of wildcat surveys, were carried out between April and September 2019 (see Appendix A7.2). A Wildcat Walkover Survey was undertaken in January 2020 (see Appendix A7.2). The Protected Species Surveys encompassed all land within the Site and extended up to a 250 m radius (Ecology Survey Area), in line with NatureScot guidance²⁹. The 250 m radius included all species considered likely to be present, but the area surveyed for each species varied depending on species-specific survey guidelines and best practise²⁹, as outlined below:

- Badger (*Meles meles*): Suitable habitats within the Site and extending up to 100 m from the Site;
- Otter (*Lutra lutra*): Suitable riparian habitats within the Site and extending up to 200 m up- and downstream of watercourses potentially impacted by the Development;
- Pine marten (*Martes martes*): Suitable habitats within the Site and extending up to 250 m from the Site;
- Red squirrel (*Sciurus vulgaris*): Suitable habitats within the Site and extending up to 50 m from the Site;
- Water vole (*Arvicola amphibius*): Suitable riparian habitats within the Site and extending up to 50 m up- and downstream of watercourses potentially impacted by the Development; and
- Wildcat (*Felis silvestris*): Suitable habitats within the Site and extending up to 200 m from the Site.

7.4.2.4 Bat Surveys

Bat Surveys, completed by MacArthur Green, were carried out in accordance with multi-stakeholder guidance published in 2019 by NatureScot³⁰, between May and October 2019 (the Bat Survey Season), as detailed in Appendix A7.3. In accordance with these guidelines³⁰ remote, static bat detector surveys were carried out for a minimum of 10 consecutive nights across three survey seasons (spring, summer and autumn) between May and October 2019.

All surveys were carried out within the 'Bat Survey Area' (BSA) which was defined by the Development layout at the time of the survey and, in line with NatureScot guidelines, included a buffer of at least, 200 m outwith the BSA. This level of survey effort represents a low-risk survey effort, as required for the Site in accordance with the aforementioned guidance. Surveys surpassed the minimum survey effort; sampling for 14 nights and covering a buffer of 300 m surrounding the BSA. The Development layout at the time of

²⁶ Rodwell, J. S (ed.) (1991 *et seq.*). *British Plant Communities. Vol 1–5*. Cambridge University Press

²⁷ Elkington, T., Dayton, N., Jackson, D. L. and Strachan, I. M. (2001). *National Vegetation Classification: Field Guide to Mires and Heaths*. Joins Nature Conservation Committee, Peterborough

²⁸ Averis, B., Birks, J., Horsefield, D., Thompson, D. and Yeo, M. (2004). *An Illustrative Guide to British Upland Vegetation*, JNCC, Peterburgh

²⁹ NatureScot (2020) Protected Species Advice for Developers. Guidance on Planning and Protected Animals [Online] Available at: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-protected-species>

³⁰ Joint Publication NatureScot, Natural England, et al. (2019) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation

survey included 20 proposed wind turbines. In accordance with NatureScot guidance³⁰, the required minimum number of static bat detectors based on this Development layout was to deploy 13 detectors.

A total of 14 bat detectors (AnaBats) were deployed at ground level (mounted at 2 m using posts) for a minimum of 10 consecutive nights in open, moorland habitats (see Technical Appendix A7.3: Bat Surveys). Habitats are broadly divisible into 'open' habitats (i.e. open areas lacking high-value linear habitat features with 50 m) and 'edge' habitats (i.e. within 50 m of woodland edges, or a linear feature such as a fence line or watercourse). Detectors are ideally situated within a mix of both open and edge habitats unless, as in this case, the habitats within the Site are homogeneous and only one habitat type is present. The AnaBats recorded from approximately half an hour before sunset until approximately half an hour after sunrise. Recordings were analysed with AnalookW software.

NatureScot guidance³⁰ states that "*full spectrum automatic detectors should be deployed, as a minimum*". However, on the NatureScot website³¹, it is stated that "*in this, the first year of implementation of the guidance, using a combination of full spectrum and zero-crossing bat detectors for pre-construction surveys is acceptable where there are not enough full spectrum detectors available. We would though expect zero-crossing detectors to be replaced over time with full spectrum detectors, to fully comply with the guidance*". NatureScot was consulted on the 21st March 2019 regarding the requirement for full spectrum detectors, following the publication of the new guidance in January 2019. NatureScot advised that the use of zero-crossing detectors would be permitted with a transition over time towards full spectrum detectors. They also suggested deploying a few full-spectrum detectors alongside the zero crossing detectors at a subset of locations, so that detectability can be calibrated; this was incorporated into the survey method for the Site. A combination of Anabat Express (recording in zero-crossing) and Anabat Swift (recording in full spectrum) bat detector models were used.

Full details of the bat survey methods are provided in Appendix A7.3.

7.4.2.5 Fisheries Habitat Survey

A Fisheries Habitat Survey (FHS) was carried out by Leigh Kelly BA MRes MIFM of Mhor Environmental Ltd (SFCC Qualified Electrofishing Team Lead and Salmonid Habitat Surveyor). The Fisheries Habitat Survey was carried out in March 2020 using a 'combined' survey methodology incorporating several a widely used survey and assessment methods to characterise in-stream habitats for potentially sensitive species, including Scottish Fisheries Co-ordination Centre (SFCC) (2007) walkover protocols, methods developed by Hendry and Cragg-Hine³² and those developed for the river/fisheries habitat surveying^{33, 34} to determine the Fish Utilisation Potential (FUP) and Fish Habitat Quality (FHQ) of watercourses that may be impacted by the Development.

The FHS was carried out to determine the potential of watercourses to support salmonid fish (Atlantic salmon (*Salmo salar*)) and brown trout (*Salmo trutta*), lamprey species, European eel (*Anguilla anguilla*) and freshwater pearl mussel (*Margaritifera margaritifera*) by recording a range of biotic and abiotic factors associated with each watercourse.

³¹ NatureScot (2019) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: January 2019. NatureScot, Natural England, Natural Resources Wales, RenewableUK, ScottishPower Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust [Online] Available at: <https://www.nature.scot/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation>

³² Hendry K, Cragg-Hine D (1997) - A Guidance Manual. APEM Ltd, Fisheries Technical Manual 4, R & D Technical Report W44, Version 1.0/07-97. R & D Project 603.

³³ Environment Agency (2003) - River Habitat Survey in Britain and Ireland. Field Survey Guidance Manual: Environment Agency, Bristol.

³⁴ SFCC (2007) - Fisheries Management SVQ – Habitat Surveys Training Course Manual.

During the field survey, watercourses and the surrounding habitats were characterised and assessed according to the following criteria:

- Predominant channel substrate and flow-types;
- Habitat features;
- Modifications to the channel and banks;
- Channel vegetation types;
- Vegetation structure of the banks and bank tops; and
- Land-use.

To determine FUP, various habitat criteria detailed within the above methodologies were considered, including, but not limited to, cover provided by habitat, barriers to fish migration, channel modifications, and point & diffuse pollution. To determine FHQ, flow and substrate types were considered to determine the value of each instream habitat for fish species of consideration concern, considering the habitat requirement for various life stages.

7.5 Baseline Conditions

7.5.1 Desk Study Results

7.5.1.1 Designated Sites

Four statutory designated sites relevant to ecology were recorded within 10 km of the Site. Information relating to these statutory designated sites is provided in Figure 7.1, provided in Volume 2a, and summarised in Table 7.4, below.

There are no non-statutory Local Nature Reserves or Local Wildlife Sites in the DSA. However, several small areas of semi-natural woodland listed on the Ancient Woodland Index (AWI) were recorded within 2 km of the Site.

Table 7.4: Statutory Designated Sites within 10 km of the Site

Name	Designation	Approximate Distance and Direction from the Site	Relevant Designated Features
Loch Bran	SSSI	1 km north of the Site (access track), but 7 km north-west of the closest turbine location	Designated for its terrestrial biological importance, notably it's dragonfly assemblage.
Ness Woods	SAC	3.4 km west of the Site (access track), but 9.3 km north-west of the closest turbine location	Otter, mixed woodland on base-rich soils associated with rocky slopes and western acidic oak woodland.
Easter Ness Forest	SSSI	3.4 km west of the Site (access track), but 9.3 km north-west of the closest turbine location	Upland mixed ash woodland and upland oak woodland.
Inverfarigaig	SSSI	5.5 km north-east of the Site	Designated for upland mixed ash woodland
Monadhliath	SAC	7.75 km south of the Site	Designated for its upland characteristics and associated habitats, including blanket bog.
River Moriston	SAC	8.0 km west of the Site on opposite side of Loch Ness	Designated for Atlantic salmon (<i>Salmo salar</i>) and freshwater pearl mussel (<i>Margaritifera margaritifera</i>)
Levishie Wood	SSSI	9.9 km north-west of the Site on opposite side of Loch Ness	Designated for upland birch woodland

7.5.1.2 Protected and Notable Species Records

Records were returned by HBRG. Data from other desk study consultees are managed by HBRG and/or otherwise freely publicly available. Table 7.5 provides a summary of recent (2000-2020) records of protected or notable species identified within the DSA.

Table 7.5: Protected and Notable Species Records in the DSA

Species	Conservation Status	Nearest Record to Site	Number of Record(s) & Date(s) of Record(s)
Brown hare (<i>Lepus europaeus</i>)	SBL ¹⁷ , LBAP ²²	5 km north-west	16 (2000-2005)
Brown Long-eared bat (<i>Plecotus auritus</i>)	SBL, EPS ³⁵	4 km west	1 (2007)
Common lizard (<i>Zootoca vivipara</i>)	WCA ³ , SBL	5 km north-west	2 (2010-2016)
Common toad (<i>Bufo bufo</i>)	WCA, SBL	5 km north-west	8 (2009-2013)
Common pipistrelle (<i>Pipistrellus pipistrellus</i>)	SBL, EPS, LBAP	4.5 km west	7 (2007)
Eurasian badger (<i>Meles meles</i>)	PBA ³⁶	4.5 km north-west	4 (2004-2013)
Eurasian red squirrel (<i>Sciurus vulgaris</i>)	WCA, SBL, LBAP	4.8 km north-west	27 (2000- 2015)
European otter (<i>Lutra lutra</i>)	EPS, WCA, SBL, LBAP	1-5 km north-west	3 (2006)
Mountain hare (<i>Lepus timidus</i>)	HR ⁴ , SBL	3-5 km east	11 (2000-2018)
Pine marten (<i>Martes martes</i>)	HR, SBL	5 km north-west	4 (2007-2013)
West European Hedgehog (<i>Erinaceus europaeus</i>)	SBL	5 km north-west	7 (2006-2009)
Wildcat (<i>Felis silvestris</i>)	HR, SBL, LBAP	3 km south	2013 (1 record)
Key: EPS: European Protected Species HR: The Conservation (Natural Habitats, &c.) Regulations 1994 WCA: Wildlife and Countryside Act 1981 SBL: Scottish Biodiversity List LBAP: Local Biodiversity Action Plan			

No records of invasive, non-native species were identified during the desk study.

³⁵ European Protected Species, Habitats Regulations (1994) Available online at <http://www.legislation.gov.uk/ukxi/1994/2716/contents/made> [Accessed 09/09/20]

³⁶ Protection of Badgers Act (1992) Available online at: <https://www.legislation.gov.uk/ukpga/1992/51/contents> [Accessed 11/02/20]

7.5.2 Baseline Survey Results

7.5.2.1 Extended Phase 1 Habitat and National Vegetation Classification Survey

A summary of the Phase 1 habitats and NVC communities recorded, and their potential groundwater dependency, is provided in Table 7.6. Figure 7.2 shows the Phase 1 habitats recorded overlaid with the infrastructure of the Development. Figure 7.3 shows the likely GWDTEs overlaid with the infrastructure of the Development.

For succinctness, habitats in Figure 7.2 were presented by their broad Phase 1 habitats classifications; however, for brevity further information regarding the various mosaics with these habitats are detailed in Table 7.6. Full survey method and results and detailed, large-scale figures of Phase 1 habitats, habitat mosaics and NVC communities, are provided in Appendix A7.1.

Peatland habitat was extensive across 1,206.4 hectares (ha) (89.5 %) of the Survey Area, and included blanket bog (1092.6 ha, 81.0 %); wet heath (111.6 ha, 8.3 %); and wet modified bog (2.2 ha, 0.2 %). There is also an additional 48.8 ha (3.6 %) of peatland mosaics with each other, acid/neutral flush, bedrock outcrops & dry heath. The extensive & highly eroded blanket bog habitat extends onto relatively steep slopes around the edge of Corriegarth where it often has a slumped, 'blocky' appearance. Wet heath occupies water-shedding ridges & slopes; and the low summit in the west where it is most extensive and widely forms mosaics with bedrock outcrops & small hollows with blanket bog.

Surface water draining from the peatland habitat to shallow depressions, watercourses & eroded channels in the blanket bog is associated with acid/neutral flush. Numerous, linear areas of this habitat type are located at mid-slope and below, especially in the south-west. A total of 20.1 ha (1.5 %) is present. Further upslope, marshy grassland is associated with the same topographic features, especially in the north and alongside watercourses. It accounts for 3.1 ha (0.2 %) alone, and its mosaics with acid/neutral flush account for an additional 4.3 ha (0.3 %).

Open water habitat is located in the base of 'peat pans' (extents of eroded, bare peat). The open water is therefore associated with varying degrees of blanket bog vegetation regeneration. It accounts for a seasonally variable 0.3 ha (<0.1 %).

Infrastructure associated with the current wind turbine array and a pre-existing track includes hard-surfacing across 16.5 ha (1.2 %). There is also 22.4 ha (1.7 %) of disturbed ground dating from construction of the wind farm that is a variable mix of bare peat and regenerating vegetation.

The remaining percentage of the Survey Area (1.9 %) was comprised of habitats categorised as 'other habitat'.

Table 7.6: Summary of the Phase 1 Habitats and their Absolute and Relative Areas within the Survey Area³⁷

Phase 1 Habitat	Habitat Mosaics	Description	Associated NVC Communities	Area (ha)
A.1.1 Broadleaved woodland - plantation		Obviously planted broadleaved woodland located within the access track; the largest planted area in the south.	N/a	30.38
A.1.2 Coniferous woodland - plantation		Obviously planted coniferous woodland located within the access track; small pockets of the habitat existed in the south-west.	N/a	1.27
A.3.1 Broadleaved Parkland/scattered trees		Tree cover was less than 30 %, density of trees less than that of plantation areas. Comprised of broadleaved species, much of which was immature cover along the existing access track.	N/a	11.03
B1.1 Acid grassland - unimproved	B1.1	This comprised scattered areas (< 5 ha in total) of species-poor, moderately even to uneven, indistinctive vegetation. It represented a modified habitat, derived from dry heath & mire through grazing (U4a & U5a) and / or drainage (U5b). B1.1 is included within the Highland Biodiversity Action Plan as a target for biodiversity enhancement.	U4a <i>Festuca ovina</i> - <i>Agrostis capillaris</i> - <i>Galium saxatile</i> grassland, typical sub-community U4a-U5a mosaic U5a <i>Nardus stricta</i> - <i>Galium saxatile</i> grassland, species-poor sub-community U5b <i>Nardus stricta</i> - <i>Galium saxatile</i> grassland, <i>Agrostis canina</i> - <i>Polytrichum commune</i> sub-community	16.89
	B1.1-B5 Acid grassland/marshy grassland mosaic	A graduation between species typical of acid grasslands and those associated with marshy grasslands, this habitat was present where localised, wetter ground conditions dominated.	U5b-U6a mosaic	
	B1.1-B5-E2.1 Acid grassland/marshy grassland/flush and spring (acid) mosaic	Mosaic habitat type comprised of vegetation typical of acid and marshy grassland as well as flush/spring habitats.	M6a-M6b-U5a-U6a mosaic	
	B1.1-E2.1 Acid grassland/flush and spring (acid) mosaic	A mosaic of vegetation which included species typical of both acidic grassland and flush/spring habitats, associated within watercourses throughout the Site.	M6a-M6b-U5a mosaic M6a-M6c-U5a mosaic M6a-U4a-U5a mosaic M6a-U5b-U6a mosaic M6b-M6c-U5a mosaic	

³⁷ Note that these areas exclude the Phase 1 habitat & NVC plant communities within the GWDTE buffer (i.e. they are calculated for the area of the Site alone).

B.1.2 Acid Grassland – semi-improved		Comprised of grasslands which have been modified by artificial fertilisers, slurry, intensive grazing, herbicides or drainage. Consequently, a range of species, less diverse and natural than that shown within the unimproved pasture were present. This habitat was present in large quantities along the existing access track.	N/a	16.81
B5 Marsh / marshy grassland	B5	A small area (3 ha) of low species-richness, evenness & distinctiveness. Highly modified by grazing. Included within the SBL but not the Highland Biodiversity Action Plan or Habitats Directive.	U6a <i>Juncus squarrosus-Festuca ovina</i> grassland, <i>Sphagnum</i> spp. sub-community	4.93
	B5-D2 Marshy grassland/wet dwarf shrub heath mosaic	A combination of species associated with marshy grassland and wet dwarf shrub heath habitat. Very small area infused throughout larger areas of marshy grassland and wet heath.	M15b-U5b mosaic	
	B5-E2.1 Marshy grassland/flush and spring (acid) mosaic	Mosaic habitat type with vegetation typical of a combination of marshy grassland and flush/spring habitats.	M6a-M6b-U6a mosaic M6c-U6a mosaic	
C.1.2 Bracken - Scattered		Pockets of habitat within the south-west of the access track which were dominated by sparse areas of bracken (<i>Pteridium aquilinum</i>).		3.72
D1.1 Dry dwarf shrub heath – acid	D1.1	Extremely species-poor, uneven & indistinctive vegetation dominated by a single species. More species-rich & distinctive forms are included within the Highland Biodiversity Action Plan, Scottish Biodiversity List & Habitats Directive.	H16 <i>Calluna vulgaris-Arctostaphylos uva-ursi</i> heath H-H12a mosaic H-H14 mosaic	6.90
	D1.1-D2 Dry dwarf shrub heath (acid)/ Wet dwarf shrub heath mosaic	A combination of species representative of both dry dwarf shrub heath and wet dwarf shrub heath, a mosaic as a result of varied ground conditions.	H-H12a-M15b mosaic H-M15b mosaic	
D2 Wet dwarf shrub heath	D2	Very small areas (<1 ha) of patchy habitat of low to moderate species-richness & evenness. The vegetation was distinctive in a local context. Extensive areas of this habitat were located on rain-fed, water-shedding slopes; and often above the likely zone of groundwater emergence. There were no floristic elements that suggested base-enrichment derived from groundwater.	M15b <i>Trichophorum cespitosum-Erica tetralix</i> wet heath, typical sub-community M15b-M15c mosaic M15c <i>Trichophorum cespitosum-Erica tetralix</i> wet heath, Cladonia spp. sub-community	151.41

		Included within the Highland Biodiversity Action Plan, Scottish Biodiversity List & Habitats Directive.		
	D2-E1.6.1 Wet dwarf shrub heath/blanket sphagnum bog mosaic	A high degree of variation was present in the ground conditions and therefore the composition of the vegetation present resulted in various mosaic forms of the wet heath and blanket sphagnum bog habitats.	M15b-M17a mosaic	
	D2-I1.4.1 Wet dwarf shrub heath/other exposure (acid/neutral) mosaic	Scattered small areas in an intimate mosaic with blanket bog & wet heath. Not included within the Highland Biodiversity Action Plan, Scottish Biodiversity List or Habitats Directive.	M15b-M15c mosaic	
D5 Dry heath/acid grassland mosaic		This represents a common mixture of dry heath (D1) and acid grassland (B1) vegetation species.	H-H12a-U5a mosaic H-U4a mosaic	5.77
D6 Wet heath/acid grassland		Vegetation mosaics similar to D5, but involving a mixture of wet heath (D2) with acid grassland (B1).	H-M15b-U5a mosaic M15c-U4a mosaic	21.79
E1.6.1 Blanket sphagnum bog	E1.6.1	Extensive habitat (>1,000 ha), associated with deep peat deposits (>0.5 m). However, there was a low to moderate species-richness, evenness & distinctiveness. The habitat was also extensively eroded and influenced by grazing & drainage. Included within the Highland Biodiversity Action Plan, Scottish Biodiversity List & Habitats Directive.	H-M17b mosaic M17a <i>Trichophorum cespitosum-Eriophorum vaginatum</i> blanket mire, <i>Drosera rotundifolia-Sphagnum</i> spp. sub-comm. M17a-M17b mosaic M17b <i>Trichophorum cespitosum-Eriophorum vaginatum</i> blanket mire, <i>Cladonia</i> spp. sub-community M19 <i>Calluna vulgaris-Eriophorum vaginatum</i> blanket mire	1117.74
	E1.6.1-E2.1 Blanket sphagnum bog/flush and spring (acid) mosaic	A mosaic of vegetation which included species typical of both blanket bog and flush/spring habitats.	M17a-M2-M6a mosaic	
E1.7 Wet modified bog	E1.7	Very small areas of habitat (<3 ha) associated with deep peat deposits (>0.5 m). Although, throughout the habitat, very low species-richness, evenness & distinctiveness existed. Included within the Highland Biodiversity Action Plan, Scottish Biodiversity List & Habitats Directive.	M20 <i>Eriophorum vaginatum</i> blanket and raised mire	2.81

	E1.7-E2.1 Wet modified bog/ flush and spring (acid) mosaic	Mosaic habitat type with vegetation typical of a combination of wet modified bog and flush/spring habitats.	M20-M6c mosaic	
E2 Flush and spring	E2.1 Flush and spring – acid/neutral flush	Generally, this habitat was comprised of individually small (<0.5 ha), scattered areas totalling 23 ha (including mosaics). A low to locally moderate species-richness, evenness & distinctiveness was present. One area of M6c was associated with discharge from a spring as well as conducting surface water from the surrounding blanket bog. The majority of the habitat was located in shallow, waterlogged depressions amongst blanket bog and in riparian settings and was not associated with obvious, diffuse or point sources of groundwater emergence. There were no floristic elements that suggested base-enrichment derived from groundwater. Included within the Highland Biodiversity Action Plan & Scottish Biodiversity List but not the Habitats Directive.	M2-M6a mosaic M2-M6a-M6b mosaic M4 <i>Carex rostrata</i> - <i>Sphagnum fallax</i> mire M6a <i>Carex echinata</i> - <i>Sphagnum fallax/denticulatum</i> mire, <i>Carex echinata</i> sub-community M6a-M6b mosaic M6a-M6b-M6c mosaic M6a-M6b-M2 mosaic M6a-M6c mosaic M6a-U5a mosaic M6c <i>Carex echinata</i> - <i>Sphagnum fallax/denticulatum</i> mire, <i>Juncus effusus</i> sub-community M32b <i>Philonotis fontana</i> - <i>Saxifraga stellaris</i> spring, <i>Montia fontana</i> - <i>Chrysosplenium oppositifolium</i> sub-community	29.55
	E2.2 Flush and spring – basic flush	Small areas represented by points (<20 m in the longest dimension). Moderate species-richness & evenness; and distinctive locally for the presence of base-enrichment indicators. Included within the Highland Biodiversity Action Plan & Scottish Biodiversity List but not the Habitats Directive.	M10a <i>Carex dioica</i> - <i>Pinguicula vulgaris</i> mire, <i>Carex viridula</i> subsp. <i>oedocarpa</i> - <i>Juncus bulbosus/kochii</i> sub-community	
G1.3 Standing water - oligotrophic		Variable habitat including various mire elements (blanket bog, wet heath, acid/neutral flush & swamp) as well as bare peat expanses. Included within the Highland Biodiversity Action Plan & Scottish Biodiversity List but not the Habitats Directive.	N/a	1.99
G.2 Running water		Comprised of rivers and streams throughout the Survey Area.		0.41
J.1.1 Cultivated/disturbed land - arable		A small area within the access track was identified as arable cropland.		3.66

J5 Other habitat	Artificial or highly modified habitat, distinctive only for the presence of some common ruderal herbs.	Non NVC: Disturbed ground Non NVC: Tracks & wind farm infrastructure	54.29

7.5.2.2 *Protected Species Survey (excluding bats)*

A summary of the Protected Species Survey results is presented below. Full survey results are presented Appendix A7.2.

During the course of the 2019 surveys, otter and badger were confirmed to be present within the Site; it is thought that water vole is also likely to be present.

Evidence of otter included numerous spraints and a resting place identified along both the Allt a' Ghille Charaich, which runs east from the River E, and the Allt Bad Fionnaich, another tributary of the River E, watercourses. A badger sett, identified as an 'outlier sett', with two well-used entrance holes was identified within coniferous woodland south of the access track in the west of the Survey Area. There are suitable habitats within the Survey Area to support water vole; however, no evidence that could confirm the presence of the species was found.

No evidence of red squirrel or pine marten was recorded, although suitable habitat for both species exists within the wooded areas in the west of the Site, and so their presence within the Survey Area cannot be discounted.

The Wildcat Winter Walkover Survey recorded no confirmed or potential evidence of wildcat within the Survey Area. Habitats in the east of the Survey Area and within the wider local environment were considered to be of very low value to wildcat for foraging, commuting and denning due to the dominance of wet bog and moorland landscape and absence of any woodland. The west of the Survey Area, along the existing access track, is more suitable for the species with the presence of scattered, broadleaved trees and riparian habitat adjacent the River E, as well as coniferous plantation. However, the relatively small size and isolated nature of this woodland within the extensively open habitat present in the wider area makes it sub-optimal.

No evidence of amphibians (including sightings) were recorded during the surveys. Habitats within the Survey Area were considered suitable for amphibians generally being of a wet nature with vegetation (such as soft-rush, sharp-flowered rush and bog-mosses) indicative of this.

Common lizard was recorded within the Site. Felled woodland and rough grassland, recorded within the Survey Area, provided suitable foraging, refuge and hibernacula opportunities for reptiles.

7.5.2.3 *Bat Survey*

A summary of the Bat Survey results is presented in this section. Full survey results and supporting data are provided Appendix A7.3.

The Site was dominated by open moorland, a habitat generally considered of low value to foraging, commuting and roosting bats, and was therefore considered to be of low value to the species. This was reflected in the very low level of activity and species diversity recorded during bat surveys.

Between May and October 2019, bats were detected on just 16 of the 561 complete recording nights, using 13 static bat detectors with a total of two bat species and one genus classification recorded within the Survey Area. Activity was dominated by common pipistrelle bats which are considered common and widespread within Scotland. Both common and soprano pipistrelle bats are considered to be at a medium population vulnerability; *Myotis* sp. are considered to be of low population vulnerability with regards to the Development. The total number of passes recorded for each species across all of the detectors within the Survey Area is shown below:

- Common pipistrelle: 208 passes and 87% of passes;
- Soprano pipistrelle: 24 passes and 10.1% of passes; and
- Myotis bats: 5 passes and 2.1% of passes.

No confirmed or potential roosts or hibernaculum were recorded within the Survey Area.

7.5.2.4 Fisheries Habitat Survey

A summary of the Fisheries Habitat Survey results is presented below. Full survey results and supporting data are provided in Appendix A7.4.

In total, 18 survey sites throughout the River E were sampled. Of these, 13 had suitable combinations of flow types, depths and variable substrates providing moderate to good habitat for juvenile salmonids.

The habitat quality of the survey sites was coherent in terms of supporting salmonid populations. However, the connectivity between the watercourses throughout the catchment is significantly affected by various barriers to fish migration. The key barrier to migration was Falls of Foyers, recorded 3.5 km downstream of the Site (access track). Falls of Foyers is a 165 ft waterfall which prevents all upstream migration, and in accordance with SEPA's 'Obstacles to Fish Passage' data³⁸, is classified as an 'impassable barrier' to migrating fish. Habitat connectivity is integral to survival of migratory salmonids, successful migration upstream and downstream is required to support populations of migratory fish species such as the Atlantic salmon^{39,40}.

Therefore, it is considered that all watercourses within the Survey Area, where moderate to good habitat was recorded are likely to contain only resident brown trout if salmonids are present.

7.6 Assessment of Ecological Importance

Table 7.7 evaluates the importance of ecological features associated with Development, and determines which ecological features, based on both their intrinsic value and their potential to be affected by the project, are considered to be IEFs. Each ecological feature has been assigned a level of importance in accordance with the geographical scale outlined in Table 7.2.

Features of Local or Less than Local value, and those to which impacts can be categorically ruled out, are scoped out of further assessment. However, if impacts to such features – even if not significant in terms of EcIA – may result in legal offences then suitable safeguards will be presented in Section 7.7.

³⁸ Marine Scotland Information. Available online at: <http://marine.gov.scot/information/barriers-and-obstructions-freshwater-rivers>

³⁹ Hendry K & Cragg-Hine D (2003). Ecology of the Atlantic Salmon. Conserving Natura 2000 Rivers Ecology Series No.7. English Nature, Peterborough.

⁴⁰ Willem B. Buddendorf, et al (2019). Integration of juvenile habitat quality and river connectivity models to understand and prioritise the management of barriers for Atlantic salmon populations across spatial scales. STOTEN 655, 557-566.

Table 7.7: Importance of Ecological Features

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
Nationally and Internationally Designated Statutory Sites				
Loch Bran SAC	Loch Bran is approximately 1km from the proposed access track, however this is an existing access track, and to the closest turbines is 7km away. Due to the low mobility of the qualifying features, and the designation's distant proximity to the Site, the designated is considered out with connectivity of the Development.	No connectivity to the Development	Local	Scoped out
Monadhliath SAC	Monadhliath is located 7.75 km south of the Site. Therefore, due to stationary nature of the qualifying features and the designation's distant proximity to the Site, the designated site is considered out with connectivity of the Development.	No connectivity to the Development	Less than Local	Scoped Out
Easter Ness Forest SSSI	Easter Ness Forest is approximately 3.4 km from the proposed access track; however, this is an existing access track, and the closest turbines is 9.3 km away. Due to the stationary nature of the qualifying features and the designation's distant proximity to the Site, the designated site is considered out with connectivity of the Development.	No connectivity to the Development	Less than Local	Scoped Out
Ness Woods SAC	Ness Woods is located on the shore of Loch Ness approximately 3.4 km from the proposed access track, however this is an existing access track, and the closest turbines is 9.3 km away. Due to the stationary nature of the majority of qualifying features and the designation's distant proximity to the Site, the designated site is considered out with connectivity of the Development for all qualifying features, with the possible exception of otter due to the species mobility and potential territorial range. As such, this feature alone is scoped in for further assessment. Furthermore, as a Natura 2000 Site, an HRA screening is required to determine if the development will result in a 'likely significant effect' on the integrity of the SAC or its qualifying features (see Section 7.12).	Internationally designated	International	Scoped in. Considered an IEF.
Inverfarigaig SSSI	Inverfarigaig is approximately 5.5km from the proposed access track; however, this is an existing access track, and the closest turbines is notable further away. Due to the stationary nature of the qualifying features and the designation's distant proximity to the Site, the designated site is considered out with connectivity of the Development.	No connectivity to the Development	Less than Local	Scoped Out

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
River Moriston SAC	River Moriston is located 8.0 km west of the Site (the proposed access track) on opposite side of Loch Ness, as such the designated site is considered out with connectivity of the Development.	No connectivity to the Development	Less than Local	Scoped Out
Levishie Wood SSSI	Levishie Wood is located 9.9 km north-west of the Site (the proposed access track) on opposite side of Loch Ness, and as such the designated site is considered out with connectivity of the Development.	No connectivity to the Development	Less than Local	Scoped Out
Phase 1 Habitats within the Site				
A.1.1 Broadleaved woodland - plantation	Limited extent of a common and widespread habitat with limited species richness.	Common and widespread habitat with limited species richness.	Less than Local	Scoped out. Not considered an IEF.
A.1.2 Coniferous woodland - plantation	Limited extent of a common and widespread habitat with limited species richness.	Common and widespread habitat with limited potential to support biodiversity.	Less than Local	Scoped out. Not considered an IEF.
A.3.1 Broadleaved Parkland/scattered trees	A moderately extensive habitat with low to moderate species-richness. However, a common habitat which is extensive throughout the wider landscape.	Common and widespread habitat with limited species richness.	Less than Local	Scoped out. Not considered an IEF.
Acid grassland - unimproved	This habitat is only present in scattered areas (< 5 ha in total) of species-poor, moderately even to uneven, indistinctive vegetation. Furthermore, it is a secondary habitat derived from dry heath & mire through grazing (U4a & U5a) &/or drainage (U5b). Unimproved acid grassland is included within the LBAP as a target for biodiversity enhancement; however, the habitat was recorded in low quantities and represented a poor example of its kind, therefore it is of little ecological importance.	Limited area with very low species-richness, evenness and distinctiveness.	Less than Local	Scoped out. Not considered an IEF.
Acid grassland – Semi-improved	Small area of species poor habitat with limited ecological value. Common and widespread habitat internationally to locally.	Limited area with very low species-richness, evenness and distinctiveness.	Less than Local	Scoped out. Not considered an IEF.

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
Marshy grassland	Small area (3 ha) of low species-richness, evenness and distinctiveness. Moreover, the habitat is highly modified by grazing. Marshy grassland is included within the SBL but not the LBAP or Habitats Directive. Common and widespread habitat nationally and regionally, and typically of moderate ecological value.	Common and widespread habitat with limited potential to support biodiversity.	Less than Local	Scoped out. Not considered an IEF.
C.1.2 Bracken - Scattered	Limited extent of a common and widespread habitat with limited species richness.	Limited area with very low species-richness	Less than Local	Scoped out. Not considered an IEF.
Dry dwarf shrub heath- acid	Non-NVC extents: Extremely species-poor, uneven and indistinctive vegetation dominated by a single species. More species-rich & distinctive forms are included within the Highland Biodiversity Action Plan, SBL & Habitats Directive. The habitat is widespread and common in Scotland, especially in the uplands where it dominates very large areas. Upland heathland habitat has been estimated to cover between 1,700,000 and 2,500,000 hectares in Scotland. ⁴¹	Species-poor example, very limited ecological value.	Less than Local	Scoped out. Not considered an IEF.
	NVC associated extents (H12c/H14/H16): Very small areas (<1 ha) of patchy habitat of low to moderate species-richness and evenness. The habitat recorded included distinctive vegetation in a local context and is included within the LBAP, SBL and Habitats Directive. However, it is widespread and common in Scotland, especially in the uplands where it dominates very large areas.	Very small area of common and widespread habitat.	Local	
Wet dwarf shrub heath	A moderately extensive habitat (161 ha including mosaics) with low to moderate species-richness, evenness and distinctiveness. It is included within the LBAP, SBL and Habitats Directive. However, it is widespread and common in Scotland, especially in the uplands where it dominates very large areas. Upland heathland habitat has been estimated to cover between 1,700,000 and 2,500,000 hectares in Scotland.	Extensive but low quality, species-poor example of a common and widespread habitat in the Scottish Highlands.	Local	Scoped out. Not considered an IEF.

⁴¹ NatureScot (2018) Priority Habitats – Upland Heath Available online at: <https://www.nature.scot/sites/default/files/2018-02/Priority%20Habitat%20-%20Upland%20Heathland.pdf> (accessed 09/09/20)

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
D5 Dry heath/acid grassland mosaic	Mosaic habitat with low to moderate species-richness, evenness and distinctiveness. The habitat has been modified by historical effects and has a species poor assemblage. Limited ecological value.	Limited area with very low species-richness, evenness and distinctiveness.	Less than Local	Scoped out. Not considered an IEF.
D6 Wet heath/acid grassland mosaic	Mosaic habitat with low to moderate species-richness, evenness and distinctiveness. The habitat has been modified by historical effects and has a species poor assemblage. Limited ecological value.	Limited area with very low species-richness, evenness and distinctiveness.	Less than Local	Scoped out. Not considered an IEF.
Blanket Sphagnum bog	Extensive habitat (>1,000 ha) covering the majority of the Site. This habitat presented a low to moderate species-richness, evenness and distinctiveness with influence from grazing, drainage and erosion all recorded. The habitat is of notable value for biodiversity as well as carbon capture. Active (peat-forming) blanket bog is an Annex I habitat. Blanket bog is also an SBL priority habitat and LBAP priority habitat.	Sensitive habitat with high conservation value, however much on Site is modified and de-graded.	Regional	Scoped in. Considered an IEF.
Wet modified bog	Very small areas of habitat (<3 ha) with very low species-richness, evenness and distinctiveness recorded. The habitat is included within the LBAP and SBL but not the Habitats Directive. The habitat has been modified by historical effects and has a species poor assemblage; however, retains potential to be restored to a more semi-natural condition.	Species-poor example, very limited ecological value.	Local	Scoped out. Not considered an IEF.
Flush and spring – acid/neutral flush	M4/M6a-c: Individually small (<0.5 ha) scattered areas totalling 23 ha (including mosaics) with low to locally moderate species-richness, evenness and distinctiveness. The habitat is included within the LBAP & SBL but not the Habitats Directive.	Limited distribution and extent, limited ecological value.	Local	Scoped out. Not considered an IEF.
	M32b: Scattered small areas of habitat recorded (<20 m in the longest dimension) with a moderate species-richness and evenness; which was found to be locally distinctive. The habitat is included within the LBAP & SBL but not the Habitats Directive.	Small area that only includes locally distinctive species. Limited ecological value.		
Flush and spring – basic flush	Small areas represented by points (<20 m in the longest dimension) with a moderate species-richness and evenness; and distinctive locally for the presence of base-enrichment indicators. The habitat is included within the LBAP and SBL but not the Habitats Directive.	Small area that only includes locally distinctive species. Limited ecological value.	Local	Scoped out. Not considered an IEF.

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
G.1.3 Standing water - oligotrophic	Variable habitat including various mire elements (blanket bog, wet heath, acid/neutral flush & swamp) as well as bare peat expanses. The habitat is included within the LBAP and SBL but not the Habitats Directive. Standing water is a common and widespread habitat internationally to locally.	Limited and variable extents of a common and widespread habitat.	Local	Scoped out. Not considered an IEF.
G.2 Running water	Variable habitat including all streams and watercourses within the Survey Area. The habitat is included within the LBAP and SBL but not the Habitats Directive. Running water is a common and widespread habitat internationally to locally.	Limited and variable extents of a common and widespread habitat.	Local	Scoped out. Not considered an IEF.
J.1.1 Cultivated/disturbed land - arable	Very small area of relatively isolated habitat, limited ecological value. Common and widespread habitat locally.	Very small area of common and widespread habitat.	Less than Local	Scoped out. Not considered an IEF.
Other habitat	Artificial or highly modified habitat. Distinctive only for the presence of some common ruderal herbs.	Negligible ecological value.	Less than Local	Scoped out. Not considered an IEF.
Groundwater Dependent Terrestrial Ecosystems				
Wet dwarf shrub heath	M15b/M15c: Potential GWDTEs of moderate dependency. Extensive areas of habitat located on rain-fed, water-shedding slopes; and often above the likely zone of groundwater emergence. There are no floristic elements (e.g. yellow-sedges) that suggest base-enrichment derived from groundwater.	Not GWDTE within the Site, and thus considered of Less than Local Importance.	Less than Local	Scoped out. Not considered an IEF.
Flush and spring – acid/neutral flush	M6a-c: Potential GWDTEs of high dependency. One area of M6c is associated with discharge from a spring as well as conducting surface water from the surrounding blanket bog. Other areas have the characteristics listed below: • Located in shallow, waterlogged depressions amongst blanket bog and in riparian settings. • Not associated with obvious, diffuse or point sources of groundwater emergence. • There were no floristic elements (e.g. yellow-sedges) that suggest base-enrichment derived from groundwater.	Not GWDTE within the Site, and thus considered of Less than Local Importance.	Less than Local	Scoped out. Not considered an IEF.

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
	M23b: Potential GWDTEs of high dependency. Associated with iron-rich water discharging from peat pipes. Rarely present as scattered mounds in the base of eroded peat gullies. Moderate productivity presumed to relate to contact of the peat pipe with the underlying, mineral substrate. There are no floristic elements (e.g. yellow-sedges) that suggest base-enrichment derived from groundwater (cf. M10a).			
Flush and spring – basic flush	M10a: Obviously associated with groundwater emergence at springs and the influence of this is also apparent in the frequency of floristic indicators of base-enrichment. Surface water flows across the flushes its passage is marked by a scarcity of vegetation.	Small area of high groundwater dependency confirmed within the Site, and thus considered of Regional Importance.	Regional	Scoped in. Considered an IEF.
Protected and Notable Species within the Site				
Bats (all species)	All bats in Scotland are protected under the Conservation (Natural Habitats, &c.) Regulations 1994 as European Protected Species. Bats are also priority species in the LBAP and the SBL. The Site was dominated by open heathland, which is a habitat of very low value to foraging, commuting and roosting bats. The west of the Ecology Survey Area, along the existing access track, is more suitable for bat species with the presence of scattered, broadleaved trees and riparian habitat adjacent the River E, as well as coniferous plantation. Activity was strongly spatially limited and based on Ecobat assessment, represented the lower end of the 'low to moderate' bat activity level. Activity recorded was limited to three species and strongly dominated by common and soprano pipistrelle; both widespread and common species in stable and favourable condition in Scotland⁴². The only myotis species found in the vicinity of the Site are Daubenton's bat (<i>Myotis daubentonii</i>) and Natterer's bat (<i>Myotis nattereri</i>) both species in stable and favourable condition in Scotland. All species recorded are listed on the International Union for Conservation of Nature (IUCN) Red list as of 'Least Concern' in mainland UK⁴².	Legally protected and high conservation status. Presence was found within the Site and surrounding environment.	Regional	Scoped in. Considered an IEF.

⁴² Mathews F, Kubasiewicz LM, Gurnell J, Harrower CA, McDonald RA, Shore RF. (2018) A Review of the Population and Conservation Status of British Mammals: Technical Summary. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and NatureScot. Natural England, Peterborough.

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
Otter	Otter is protected under the Conservation (Natural Habitats, &c.) Regulations 1994 as a European Protected Species. Furthermore, the local otter population is a designated feature of the Ness Woods SAC. Otter is also a priority species in the LBAP and the SBL. Both the UK and Scottish otter population are in a favourable and inclining condition. The Scottish otter population is estimated to be around 8000 otters, approximately 73% of the UK population (~11,000)⁴¹. However, otter is listed on the IUCN Red List as 'Vulnerable' in Scotland⁴¹. Surveys identified plentiful suitable habitats for otter, with their presence, in the form of spraints, frequently recorded within the Ecology Survey Area. Two potential otter resting places were also noted, and otter were recorded on two tributaries of the River E, Allt a' Ghille Charaich and Allt Bad Fionnaich, which flow through the existing and proposed turbine envelope. In light of the abundant and inclining status of otter within the Scottish Highlands, and extensive local habitat suitability outwith the Site, the Site is not considered to be of notable value to otter. However, as otter is a European Protected Species and is present within the Site the species is considered of Regional Importance.	Legally protected and high conservation status. Presence was found within the Site and surrounding environment.	Regional	Scoped in. Considered an IEF.

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
Water vole	Water vole is legally protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is a priority species in the LBAP and the SBL. Although the current UK population (132,000) is believed to have declined by 50% since 1998, and the species are in decline in both England and Wales, the Scottish population, which is largely genetically and phenotypically distinct, is in fact inclining is size with a stable range⁴³. The species is listed on the IUCN Red list and 'near threatened in Scotland, but 'endangered' elsewhere in the UK⁴¹. No confirmed water vole burrows or latrines were found within the Site, although potential signs in the form of possible water vole burrows were found in the south of the Ecology Survey Area, on a tributary of Allt a' Ghille Charaich. However, other characteristic signs, such as a latrine or chewed vegetation, were not observed alongside the burrow. As the species are locally present, some minor future colonisation of water vole cannot be entirely ruled out, however it is unlikely that the Site plays a notable role in the ecology of the local water vole population. As the result, the species is considered of Local Importance.	Species not recorded within the Site but suitable habitat exists.	Local	Scoped out. Not considered an IEF
Amphibians	In Scotland the great crested newt (GCN), a European Protected Species, is found predominantly in Dumfries and Galloway, the Borders, Central Lowlands and around Inverness. The habitats within the Site were unsuitable to support GCN. Common amphibian species are protected under the Wildlife and Countryside Act 1981 (as amended) against intentional or reckless killing and injuring. Although the lack of ponds and waterbodies meant the Site was unsuitable for breeding amphibians, localised areas within the Site such as bog, marshy grassland and riparian habitats, were considered suitable for foraging amphibians.	Localised areas of habitat suitable for common and widespread amphibian species.	Less than Local	Scoped out. Not considered an IEF.

⁴³ Harris, S. & Yalden, D. W. eds. (2008). Mammals of the British Isles: Handbook, 4th Edition.

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
Badger	Badger is legally protected by the Protection of Badgers Act 1992 (as amended). The species is at risk of persecution but it not recognised as a high conservation priority. Badger are a widespread species throughout the UK with a stable and inclining estimated population of 562,000⁴¹. In Scotland and the Highlands, the species has shown a similar increase in size. Although still widespread within the Scottish Highlands, populations are understood to be less dense than other parts of the country, largely due to the prevalence of upland and peatland habitats the species least favoured habitat. The species is listed on the IUCN Red list as of 'Least Concern' in mainland UK⁴¹. A single, outlier sett with two entrance holes was identified within coniferous woodland south of the access track in the west of the Ecology Survey Area. Lowland, grassland areas and riparian habitat adjacent to the River E provide suitable foraging for badger. Although, within the east of the Ecology Survey Area, where turbines will be constructed, the landscape was dominated by upland bog and moorland and considered unsuitable for badger. In light of the diminished status of badger presence within the Scottish Highlands, and limited extent of suitable habitat within the Site, the Site is not considered to be of notable value to badger. Furthermore, the one sett which was found within the Site was far outwith the turbine envelope of the proposed Development and therefore it is considered that it will not be affected.	Legally protected, albeit not a high conservation status.	Local	Scoped out. Not considered an IEF.

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
Pine marten	Pine marten is legally protected under the Wildlife and Countryside Act 1981 (as amended). Pine marten is also a priority species in the SBL. Although the status on the species in England and Wales is poor, in Scotland the species is favourable and can now be found in all regions of Scotland with the exception of the central belt and the south east coast⁴². The species is listed on the IUCN Red list and 'Least Concern' in Scotland, but 'Critically Endangered' elsewhere in the mainland UK⁴¹. Scotland's population is estimated at 3,700 adult pine martens, which represent approximately 99% of the known UK population⁴⁴. No evidence of pine marten and limited suitable habitat for pine marten was recorded within the Site. Although it is acknowledged that the species can occasionally utilise peatland habitats in northern Scotland, it is deemed unlikely that the Site is of any notable value to pine marten. However, during the Desk Study, recent records of pine marten were identified within 5 km of the Site and therefore occasional presence of the species within the Site cannot be ruled out.	Not recorded and habitats unfavourable.	Local	Scoped out. Not considered an IEF.
Red squirrel	Red squirrel is protected under the Wildlife and Countryside Act 1981 (as amended) and is a priority species in the LBAP and SBL. Although declining across the UK, the Scottish population is stable and expanding in many regions. The species is listed on the IUCN Red list as 'Near Threatened' in Scotland, but 'Endangered' elsewhere in the mainland UK⁴¹. The majority of site was unsuitable for squirrel, with only one area of woodland bordering the north-west of the Site. Furthermore, the trees present were sparse in some areas, with not much connectivity, so would be suboptimal for squirrel populations, as they can become isolated from each other and their food sources. There may also be a higher risk of predation where animals are forced to cross open ground⁴⁵. No evidence of red squirrel was recorded and no dreys were identified, the Site was considered to have low potential to support red squirrel. However, during the Desk Study, recent records of red squirrel were identified within 5 km of the Site and therefore occasional presence of the species within the Site cannot be ruled out.	Not recorded and habitats unfavourable.	Local	Scoped out. Not considered an IEF.

⁴⁴ Croose, E., Birks, J.D.S. & Schofield, H.W. 2013. Expansion zone survey of pine marten (*Martes martes*) distribution in Scotland. Scottish Natural Heritage Commissioned Report No. 520.

⁴⁵ NatureScot (2019) Red squirrel. Available online at <https://www.nature.scot/plants-animals-and-fungi/mammals/land-mammals/red-squirrel> [Accessed July 2020]

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
Reptiles	Only common and widespread species are found on mainland Scotland. Common reptile species; the common lizard, slow-worm (<i>Anguis fragilis</i>), and adder are protected under the Wildlife and Countryside Act 1981 (as amended) against intentional or reckless killing and injuring. The aforementioned reptile species are all included on the SBL and adder is included on the LBAP. Common lizard was recorded within the Site, and localised areas within the Site, which included rough grassland and heathland habitats, were considered suitable for foraging, sheltering and basking for reptiles.	Localised areas of habitat suitable for common and widespread reptile species.	Less than Local	Scoped out. Not considered an IEF.

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
Wildcat	Wildcat is a 'European Protected Species' (EPS) and is therefore afforded a high level of legal protection under the Conservation (Natural Habitats, &c.) Regulations 1994. Scottish wildcat is a Priority Species listed in the Species Action Framework (SAF) for Scotland⁴⁶. The wildcat is an extremely rare species, with an estimated steadily population ranging between 30 to 430 individuals, principally as a result of through hybridisation with domestic cats⁴¹. The species is listed on the IUCN Red list and 'Critical Endangered' in Scotland, but 'extinct' elsewhere in the UK⁴¹. Recent IUCN research has suggested that the species in Scotland is on the verge of extinction, and that its population is no longer genetically viable, and thus urgent conservation action is required⁴⁷. The majority of the Site was considered to be of very low value to wildcat for foraging, commuting and denning due to the dominance of wet bog and moorland landscape and absence of any woodland. The west of the Ecology Survey Area, along the existing access track, is more suitable for the species with the presence of scattered, broadleaved trees and riparian habitat adjacent the River E, as well as coniferous plantation. However, the relatively small size and isolated nature of this woodland within the extensively open habitat present in the wider area makes it sub-optimal. However, the Site lies within the known range of the species⁴⁸ and historical records of Scottish wildcat, identified during the desk study, suggest that the species may be present in the wider environment, potentially occurring where more extensive areas of suitable habitat exist.	Legally protected and high conservation status. Localised areas of suitable habitat.	Regional	Scoped in. Considered an IEF.

⁴⁶ SNH, 2007. A Five-Year Species Action Framework: Making a difference for Scotland's species. Scottish Natural Heritage. Redgorton, Perth.

⁴⁷ Breitenmoser, U., Lanz, T., and Breitenmoser-Würsten, C. (2019). Conservation of the wildcat (*Felis silvestris*) in Scotland: Review of the conservation status and assessment of conservation activities. IUCN SSC Cat Specialist Group, Bern, Switzerland.

⁴⁸ Mathews F., Kubasiewicz L. M., Gurnell J., Harrower C. A., McDonald R. A. & Shore R. F. 2018. A review of the population and conservation status of British mammals: Technical Summary. A report by the Mammal Society under contract to Natural.

Ecological Feature	Evaluation Rationale	Reason	Importance	Scoped in/out of assessment
Deer Species	Deer are not a protected species (in terms of conservation legislation); however, they are protected from certain forms of killing by the Deer (Scotland) Act 1996. Evidence of deer was present on the Site, and deer species known to be present in the wider local area include native red deer and roe deer. Red deer are abundant across much of Scotland, and the wider UK, with an estimate population of 346,000. They are increasing in their range; population size and their habitat remain in a stable status⁴². Roe deer are abundant across much of Scotland, and the wider UK, with an estimate population of 265,000. Their range, population size and habitats all remain in a stable status⁴². Extensive area of the Site as consider suitable for deer grazing, and this is likely to have at least in part led to the notable degradation of peatland habitats. Furthermore, their presence has the potential to compromise peatland restoration measures.	Deer are common and widespread and have the potential to be detriment to IEFs.	Less than Local	Scoped Out
Atlantic Salmon	Atlantic salmon is legally protected under the Schedule 3 of the Conservation (Natural Habitats, &c.) Regulations 1994 and is listed as a priority in the LBAP and SBL. No extensive areas of suitable spawning habitat for salmonids were recorded. Atlantic salmon (<i>Salmo salar</i>) was absent from all survey sites; the habitat quality of the survey sites was coherent in terms of supporting salmonid populations, however, the connectivity between the watercourses throughout the catchment was significantly affected by various barriers to salmon (and other migratory fish) migration. The most significant barrier, Falls of Foyers, was recorded 3.5 km downstream of the Site. The Falls of Foyers is a 165 ft waterfall which prevents all upstream migration. Habitat connectivity is integral to survival of migratory salmonids, successful migration upstream and downstream is required to support populations of migratory fish species^{49,50}.	No Atlantic salmon recorded. Significant barriers to fish migration a limiting factor.	Less than Local	Scoped out. Not considered an IEF.

⁴⁹ Hendry K & Cragg-Hine D (2003). Ecology of the Atlantic Salmon. Conserving Natura 2000 Rivers Ecology Series No.7. English Nature, Peterborough.

⁵⁰ Willem B. Buddendorf, et al (2019). Integration of juvenile habitat quality and river connectivity models to understand and prioritise the management of barriers for Atlantic salmon populations across spatial scales. STOTEN 655, 557-566.

7.6.1 *Scoped Out for Further Assessment*

Following the systematic evaluation of importance outlined in Table 7.7, the following ecological features are considered of Local Importance or below, and thus not considered to be IEFs, and have therefore have been scoped out of further assessment within Section 7.8:

- Loch Bran SSSI;
- Monadhliath SAC;
- Easter Ness Forest SSSI;
- River Moriston SAC;
- Levishie Wods SSSI;
- Inverfarigaig SSSI;
- Coniferous and broadleaved woodland plantation;
- Broadleaved woodland – scattered/parkland;
- Acid grassland – unimproved/semi-improved and marshy grassland habitats;
- Dry & wet dwarf shrub heath habitats and mosaic forms;
- Wet modified bog;
- Flush and spring – acid/neutral flush;
- Bracken – scattered;
- Cultivated land – arable;
- Standing and running water habitat and other habitat;
- Water vole;
- Badger;
- Pine marten;
- Red squirrel;
- Amphibians;
- Reptiles; and
- Atlantic salmon.

Although the above IEFs have been scoped out of further assessment within this Chapter, measures to mitigate or avoid potential effects on these IEFs have been included within Embedded Mitigation to help ensure legislative compliance of works as well as adherence to accept industry good practise (see Section 7.7).

7.6.2 *Scoped into the Assessment of Potential Effect*

Following the systematic evaluation of importance outlined in Table 7.7, the following ecological features are considered of Regional Importance or above, and thus are considered to be IEFs, and have therefore will be further assessed in Section 7.8:

- Ness Woods SAC;
- Blanket bog;
- Flush and spring – basic flush;
- Bats;
- Otter; and
- Wildcat

7.7 Embedded Mitigation

Application of the 'mitigation hierarchy' has been achieved throughout the Development process, with the identification and incorporation of methods for the avoidance of impacts and application of embedded mitigation, compensation and enhancement within the EcIA.

Mitigation to reduce potential ecological effects has been incorporated into the design of the Development ('embedded mitigation'). This includes 'mitigation by design' whereby aspects of the Development have been re-designed to avoid or reduce ecological effects.

This type of mitigation is particularly beneficial for ecological resources as there is greater certainty that it will be delivered. Embedded mitigation also includes 'mitigation by practice' whereby mitigation is actively implemented during the Development process. Embedded mitigation is taken into consideration when undertaking the EcIA.

7.7.1 Mitigation by Design

Ecological features have been considered at all stages of the Development design, from initial feasibility to final layout. This has helped to avoid or greatly reduce impacts on IEFs and other ecological features. A critical design consideration has been the avoidance of habitats with high conservation value and potential groundwater dependency, which has been largely achieved by siting the majority of the Development outwith sensitive habitats and making use of existing tracks associated with the Operational Corriegarth Wind Farm.

The sensitive designs (e.g. of watercourse crossing and culverts) presented in **Chapter 4: Development Description** of this EIA Report have been developed to safeguard the water environment, will also help effectively mitigate construction-related direct and indirect impacts to fish and other aquatic features.

7.7.2 Mitigation by Practice: Construction

7.7.2.1 Ecological Clerk of Works

In addition to the incorporation of effective mitigation through Development design, the following sections outline mitigation of Development impacts through practice, particularly with the aim of safeguarding of protected species during Development construction and operation and to restore and enhance peatland habitats. Ecological Clerk of Works (ECoW)

A suitably qualified and experienced Ecological Clerk of Works (ECoW) will be appointed to provide ecological and environmental advice during construction, including the monitoring of compliance with the recommendations of this EIA Report and subsequent planning conditions.

Before construction begins, the ECoW and the project hydrologist will undertake a review of design and drainage plans to inform the requirement for micro-siting, to minimise the potential for effects to habitats of conservation concern, and to assist in the identification of appropriate locations for commencement of habitat restoration works. Where possible, the ECoW will advise on the drainage design to minimise hydrological disruption and reduce the risk of scour and erosion. The ECoW will also monitor and advise on the implementation of pollution prevention and good working practices throughout construction, to protect both terrestrial and aquatic ecosystems from accidental pollution.

7.7.2.2 Construction Phase Mitigation for Terrestrial Habitats & Species

Pre-Construction Protected Species Surveys

Pre-construction Surveys for protected species, such as otter and water vole, will be undertaken to provide up-to-date information about the distribution and abundance of the protected species identified in the baseline. The results of the surveys will inform the need for and scope of SPPs and associated mitigation and licencing requirements, all of which will be developed in line with NatureScot guidance.

Ecological Protection Plan

Following the completion of Pre-construction Protected Species Surveys, an Ecological Protection Plan would be written and agreed with the Council and NatureScot prior to construction. The Ecological Protection Plan would detail the species protection plan,

breeding bird protection plan, and any habitat protection measures required to be implemented during construction.

The EPP will also include, where relevant, guidance for any practical habitat creation associated with the Habitat Management Plan (HMP) that is scheduled to take place during Development construction (yet to be confirmed), and will cross reference the Final HMP document as necessary. This will aim to facilitate the management of construction activities to allow for the effective commencement of restoration works within the Peatland Restoration Area.

7.7.2.3 Construction Phase Mitigation for Aquatic Habitats

Mitigation presented in **Chapter 12: Hydrology and Hydrogeology** to safeguard the water environment, will also effectively mitigate construction-related impacts to fish such as the direct and indirect effect of pollution and sedimentation from instream works and surface water run-off.

As part of an ongoing monitoring assessment, pre-construction electrofishing surveys will be undertaken at all survey locations where moderate/good habitat quality was recorded. Should results of pre-construction surveys indicate salmonid populations within watercourses, it is recommended that further monitoring is carried out annually during construction and for two years post-construction.

This monitoring will compliment water quality monitoring recommended in Chapter 12 to ensure the safeguarding of the water environment and important aquatic features.

7.7.3 Mitigation by Practice: Operation

Good practice mitigation measures will be adopted to minimise the risk of bats colliding with operational turbines, in accordance with NatureScot published guidance⁴⁰. Turbines will have a 50 m separation distance between blade tips and high-value bat habitats, such as woodland and riparian features. Although this offset has been included in the design of the Development, it will be maintained throughout the operational life of the Development by ensuring that tree regeneration does not encroach on the buffer.

7.7.4 Mitigation by Practice: Decommissioning

Decommissioning activities are anticipated to be of a similar character to those of Development construction and so the embedded mitigation outlined in Section 7.7 is considered relevant to the decommissioning phase.

7.8 Ecological Impact Assessment

7.8.1 Assessment of Potential Effects

7.8.1.1 Nationally Designated Sites

An assessment of Ness Wood SAC in the context of the EIA regulations is presented in Sections 7.12.3.

7.8.1.2 Habitats

The construction of the Development will cause the loss of and disturbance to habitats during construction and the effects may be both permanent and temporary. Permanent losses are calculated based on the Development layout but estimates of temporary losses, such as those caused by construction activities (e.g. vehicle movements and stockpiling) in the areas surrounding built infrastructure, are more difficult to quantify. However, temporary losses will be relatively limited in extent, based on experience of the construction

of similar developments, and so are assumed, on a precautionary principle, to equate to approximately 20% of the areas permanently lost.

In total, an estimated 18.60 ha of habitats will be lost, equating to 1.26 % of the Survey Area. Of this loss, the majority (80.79 %) will consist of bog habitat, the next greatest lost will be 'other' habitat (4.63 %). The only IEF habitats to be impacted by habitat loss will be blanket bog and flush and spring habitat. An assessment of the potential effect of this loss is assessed below. A summary of the predicted habitat loss is presented in Table 7.8. For succinctness and clarity, habitats were presented by their broad Phase 1 habitats classifications, as presented in Figure 7.2.

Table 7.8: Summary of Phase 1 Habitat Loss by Infrastructure

Phase 1 Habitat recorded in Survey Area	Infrastructure	Area Lost (Ha)	% of Phase 1 Habitat Lost	% of Survey Area Loss
B.1.1 Acid Grassland – Semi - improved	Laydown Area	0.63	3.78	0.04
	Track Widening Area	0.01		
B.1.2 Acid Grassland – Unimproved	Proposed Access Tracks	0.01	0.06	0.00
	Track Widening Area	0.00		
A.1.3 Broadleaved parkland / scattered trees	Track Widening Area	0.00	0.03	0.00
A.1.1 Broadleaved woodland - plantation	Laydown Area	0.03	0.11	0.00
	Track Widening Area	0.01		
D.1.1 Dry dwarf shrub heath - acid	Proposed Access Tracks	0.01	0.12	0.00
D.5 Dry heath /acid grassland mosaic	Track Widening Area	0.00	0.01	0.00
E.2 Flush and spring	Crane Hardstanding	0.16	0.91	0.02
	Proposed Access Tracks	0.11		
B.5 Marshy grassland	Proposed Access Tracks	0.00	0.00	0.00
J.5 Other habitat – including tracks / hardstanding	Borrow Pit Extents	0.13	1.59	0.06
	Construction Compound	0.50		
	Laydown Area	0.03		
	Proposed Access Tracks	0.04		
	Substation Compound	N/A		
	Track Widening Area	0.16		
E.1.1 Sphagnum blanket bog	Borrow Pit Extents	1.21	1.34	1.01

Phase 1 Habitat recorded in Survey Area	Infrastructure	Area Lost (Ha)	% of Phase 1 Habitat Lost	% of Survey Area Loss
	Crane Hardstanding	8.87		
	Proposed Access Tracks	4.87		
	Substation Compound	N/A		
	Track Widening Area	0.09		
D.2 Wet dwarf shrub heath	Borrow Pit Extents	1.60	1.15	0.12
	Crane Hardstanding	0.00		
	Proposed Access Tracks	0.14		
	Substation Compound	N/A		
Total				1.26

As the substation is proposed to be constructed within the borrow pit; any loss of habitat attributed to the substation has already been encapsulated within the loss associated with the borrow pit extents.

Blanket Bog

Construction

The construction of the Development will cause the permanent loss of 15.03 ha of bog habitats. This loss equates to 1.34 % of the total area (1117.74 ha) of bog habitats recorded, and 1.01 % of the Survey Area. The majority of the bog habitats impacted are heavily modified and degraded, which as such, is unlikely to appreciably contribute to the value of the wider local recourse, especially to that of higher value types which are extensive in the surrounding landscape.

The proposed HMP will focus on restoring peatland habitats, namely blanket bog, to their original quality, and thus in the longer term, proposed peatland restoration is considered likely to increase the local blanket bog blanket resource locally and notable increase the ecological value of habitats in the Site, to the benefit of local ecology.

Embedded mitigation and good practice measures, such as the use of Operational Corriegarth Wind Farm tracks, floating roads, hydrological pollution prevention, and best practice will be adopted to reduce the likelihood of any potential direct or indirect effects of the Development on blanket bog. Additionally, micro-siting, informed by the ECoW, will help to further reduce impacts. Therefore, the effects of construction impacts to blanket bog are considered of negligible magnitude and significant on a less than local level, and the effect is therefore **not significant** in terms of the EIA Regulations.

Operation

Development operation is not anticipated to involve any works which will directly or indirectly impact blanket bog habitat. Blanket bog restoration works will take place on Site throughout the lifecycle of the Development and will likely have a long-term positive impact

on the blanket bog resource on Site, which may bring benefit to species beyond the boundary of the Site.

In light of the above, no significant detrimental operational effects on blanket bog habitat are predicted. Although it is reasonable to anticipate that the successful implementation of the proposed restoration measures, would result in a positive operational effect, as a scale and success of these measures are yet to be determined, it is considered that the effects will, at a minimum, be neutral, and thus **not significant** in terms of the EIA Regulations.

Decommissioning

Impacts to the blanket bog habitats from decommissioning works are anticipated to be of a similar nature to the construction phase impacts, but of lower magnitude. Although successful blanket bog restoration will mean that the future baseline condition of habitats in the Site are higher value than they are currently, these improvements will take place outwith the Development footprint, so will be unaffected by decommissioning. Decommissioning impacts to blanket bog habitats are considered temporary, reversible, of negligible magnitude and considered to be **not significant** in terms of the EIA Regulations.

Flush and Spring – Basic Flush

Construction

A small, isolated area of basic flush and spring habitat was identified as having the potential to be highly ground water dependent. Hydrological surveys revealed that this area of habitat is likely to be as a result of a cross over boundary between bedrock and superficial deposits causing release of water to the surface. Due to the presence of overlying peat soils and the limited productivity of the bedrock, it is considered that the spring feature is only partially dependent on ground water with a substantial contribution from surface water run-off.

The design consideration has avoided impacts to potential GWDTEs because all such features within the Site are almost certainly heavily modified and defined by historical operations, and thus lack naturalness and true groundwater dependency. Historical disturbance associated with the construction of the existing wind farm within the Site boundary has resulted in alteration of the hydrology and water quality within the Site. Consequently, nearly all habitats within the Site will have lower value than their less-disturbed counterparts which can be observed in the surrounding area. Moreover, embedded mitigation and good practice measures aim to further reduce any impact on potential GWDTEs and the hydrology of the Site by implementing buffers around potential GWDTE's and all watercourses within the Site.

The M10a flush and spring habitat has the potential to be partially dependent on groundwater however it is unlikely fully supported by true groundwater, and is likely to be near-surface water and interflow in peat soils and superficial deposits. Therefore, the effects of construction impacts to the potential GWDTE flush and spring habitat are considered of negligible magnitude and significant on a less than local level, and the effect is therefore **not significant** in terms of the EIA Regulations.

Operation

Development operation is not anticipated to involve any works which will directly or indirectly impact flush and spring habitat.

In light of the above, no significant detrimental operational effects are predicted, and thus the effect is **not significant** in terms of the EIA Regulations.

Decommissioning

Impacts to flush and spring habitats from decommissioning works are anticipated to be of a similar nature to the construction phase impacts, but of lower magnitude. Decommissioning impacts are considered temporary, reversible, of negligible magnitude and considered to be **not significant** in terms of the EIA Regulations

7.8.1.3 Bats

Very low levels of bat foraging and commuting activity of common and widespread bat species were recorded within the Site; and no bat roosts were recorded within the Site. The Development may result in direct and indirect effects to bats including displacement caused by loss of foraging and commuting habitats, disturbance and harm through loss of roosts during construction, and direct operational effects such as mortality and harm caused by turbine collisions and possibly barotrauma.

Recent Multi-stakeholder guidance³⁰, published by NatureScot in 2019 sets out a points-based framework to assess the risk a turbine development is likely to pose to bats, and scores and categorises sites through consideration of the habitats present and the scale of the development. Surveys were carried out ahead of the publication of this guidance; however, it is similar to the previous BCT approach that informed the bat survey scope.

Based on this assessment criteria the Site is considered to have a Low Habitat Risk, and a Medium Project Scale, giving the site two points (1-2 points = lowest-low risk), NatureScot guidance recommends that this score should then be combined with the level of activity recorded. The level of activity (assessed as low, via professional judgement) when combined with this site risk score, gives an overall assessment score of two points, concluding the Development is overall Low Risk.

Construction: Habitat Loss and Disturbance

Habitats within the turbine envelope of the proposed Development were dominated by open heathland, which is a habitat of very low value to foraging and commuting bats. The west of the Site, along the existing access track, was more suitable for bat species, however this habitat is far outside the footprint of the Development and will not be affected. Therefore, there is no expected reduction in utilisation of the Site by bats or displacement of bat species. The overall effects of habitat loss and disturbance on the conservation status of bats are considered to be negligible and therefore **not significant** in terms of EIA Regulations.

Construction: Roost Loss

Bats within the Site may be impacted through the direct loss of bat roosts, and via direct harm or indirect disturbance to roosting bats, as a result of felling activities and the associated noise and vibration. No bat roosts were identified within the Site and there is no habitat suitable to support roosting bats within the turbine envelope of the proposed Development. No roost loss is anticipated as a result of the Development and therefore the effect is **not significant** in terms of the EIA Regulations.

Operation: Direct Harm

Operational effects of the Development on bats will likely be restricted to accidental mortality or injury to bats in flight, through direct collision with moving turbine blades. The potential for this impact is difficult to characterise because there is a limited evidence base specific to bats and wind farms in the UK. Effects have therefore been assessed on a precautionary basis.

All of the proposed turbine locations are situated in open bog habitats more than 50 m from any features (such as woodland/riparian corridors) attractive to foraging, commuting and roosting bats. Due to the lack of suitability of the habitats within the Site for bats and

the very low numbers of bats encountered during baseline surveys, operational effects are unlikely to adversely affect the conservation status of bat species. Despite this, due to the lack of data regarding bat interactions with turbines, impacts on low numbers of bats cannot be ruled out. As a result, operational effects are considered to be adverse and long-term, but of very low magnitude and therefore the effect is **not significant**, in terms of EIA Regulations.

Decommissioning

Decommissioning activities are considered to be of a similar nature to those of Development construction; however, as no habitats used by bats are likely to be impacted, the potential for detrimental impact to bats is considered likely to be on a significantly notably smaller scale, and therefore effect are likely to be **not significant**.

7.8.1.4 Otter

Construction

Otters utilise watercourses for foraging and commuting around their territories. The construction of watercourse crossings may, therefore, disrupt such movements and cause severance of territorial resources. Where new watercourse crossings (NWC) will be required, the potential exists for temporary displacement and disturbance of otters during Development construction. Furthermore, pollution of watercourses could potentially result in a direct impact to otter through habitat disturbance and may also have indirect impact through loss of prey resource. Although disruption of regular foraging and commuting routes may result in a minor loss of fitness at an individual level during construction, the impact is likely to be short term, and limited to periods where construction of the watercourse crossing is taking place. It is likely that otters would become habituated to the crossings in the long-term once watercourse crossings are constructed without any adverse effect, irrespective of whether they pass through or over the crossings.

Two otter couches were identified within the Site (one deemed inactive and the other possibly active); however, the potential exists for otters to establish new resting places in close proximity to the Development infrastructure. Construction will result in a localised increase in noise, vibration, traffic, and the presence of people. Therefore, the potential for the disturbance of commuting and foraging otters in the immediate area exists. However, the risk of detrimental effects of disturbance occurring is likely to be notably reduced through the implementation of embedded mitigation measures, including pre-works ECoW monitoring, the implementation of riparian buffers, sensitive timings of works, and the adoption of good practise working practises and emergency procedures.

Suitable otter habitat is present adjacent to the Site and throughout the surrounding environment, therefore the risk of a detrimental impact occurring does exist; however, the effects of disturbance and displacement impacts are considered to be temporary, reversible, of low magnitude, and therefore **not significant**.

In addition to construction phase disturbance, the direct increase of traffic and vehicle movements from Development construction may also result in a temporary increase in the risk of traffic collisions and accidental otter fatality. As otter are largely crepuscular and nocturnal, the risk is largely limited to periods when construction is taking place at night, or during low light levels during the winter months. Furthermore, the risk is likely to be notably reduced through the implementation of embedded mitigation measures, such as pre-construction surveys, the implementation of best good practise working measures, and monitoring of works by the ECoW.

As a result, it is considered that a potential impact is of low risk, and is unlikely to affect more than a small number of otters (if any). Therefore, the effect of this impact is

considered localised, temporary, reversible, of low magnitude, and therefore **not significant**.

Operation

Development maintenance is likely to result in occasional vehicle movements and personnel presence throughout the operation of the Development; however, this activity will be limited to the Development infrastructure and wind turbine generators, with no disturbance of the surrounding environment (including riparian habitats) expected. Due to the infrequency and localised nature of operational activities, the potential detrimental effect is predicted to be **not significant**.

Decommissioning

Decommissioning activities are considered to be of a similar nature to those of Development construction, therefore potential exists for direct and indirect effect to otters, where decommissioning works may take place in close proximity to riparian habitats. Decommissioning activities may result in a localised increase in noise, vibration, traffic and presence of people, potentially causing disturbance to commuting and foraging otters. However, this impact is considered temporary, reversible, of low magnitude and therefore the effect is **not significant**.

7.8.1.5 Wildcat

Wildcat has been potentially recorded within 3 km of the Site. Wildcat are thought to be easily disturbed by construction activities and changes to their environment^{51,52}. There is little, if any, published research on effects of disturbance to wildcats in dens or on feeding sites. Therefore, the below EcIA for wildcat is based on site-specific judgement from expert opinion.

Due to the unknown status of wildcat in the local environment and the Scottish Highlands, and the recent (unconfirmed) sightings of wildcat within 3 km of the Site, a precautionary approach has been applied to the EcIA. This assumes that Scottish wildcat are present in the wider environment and that future potential exists for Scottish wildcat to use habitats within the Site.

Construction

The habitat within the turbine envelope of the Development is dominated by wet bog and open, moorland landscape and considered of low value to wildcat for foraging, commuting and denning. The only areas of potential suitability to wildcat within the Site is within woodland adjacent to the existing access track associated with the Operational Corriegarth Wind Farm and which would be used for the Development. It is therefore, considered that Scottish wildcats will not be displaced or disturbed during the construction phase of the Development, unless they seasonally use foraging habitats within the Development turbine envelope.

Wildcat are predominantly nocturnal and therefore construction activities at night are more likely to cause concern due to the potential for disturbance of foraging Scottish wildcats (if present). Construction activities at night are likely to be limited, and as no Scottish wildcats have been identified within the Site to date, construction is considered unlikely to cause disturbance at this time.

⁵¹ Forestry Commission Scotland and NatureScot. Forest operations and wildcat in Scotland. FCS Guidance Note 35d

⁵² Kitchener, A.C., Yamaguchi, N., Ward, J.M. and Macdonald, D.W. (2005). A diagnosis for the Scottish wildcat (*Felis silvestris*): a tool for conservation action for a critically-endangered felid. *Animal Conservation* 8, 223–237.

Alternative and more suitable foraging and cover habitats are located in the wider surrounding environment into which wildcat (if present) could be displaced during the construction phase. Therefore, the impact of disturbance to wildcat from Development construction is considered temporary, reversible, of low magnitude and **not significant**, in terms of EIA Regulations.

Operation

Development maintenance is likely to result in occasional vehicle movements and personnel presence throughout the operational phase; however, maintenance activities will be limited to the Development infrastructure and wind turbine generators, with no disturbance of the surrounding environment expected. Due to the infrequency and localised nature of operational activities, no impacts to wildcats are anticipated from operation of the Development and therefore the effect is **not significant**.

Decommissioning

Decommissioning activities are considered to be of a similar nature to those of Development construction, therefore potential exists for disturbance to wildcats, if present in the vicinity of the Development. Decommissioning activities may result in a localised increase in noise, vibration, traffic and presence of people, potentially causing disturbance to wildcats if present in close proximity to the works. Disturbance to wildcats from Development decommissioning is considered temporary, reversible and of low magnitude and therefore the potential detrimental effect is predicted to be **not significant**.

7.9 Mitigation

Mitigation is a measure taken to avoid or reduce negative impacts and effects, and it is typically applied when a significant effect is predicted, to ensure that significant residual effects (the effect after the application of mitigation) are avoided or minimised⁵³. Should negative effects which are residual, after avoidance and mitigation have been considered remain then compensation is recommended to offset the loss of, or permanent damage to, ecological features⁹.

As no significant effects have been predicted, no specific mitigation or compensation is required; however, enhancement measures have been recommended to both offset the non-significant effects of blanket bog loss, and enhance the local blanket bog resource. Improved management measures will be implemented through the application of a Habitat Management Plan (HMP) with the aim of achieving a net gain for biodiversity.

7.9.1 Enhancement

Although there is no current legislative commitment requiring a developer to adopt a biodiversity net gain (BNG) strategy, Section 24 on the Planning Scotland Act 2019 introduces an amendment to the Town and Country Planning (Scotland) Act 1997, with a specific reference to development having a net positive effects on biodiversity, meaning that BNG must be considered before planning permission for development of any class is granted⁵³.

An Outline HMP is provided below to summarise the aims and objectives of the proposed enhancement works associated with the Development.

7.9.1.1 Outline Habitat Management Plan

An HMP will be implemented; however, it is anticipated that the fully detailed version of this plan will be written and developed following consent, and in consultation with

⁵³ Scottish Government (2019): Planning Scotland Act 2019. Available online at: <https://www.legislation.gov.uk/asp/2019/13/section/24/enacted> [accessed 09/09/2020]

NatureScot and the Highland Council, where relevant. The area identified for the HMP is presented in Figure 7.4. An Outline HMP is presented below to provide high-level summary of this commitment.

The primary aim of the HMP will be re-use of peat onsite and peatland restoration with a view to ensure that, as a minimum, there is no overall net direct loss of peatland habitat as a result of the Development and all peat is re-used within the estate. As such, the proposed restoration area will be equal to that which is to be lost as a result of the Development (see Section 7.8).

Upon consent, the development of the HMP will be informed, where necessary, by further site appraisal to ensure the appropriate methods and plans are to be implemented.

Once developed, the HMP will remain an active document and will be reviewed on a regular basis by appropriate stakeholders.

Blanket Bog Restoration

Peatland habitats are extensive across the Site, and include some areas of good quality and near natural blanket bog; however, away from the near-natural hollows, the blanket bog vegetation has been extensively modified by a combination of grazing and drainage.

The HMP, which will be fully developed post-consent, will aim to increase the biodiversity value of areas of degraded habitats within the Site, by restoring damaged and degraded blanket bog, but will, as a minimum, compensate for the direct loss of blanket bog habitats as a result of the Development.

In addition, the gradual degradation of these peatlands results in the slow release of carbon into the atmosphere; a contributor to global warming. As a result, the Scottish Government's Draft Climate Change Plan details its policy to "*increase the annual rate of peatland restoration to 20,000 hectares per year*"⁵⁴. Restoring of peatlands within the Site would contribute to reducing the impacts to global warming and positively contribute to the Scottish Government's aim.

The Bog Restoration Area (BRA) is yet to be fully defined; however, the proposed BRA will be on restorable peatland habitats located to north-west of the Site on land located east of Carn Gairbhthinn and south of the River E. This area is located over 2 km from the closest turbines (of both the Development and the Operational Corriegarth Wind Farm). This area is located immediately adjacent to an existing HMP area for the Operational Wind Farm, and it is anticipated that the measures proposed will seek to compliment those already in place.

The BRA will be considered as suitable on the following basis:

- It will be of sufficient scope and scale to compensate for direct loss of blanket bog as a result of the Development;
- Outwith 500 m of any existing or proposed turbine location;
- Peat depth data from NatureScot's Carbon and Peatland Map indicates that the BRA comprises peat depths suitable for restoration (greater than 0.5 m);
- If possible, the BRA will be of sufficient scale to increase the current coverage of blanket bog in the Site, bringing additional benefit, but will be, as a minimum, equivalent in extent to the area of blanket bog to be lost by the Development;
- Focus on restoring historically drained and degraded peatland habitats currently at greatest risk of contributing to climate change through the release of carbon into the environment;

⁵⁴ Scottish Government (2018) CLIMATE CHANGE PLAN The Third Report on Proposals and Policies 2018-2032. Available online at: <https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018/pages/15/> [accessed 09/09/2020]

- Restoration of blanket bog will increase the value of the habitats to support rare plants, invertebrates, mammals and birds;
- Restoration of blanket bog will not increase the potential risk of the Development to ground nesting birds or any other associated; and
- Restoration will not detrimentally impact the existing habitat management proposals of the Operational Corriegarth Wind Farm.

Further details regarding the effects of the bog restoration on ecological features are detailed in Section 7.8 of this Chapter. It is important to note that the assessment of the effects of bog restoration measures will be precautionary, as the full extent and scope of HMP works are yet to be determined. The assessment will assume that as a minimum the HMP will compensate for the direct loss of blanket bog as a result of the Development. However, as the direct loss of blanket bog is minimal (see Section 7.8), it is reasonable to assume that the HMP will more than compensate for direct losses. Furthermore, where feasible, peat excavated to facilitate the construction of the Development will be used in the peat restoration (see **Chapter 13: Geology and Peat**).

As highlighted in NatureScots' consultation response (see Table 7.1) extensive areas of the Site are considered suitable for deer grazing, and although no negative effects are predicted, the presence of deer is likely to have, at least in part, led to the notable degradation of peatland habitats. Therefore, to ensure the success of habitat management, mitigation of the impacts of deer on bog restoration, and any consequent implications on local deer management, will need to be appropriately considered within the HMP. If required, a Deer Management Plan will be developed as part of the HMP proposals, with input from landowners and NatureScot as necessary.

7.10 Residual Effects

No significant residual effects are predicted following the implementation of embedded mitigation, as detailed in Section 7.8 of this Chapter.

7.11 Assessment of Cumulative Effects

The EIA Regulations require the cumulative effects of the Development with other relevant projects or plans to be assessed. In considering cumulative effects, it is necessary to identify any effects that may be not significant in isolation but that may be significant in combination with other developments.

This assessment considers that cumulative effects can result from effects that were individually assessed as non-significant, but in combination with effects or actions taking place over time, or across a wider spatial range (such as where the zone of influence of other developments or actions may overlap the with Development), may cumulatively be considered significant.

Cumulative effects are particularly important in EcIA as ecological features may be already exposed to background levels of threat or pressure and may be close to critical thresholds where further impact could cause irreversible decline.

7.11.1 Blanket Bog/Flush and Spring Habitats

These habitats are found extensively in the local area; however, Development related losses are very low, and focussed on already degraded habitats. Therefore, due to the very low magnitude of this non-significant effect, **no significant cumulative effects** in terms of the EIA Regulations are predicted.

7.11.2 Bats

Given the potential foraging and commuting range for bats⁵⁵; the Site lies outwith the ZoI of all local wind farms with the exception of the Operational Corriegarth Wind Farm. However due to the prevalence of upland habitats of very low value to bats that dominate both sites, and the low magnitude of the predicted non-significant effects, **no significant cumulative effects** in terms of the EIA Regulations are predicted.

7.11.3 Otter

Given the potential foraging and commuting range of otters, the Site lies within the ZoI of six local approved or pre-consent wind farms.

The presence of otter within was limited to two tributaries of the River E with the species not recorded elsewhere within the Survey Area. Extensive local habitat suitability outwith the Site exists for the species which are abundant and in an inclining status in the Scottish Highlands. Therefore, despite the proximity to a number of other existing or future wind farms, due to the low magnitude of predicted non-significant effects, **no significant cumulative effects** in terms of the EIA Regulations are predicted.

7.11.4 Wildcat

Wildcat were not recorded within the Site and the habitats identified were assessed as having a low suitability to support the species. Higher value habitats are abundant in the local area and therefore, despite the proximity to a number of other existing or future wind farms, due to the low magnitude of predicted non-significant effects, **no significant cumulative effects** in terms of the EIA Regulations are predicted.

7.12 Habitats Regulation Appraisal (HRA):

7.12.1 HRA Screening

In accordance with the requirements of the Habitats Directives, where a project is likely to have a significant effect on an SAC (or any Natura 2000 Site, and in Scotland, as Ramsar Site), while not directly connected with, or necessary to the nature conservation management of the SAC, that project shall be subject to HRA. This identifies any implications for the SAC in the respect of its conservation objectives.

The Development is not associated with the management of the SAC or Ramsar, and therefore must undergo HRA screening. The intention of this screening is to assist the consenting authority in their assessment of the potential for likely significant effects on the integrity of the SAC/Ramsar. Should a 'likely significant effect' be determined, the Development is statutorily required to be subject to an Appropriate Assessment (AA) by a relevant competent authority.

Part of HRA screening involves establishing the likely 'Zone of Influence' (ZoI) of the Development. The ZoI will vary depending on the nature of the project as well as the character and ecology of the Qualifying Features (QF). For floral and habitat QFs, given the fixed nature of these features, potential effects are likely to be limited to those associated with direct impacts, such as construction related habitat loss and pollution on habitats, or directly adjacent with indirect connectivity to the Site, for example hydrologically. In light of this, for terrestrial habitats it is considered that the ZoI should be limited to land within 2 km of the Site boundary. For a mobile species, the ZoI is likely to be greater, so is extended to 10 km of the Site.

⁵⁵ Avery, M. I. 1991. Pipistrelle *Pipistrellus pipistrellus*. In: The Handbook of British Mammals (Ed. by G. B. Corbet & S. Harris), pp. 124–128. Oxford: Oxford University Press

Two Natura 2000 sites were recorded within 10 km of the Site, and these are designated for both mobile and stationary features. An assessment of the likely ZoI, and thus the potential for 'Likely Significant Effects' is presented Table 7.9.

Table 7.9: Habitats Regulation Appraisal Screening Assessment

Natura 2000 Site	Screening Assessment	'Likely Significant Effect'
Ness Woods SAC	Ness Woods is located approximately 3.4 km from the proposed access track; (an existing access track) and the closest turbines is 9.3 km away. Due to the stationary nature of the majority of qualifying features and the designation's distant proximity to the Site, the designated site is considered out with connectivity of the Development for all qualifying features, with exception of otter due to the species mobility and potential territorial range. As otter was recorded within the Site, and the species inhabit territories of between 20-32 km, it is considered likely that otter utilising the Site comprise part of the SAC population.	Yes, but limited to otter. AA Required
Monadhliath SAC	Monadhliath is located 7.1 km south of the closest indicative turbine location. Therefore, due to stationary nature of the qualifying features and the designation's distant proximity to the Site, the designated site is considered out with the ZoI of the Development.	No. Scoped out of AA
River Moriston SAC	River Moriston is located 8.0 km west of the Site (the proposed access track) on opposite side of Loch Ness, as such the designated site is considered out with the ZoI of the Development.	No. Scoped out of AA

As presented in Table 7.9 (above). the only Natura 2000 site which falls within the ZoI of the Development is Ness Woods SAC, which are part of the same boundary. As a result, 'likely significant effects' on the SAC are predicted in the context of an HRA, and the SAC has been scoped into Stage 2 of the HRA process (AA).

The potential for Likely Significant Effects is predicted for the Ness Wood SAC otter population; however, all other QFs and Natura 2000 Sites, have been scoped out of further assessment, therefore only the above aforementioned QFs have been scoped into the AA.

Although an AA must be carried out by a relevant competent authority, information to inform the AA (often referred to as a Shadow AA) has been provided below.

7.12.2 Shadow Appropriate Assessment

7.12.2.1 Ness Woods SAC

As established in HRA Screening (Section 7.12.2, above) the only Natura 2000 site which falls within the ZoI of the Development is Ness Woods SAC; however, due to proximity, the potential for 'likely significant effects' are limited to otter.

As stated in Table 7.9, it is assumed that the otter utilising the Site are part of the SAC population. Section 7.8.1.4 provides a detailed assessment of all perceptible Development related effects, and no further effects are required to be assessed in the context of an AA.

Otter were recorded along both the Allt a' Ghille Charaich and the Allt Bad Fionnaich, both of which are tributaries of the River E. Although the Site is within range of the SAC otter population, neither of the above watercourses, nor any other watercourse within the Site have any riparian connectivity to the SAC. Therefore, although the occasional use of the Site by members SAC population cannot be ruled out, it is very unlikely to represent a notable part of any SAC otter territory, if it is at all.

Although very minor Development related effects on otter cannot be ruled out, the risk is very low, and given the limited value of the Site for the SAC population, the extensive availability of more suitable habitats in the wider local area, and the large extent of the SAC boundary, no adverse effects on the integrity on SAC otter population are predicted.

7.12.3 EIA Context of Assessment

In addition to the prediction of no adverse effects on the integrity of the SAC/Ramsar in the context of the HRA, **no significant effects** (in terms of the EIA Regulations) on the SAC/Ramsar or its qualifying features in terms of the EIA regulations are predicted from to occur from the Development.

7.13 Statement of Significance

No significant ecological effects have been identified for the construction and operation of the Development, either alone or in combination with other developments, and therefore these are not significant in relation to the EIA Regulations. Mitigation has been proposed to further reduce the low magnitude effects during the construction phase and to reduce the likelihood of legal offences and comply with good practice.

7.14 Summary of Effects

Table 7.10 provides a summary of the effects detailed within this chapter.

Table 7.10: Summary of Effects on Important Ecological Features

IEFs	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
Blanket Bog/Flush and Spring Habitats	Indirect effects of pollution and sedimentation of blanket bog and potential GWDTEs.	Not Significant/No Adverse Effect	Embedded Mitigation and Enhancement	None
Bats	Habitat change	Not Significant	Embedded Mitigation only	None
	Roost loss	Not Significant	Embedded Mitigation only	None
Otter	Habitat Loss, Disturbance and Degradation	Not Significant	Embedded Mitigation only	None
	Disturbance and Displacement of Breeding otters	Not Significant	Embedded Mitigation only	None
	Interaction with Traffic, Plant and personnel	Not Significant	Embedded Mitigation only	None
	Otter entrapment in Excavations.	Not Significant	Embedded Mitigation only	None
Wildcat	Disturbance	Not Significant	Embedded Mitigation only	None

IEFs	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
	Displacement (from disturbance)	Not Significant	Embedded Mitigation only	None
Operational Phase				
Bats	Turbine related mortality or injury to bats in flight	Not Significant	Embedded Mitigation only	None
Otter	Otter Interaction with Traffic, Plant and personnel	Not Significant	Embedded Mitigation only	None
Wildcat	Increase risk of accidental fatality	Not Significant	Embedded Mitigation only	None

8 ORNITHOLOGY

8.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) evaluates the effects of the Corriegarth 2 Wind Farm (the Development) on ornithological features. Baseline surveys were conducted by Nevis Environmental Ltd and this assessment was undertaken by Rafe Dewar and reviewed by Ross McGregor, Principal Ornithologists at MacArthur Green.

This chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Assessment of Potential Effects;
- Mitigation and Residual Effects;
- Cumulative Effect Assessment;
- Summary of Effects;
- Statement of Significance; and
- Glossary.

The following terms are used within this Chapter:

- The Development: the whole physical process involved in the development of Corriegarth 2 Wind Farm, including all aspects of proposed infrastructure and the construction, operation and decommissioning phases (i.e. not a piece of land or an area); and
- Operational Corriegarth Wind Farm: encompasses the as built operational wind farm of 23 turbines and associated infrastructure including the existing access track.

This Chapter of the EIA Report is supported by the following figures, based on a 16 wind turbine layout, provided in Volume 2: EIA Report Figures:

- Figure 8.1: Ornithological Designated Sites within 20km;
- Figure 8.2: Site Boundary and Study Areas;
- Figure 8.3: Vantage Points and Viewsheds; Operational Monitoring;
- Figure 8.4: Vantage Points and Viewsheds; Baseline 2019;
- Figure 8.5: Flight Activity: Operational Monitoring 2015-18 - Red Kite;
- Figure 8.6: Flight Activity: 2019-20 - Red Kite;
- Figure 8.7: Flight Activity: Operational Monitoring 2015-18 - Golden Eagle;
- Figure 8.8: Flight Activity: 2019-20 - Golden Eagle;
- Figure 8.9: Flight Activity: Operational Monitoring 2015-18 - White-tailed eagle;
- Figure 8.10: Flight Activity: 2019-20 - White-tailed eagle;
- Figure 8.11: Flight Activity: Operational Monitoring 2015-18 - Other raptors;
- Figure 8.12: Flight Activity: 2019-20 - Other raptors;
- Figure 8.13: Breeding Wader Activity: 2019;
- Figure 8.14: Cumulative Impact Assessment: Natural Heritage Zone 10;

This Chapter of the EIA Report is supported by the following Technical Appendix documents provided in Volume 3 Technical Appendices:

- A8.1: Breeding Bird Report 2019;
- A8.2: Ornithological Monitoring 2015-2018;
- A8.3: Collision Risk Modelling Methods and Results;
- A8.4: Golden Eagle Population Modelling; and

- A8.5: Confidential Annex: Confidential Ornithology, which contains the following figures:
 - Confidential Figure 8.2.1: Golden Eagle Nest Locations 2018 and 2019;
 - Confidential Figure 8.2.2: Golden Eagle PAT Model Output; and
 - Confidential Figure 8.2.3: Breeding Raptors 2019.

8.2 LEGISLATION, POLICY AND GUIDANCE

The following guidance, legislation and information sources have been considered in carrying out this assessment:

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

- Directive 2009/147/EC on the Conservation of Wild Birds (Birds Directive);
- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (Habitats Directive);
- Environmental Impact Assessment Directive 2014/52/EU; and
- European Commission (2010) Natura 2000 Guidance Document *'Wind Energy Developments and Natura 2000'*. European Commission, Brussels.

The following national legislation and policy will be considered as part of the assessment:

- The Wildlife and Countryside Act 1981 (as amended);
- The Nature Conservation (Scotland) Act 2004 (as amended);
- The Wildlife and Natural Environment (Scotland) Act 2011;
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) (The Habitats Regulations);
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations);
- Circular 1/2017; The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017; and
- Planning Advice Note (PAN) 1/2013 – Environmental Impact Assessment, Revision 1.0 (Scottish Government 2017).

The following guidance will be considered as part of the assessment:

- CIEEM (2018¹) Guidelines for Ecological Impact Assessment;
- Eaton *et al.* (2015²) Birds of Conservation Concern 4;

¹ 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.

² Eaton M.A., Aebischer N.J., Brown A.F., Hearn R.D., Lock L., Musgrove A.J., Noble D.G., Stroud D.A. and Gregory R.D. (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

- NatureScot (formerly known as Scottish Natural Heritage, SNH) (2000³; 2009⁴; 2016⁵; 2018a⁶; 2018b⁷; 2018c⁸; 2017⁹; 2019¹⁰) various guidance on assessment of effects of wind farms on birds;
- Scottish Executive Rural Affairs Department (SERAD) (2000¹¹);
- Highland Biodiversity Action Plan (2015-2020); and
- The Scottish Biodiversity List¹².

8.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

8.3.1 Scoping Responses and Consultations

Consultation for this EIA Report topic was undertaken with the organisations shown in Table 8.1.

Table 8.1: Consultation Responses

Consultee	Summary of Consultation Response	Response to Consultee
NatureScot Response to pre-scoping consultation June 2019	NatureScot confirmed that a combination of one breeding season of new ornithology survey work, combined with post-construction monitoring data from the Operational Corriegarth Wind Farm is sufficient to inform the ornithology impact assessment.	All operational monitoring data and baseline data for the Development have been considered in the assessment.
NatureScot Scoping Response 18 March 2020	As this proposal is located within Natural Heritage Zone (NHZ) 10 NatureScot identified a high potential for golden eagles to be affected. NatureScot welcomes further assessment of any impacts of this proposal on golden eagle within the EIA report.	Golden eagle has been taken forward to assessment in Section 8.5, with potential effects considered within the context of the NHZ 10 breeding population.
	Should this proposal be consented then NatureScot would advise on a further contribution to the Regional Eagle Conservation Management Plan (RECMF).	This has been considered in Section 8.6.
	The Scoping Report has identified the proposal as having connectivity with the River Spey-Insh Marches Special	All designated sites identified in the scoping report have been considered in this Chapter, with SPAs assessed

³ SNH (2000). *Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action*. SNH Guidance Note. Scottish Natural Heritage;

⁴ SNH (2009) Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees. Scottish Natural Heritage.

⁵ SNH (2016) Assessing connectivity with Special Protection Areas (SPAs). Scottish Natural Heritage.

⁶ SNH (2018a) Assessing Significance of Impacts from Onshore Wind Farms Outwith Designated Areas. Scottish Natural Heritage.

⁷ SNH (2018b) Assessing the cumulative impacts of onshore wind farms on birds. SNH Guidance Note. Scottish Natural Heritage.

⁸ SNH (2018c) Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland. Scottish Natural Heritage.

⁹ SNH (2014, revised March 2017). Recommended bird survey methods to inform impact assessment of onshore wind farms.

¹⁰ SNH (2019) SNH joint publication (2019) Good Practice during Wind Farm Construction. 4th Edition. Scottish Natural Heritage.

¹¹ 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 and the Conservation of Wild Birds ('the Habitats and Birds Directives'). Revised Guidance Updating Scottish Office Circular No 6/1995.

¹² Available at: <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list>. Accessed on: July 2020.

Consultee	Summary of Consultation Response	Response to Consultee
	Protection Area (SPA) designated for raptors and wildfowl. NatureScot welcomes the proposal to undertake a detailed assessment of potential impacts on the SPA species within the EIA report.	within the context of the Habitats Regulations Appraisal (HRA) process.
RSPB Scotland Scoping Response 26 March 2020	This proposal has the potential to adversely impact on golden eagles within NHZ10 and other Annex I species including raptors and waders. These issues must be fully assessed in the EIA.	Golden eagle, raptors, waders and any other target species recorded have been considered in the assessment process and taken forward to full assessment as Important Ornithological Features (IOFs) where appropriate.
	As well as collision risk, the impact on loss of available golden eagle foraging area through direct habitat loss and/or displacement effects for any territories that overlap with the Wind Farm footprint must also be assessed within the EIA (and should be considered in any assessment of cumulative impacts with other developments).	The potential collision, habitat loss and displacement effects on golden eagle have been fully assessed in this Chapter, within the context of the Development alone, and cumulatively with other developments. This has been achieved by the use of various analyses: collision risk modelling, Predicted <i>Aquila</i> Territory (PAT) modelling and Golden Eagle Population Modelling (GEPM).
	Habitat loss and displacement effects should also be assessed for other species of conservation concern, particularly breeding waders that may be particularly susceptible to displacement.	Habitat loss and displacement effects have been considered for all IOFs taken forward to assessment.
	A Habitat Management Plan (HMP) will be required to ensure suitable good quality habitat is managed/ created elsewhere.	The HMP (as outlined in Section 7.9.1.1 of the Ch 7: Ecology) includes measures to improve habitat quality of selected areas, which would provide better conditions for raptor prey and waders.
	Impact assessments should not be restricted just to wind farms but include all development, forestry or recreational pressures that may have an impact on the habitats or species affected.	A desk study has been undertaken for the Cumulative Effect Assessment (Section 8.7) which considers all projects and activities within NHZ 10 that are subject to the EIA process.
The Highland Council (the Council) Scoping Response 6 April 2020	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.	All Schedule 1 and EU Birds Directive Annex I-listed species were considered target species, and where there was regular activity recorded during surveys, these species have been taken forward to assessment as an IOF.
	An assessment of the impacts to birds through collision, disturbance and displacement from foraging / breeding / roosting habitat will be required for both the Development site and cumulatively with other proposals.	Disturbance, displacement and collision effects have been assessed for all IOFs, within the context of the Development alone, and with other projects in NHZ 10.
	Of particular interest in this area is the golden eagle. Consideration should be given to the findings of the research undertaken as part of the NHZ10 Regional	Golden eagle has been assessed as an IOF. The assessment on golden eagle has been placed within the context of the NHZ 10 breeding population and has considered the

Consultee	Summary of Consultation Response	Response to Consultee
	Golden Eagle Conservation Management Plan.	latest 2020 report published by the RECMP.
	The EIA Report should be clear on the survey methods and any deviations from guidance on ornithology matters	Survey methods are summarised below in Section 8.3.6 and in further detail in Appendices A8.1 and A8.2.

8.3.2 Scope of Assessment

The key issues for the assessment of potential ornithological effects relating to the Development are as follows:

- Permanent and temporary direct habitat loss for birds through construction of the Development;
- Displacement of birds through direct and indirect loss of habitat as a result of construction activity disturbance, turbine operation and maintenance, or visitor disturbance. This also includes barrier effects to commuting or migrating birds due to the presence of wind turbines or other infrastructure;
- Death or injury through collision with wind turbine blades or other types of infrastructure associated with the Development; and
- Cumulative effects of the Development during construction and operation when considering Wind Farms (including the Operational Corriegarth Wind Farm) and other projects within NHZ 10.

8.3.3 Elements Scoped Out of Assessment

It is recognised that disturbance may occur due to maintenance activities throughout the operational phase of the Development, although since these individual occurrences are likely to be of shorter duration and smaller extent than construction activities, effects would be lower than those predicted for construction effects, and operational displacement effects included in the assessment.

Decommissioning effects have been scoped out of the assessment as these are considered to be similar to those predicted for construction effects, with similar mitigation measures undertaken to those outlined for the construction phase.

On the basis of the desk-based study and survey work undertaken, experience from other relevant projects and policy guidance or standards (e.g. SNH, 2018a), species which do not fall within the following categories have been scoped out.

- Those species recognised in statute as requiring special conservation measures, e.g. birds listed in Annex 1 of the Birds Directive, regularly occurring migratory species, and birds on Schedule 1 to the Wildlife & Countryside Act 1981 (as amended);
- Species on non-statutory lists (e.g. Red and Amber-listed Birds of Conservation Concern (BoCC), Eaton *et al.* 2015²), whose populations are at some risk either generally or in parts of their range; and
- Passerine species (with limited exceptions), which are not considered to be sensitive to wind farm developments (e.g. SNH, 2018a⁶).

8.3.4 Study Area / Survey Area

This ornithological assessment focuses on the Site and appropriate buffer areas (collectively the 'Study Areas') which have been applied, as recommended by NatureScot/SNH (2017⁹) guidance. The specific Study Areas are as follows:

- Ornithological designated sites: within 20 km of the Site (Figure 8.1);
- Flight activity (Vantage Point) surveys: areas within a buffer of up to 500 m around the outermost wind turbine locations, referred to for collision risk modelling

purposes as the Collision Risk Analysis Area (CRAA) (see Appendix A8.3 and Figure 8.3);

- Breeding birds (waders): within a 500 m buffer around wind turbines and access route (Figure 8.2);
- Scarce breeding birds: 2 km buffer around wind turbines, and 750 m around access route (Figure 8.2), with a 6 km buffer for golden eagle; and
- Cumulative effects: projects within NHZ 10 (Central Highlands) (Figure 8.14).

8.3.5 Design Parameters

The specifics of the Development's construction period considered relevant for assessing potential effects on IOFs are:

- A construction period of approximately 18 months, with a worst-case scenario of commencement during a breeding season, and overlapping with two consecutive breeding seasons; and
- Construction activities would be limited to the working hours of 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays.

The specifics of the Development's operational period considered relevant for assessing potential effects on IOFs are:

- The Development would consist of 16 turbines, with a maximum tip height of up to 149.9 m. For the purposes of collision risk and modelling, a rotor diameter of up to 133 metres (m), a hub height of approximately 83.4 m was used, and the worst-case scenario, the wind turbines would have a lower rotor tip height of 16.9 m above ground level;
- The Development would include ancillary infrastructure including control building, incorporating the substation compound, crane hardstanding, underground cabling, temporary construction compound, up to two borrow pits, and laydown areas as well as new and upgraded access tracks; and
- The operational phase of the Development is anticipated to last for 30 years.

8.3.6 Baseline Survey Methodology

8.3.6.1 Desk Study

The following data sources were considered as part of the assessment:

- National Biodiversity Network (NBN) Atlas Scotland website¹³ for historical species records;
- NatureScot SiteLink¹⁴ for designated site information;
- The Highland Raptor Study Group (HRSRG) for historical nesting raptor records;
- Results of ornithological monitoring for the Operational Corriegarth Wind Farm (Technical Appendix A8.2); and
- Various EIA and monitoring documents for Wind Farm projects within NHZ 10.

Table 8.2 outlines the ornithological reports and baseline, pre- and post-construction surveys carried out for the Operational Corriegarth Wind Farm which have been considered in this chapter.

Table 8.2: Existing Ornithological Information for the Operational Corriegarth Wind Farm

Year	Reports	Summary of Surveys undertaken
2017-2018	Technical Appendix A8.2	Operational Year 3 of flight activity surveys comprising:

¹³ Available at: <https://scotland.nbnatlas.org>. Accessed on: July 2020.

¹⁴ Available at: <https://Sitelink.nature.scot/home>. Accessed on: July 2020.

Year	Reports	Summary of Surveys undertaken
	Corriegarth Wind Farm HMP Implementation Annual Report 2018 ¹⁵	• 5 Vantage Points (VPs) • Average of 68 hours of watches per VP between Sep 2017 and Aug 2018 (Inclusive). VP hours were variable due to snow cover restricting access to certain VPs.
2016-2017	Technical Appendix A8.2 Corriegarth Wind Farm Operational Monitoring and HMP Implementation Annual Report 2017 ¹⁶	Operational Year 2 of flight activity surveys. As Year 3 except: • Average of 72 hours of watches per VP between Sep 2016 and Aug 2017 (inclusive).
2015-2016	Technical Appendix A8.2 Corriegarth Wind Farm Operational Monitoring and HMP Implementation Annual Report 2016 ¹⁷	Operational Year 1 of flight activity surveys. As Year 2 except: • Average of 70 hours of watches per VP between Sep 2015 and Aug 2016 (Inclusive). VP hours were variable due to snow cover restricting access to certain VPs.
2012	Corriegarth Windfarm Pre-Construction Avian Surveys (SKM Enviros 2013 ¹⁸)	Species-specific surveys (no. visits in brackets): • Golden eagle within 6 km of the Operational Corriegarth Wind Farm (2); • Hen harrier, merlin, peregrine, short-eared owl within 2 km (4); • Black grouse within 1.5 km (2); and • Barn owl within 1 km. Four upland bird surveys following Brown and Shepherd (1993 ¹⁹) methodology and guidance set out in SNH 2010 ²⁰
2005-2006	Corriegarth Windfarm Environmental Statement (SLR 2007 ²¹)	2006: • Flight activity surveys from 5 VPs (April 2006 to August 2006); • Three-visit upland breeding bird survey (April to June 2006); • Breeding raptor survey and prey transects (April – July 2006); • Black grouse survey (April to May 2006). 2005: • Flight activity surveys from 11 VPs (April 2004 to March 2005); and • Three-visit upland breeding bird survey (April to June 2005).

8.3.6.2 Field Surveys

All baseline surveys from 2019 onwards followed best practice methods and guidance, namely SNH (2017⁹), Gilbert *et al.* (1998²²), Brown & Shepherd (1993¹⁹) and Hardey *et*

¹⁵ Nevis Environmental (2019). Corriegarth Wind Farm HMP Implementation Annual Report 2018.

¹⁶ Nevis Environmental (2018). Corriegarth Wind Farm Operational Monitoring and HMP Implementation Annual Report 2017.

¹⁷ Nevis Environmental (2017). Corriegarth Wind Farm Operational Monitoring and HMP Implementation Annual Report 2016.

¹⁸ SKM Enviros (2013). Corriegarth Windfarm Pre-Construction Avian Surveys.

¹⁹ Brown, A.F. & Shepherd, K.B. 1993. A method for censusing upland breeding waders. *Bird Study*, 40, 189-195.

²⁰ Scottish Natural Heritage (2010) Survey Methods for use in Assessing the Impacts of Onshore Windfarms on Bird Communities.

²¹ SLR (2007). Corriegarth Windfarm Environmental Statement.

²² Gilbert, G., Gibbons, D.W. & Evans, J. (1998) Bird Monitoring Methods. RSPB, Sandy.

a/. (2013²³). Ornithological fieldwork commenced in January 2019 and was completed in August 2019 and comprised the following surveys (see Appendix A8.1 for further details):

- **Flight activity surveys:** From three vantage points, April to August 2019. All proposed wind turbine locations for the final layout of the Development were covered by viewsheds (Figure 8.3).
- **Scarce breeding bird surveys:** Surveys for breeding raptors, divers and any other species listed in Schedule 1 of the Wildlife and Countryside Act 1981 took place within a Survey Area buffer of up to 2 km from proposed wind turbines between April and August; and
- **Upland breeding bird surveys:** Completed with a 500 m Survey Area buffer around proposed Wind Turbines, with monthly visits from mid-April to mid-July. These focussed on recording breeding waders and any other species of conservation concern.

This fieldwork was supplemented by available survey data. It was understood HRSG were monitoring all golden eagle sites within 6 km of the Site in 2019, and in order to avoid unnecessary disturbance to birds at potential nest sites by repeat visits it was agreed with NatureScot that the HRSG would make relevant data available in order to inform the impact assessment.

Flight activity surveys from five VPs, as part of the ongoing monitoring for the Operational Corriegarth Wind Farm, continued through the 2019-20 non-breeding season from September 2019 to March 2020, and the data have been included in this assessment.

8.3.7 Methodology for the Assessment of Effects

The significance of the potential effects of the Development has been classified by professional consideration of the sensitivity of the feature (a combination of nature conservation importance and conservation status) and the predicted magnitude of change on the feature.

The evaluation of ornithological features unrelated to Natura sites (which are covered as part of the HRA process) involves the following process:

- Identifying the potential effects associated with the Development;
- Considering the likelihood of occurrence of potential effects where appropriate;
- Defining the nature conservation importance and conservation status of the bird populations present to establish level of sensitivity;
- Establishing the magnitude of change associated with the likely effect (both spatial and temporal);
- Based on the above information, making a judgement as to whether or not the resultant effect is significant in terms of 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
- Confirming residual effects after mitigation, compensation or enhancement are considered.

An effect can be defined as a change of a particular magnitude to the abundance and/or distribution of an IOFs population as a result of the Development. Effects can be positive, negative or neutral.

8.3.7.1 Sensitivity of Receptors

The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Site or the sensitivity of potentially affected features, is

²³ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2009; updated 2013) Raptors: a field guide for surveys and monitoring (2nd and 3rd editions). The Stationery Office, Edinburgh.

assessed in line with best practice guidance, legislation, statutory designations and/or professional judgement.

Determination of the level of sensitivity of an IOF is based on a combination of the feature's nature conservation importance and conservation status. Table 8.3 details the framework for determining the nature conservation importance.

Table 8.3: Determining Factors of a Feature's Nature Conservation Importance

Sensitivity of Receptor	Definition
High	Populations receiving protection by a SPA, proposed SPA, Ramsar Site, SSSI or which would otherwise qualify under selection guidelines. Species present in nationally important numbers (>1 % national breeding or wintering population).
Medium	The presence of species listed in Annex 1 of the Birds Directive (but population does not meet the designation criteria under selection guidelines). The presence of breeding species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). The presence of species noted on the latest Birds of Conservation Concern (BoCC) Red list (Eaton <i>et al.</i> 2015 ²). Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the proposed development. Species present in regionally important numbers (>1 % regional breeding population).
Low	All other species' populations not covered by the above categories.

IOFs to be assessed are taken to be those species of High and Medium nature conservation importance.

As defined by SNH (2018a⁶), the conservation status of a species is "*the sum of the influences acting on it which may affect its long-term distribution and abundance, within the geographical area of interest (which for the purposes of the Birds Directive is the EU)*". Conservation status is considered by SNH (2018a⁶) to be "favourable" under the following circumstances:

- "*population dynamics indicate that the species is maintaining itself on a long-term basis as a viable component of its habitats;*
- "*the natural range of the species is not being reduced, nor is likely to be reduced for the foreseeable future; and*
- "*there is (and probably will continue to be) a sufficiently large habitat to maintain its population on a long-term basis*".

SNH (2018a⁶) recommends that "*the concept of favourable conservation status of a species should be applied at the level of its Scottish population, to determine whether an impact is sufficiently significant to be of concern. An adverse impact on a species at a regional scale (within Scotland) may adversely affect its national conservation status*". Thus, "*An impact should therefore be judged as of concern where it would adversely affect the existing favourable conservation status of a species or prevent a species from recovering to favourable conservation status, in Scotland*."

In the case of non-designated sites in Scotland, the relevant regional scale for breeding species is considered to be the appropriate NHZ which the Site falls within, in this case the Central Highlands NHZ 10. For wintering or migratory species, the national UK

population is often considered to be the relevant scale for determining effects on the conservation status and this approach is applied here.

8.3.7.2 *Magnitude of Change*

The magnitude of change will be identified through consideration of the Development, the degree of change to baseline conditions predicted as a result of the Development, the duration and reversibility of an effect and professional judgement, best practice guidance and legislation.

In determining the magnitude of change, the resilience of a population to recover from temporary adverse conditions is considered in respect of each potentially affected population.

The sensitivity of individual IOFs to disturbance during relevant behaviours is considered when determining spatial and temporal magnitude of change and is assessed using guidance described by Bright *et al.* (2006²⁴), Hill *et al.* (1997²⁵) and Ruddock and Whitfield (2007²⁶).

Magnitude of change can be judged in terms of space and time. There are five levels of spatial effects and temporal effects as detailed in Table 8.4 and Table 8.5 respectively. The examples given in these two tables provide a guideline to the assessment, but professional judgement will be relied upon in each individual case.

Table 8.4: Spatial Magnitude of Change

Magnitude of Change	Definition
Very High	Total/near total loss of a bird population due to mortality or displacement. Total/near total loss of productivity in a bird population due to disturbance. Guide: >80 % of population lost, or increase in additive mortality.
High	Major reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 21-80 % of population lost, or increase in additive mortality.
Medium	Partial reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 6-20 % of population lost, or increase in additive mortality.
Low	Small but discernible reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 1-5 % of population lost, or increase in additive mortality.
Negligible	Very slight reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Reduction barely discernible, approximating to the "no change" situation. Guide: < 1 % of population lost, or increase in additive mortality.

²⁴ Bright, J. A., Langston, R. H. W., Bullman, R., Evans, R. J., Gardner, S., Pearce-Higgins, J. & Wilson, E. (2006). Bird Sensitivity Map to provide locational guidance for onshore Windfarms in Scotland. Royal Society for the Protection of Birds.

²⁵ Hill, D.A., D. Hockin, D. Price, G. Tucker, R. Morris, and J. Treweek. (1997). Bird disturbance: improving the quality of disturbance research. *Journal of Applied Ecology* 34:275-288.

²⁶ Ruddock, M. & Whitfield, D. P. (2007). A Review of Disturbance Distances in Selected Bird Species, A report from Natural Research (Projects) Ltd to Scottish Natural Heritage.

Table 8.5: Temporal Magnitude of Change

Magnitude of Change	Definition
Permanent	Effects continuing indefinitely beyond the span of one human generation (taken as approximately 30+ years), except where there is likely to be substantial improvement after this period. Where this is the case, Long-Term may be more appropriate.
Long-term	Approximately 15 - 30 years or longer (see above).
Medium-term	Approximately 5 – 15 years.
Short-term	Up to approximately 5 years.
Negligible	<12 months.

8.3.7.3 Significance of Effect

The sensitivity of the IOF and the magnitude of the predicted effects will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects. Table 8.6 summarises guideline criteria for assessing the significance of effects, although the concluded levels of significance in each case will be based on professional judgement.

Table 8.6: Assessment of the Significance of Effects

Magnitude of Change	Sensitivity of Resource or Receptor			
	High	Medium	Low	Negligible
High	Major	Moderate	Moderate	Minor
Medium	Moderate	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light grey in the above table.

8.3.7.4 Collision Risk Modelling

Birds that utilise the airspace within the Site at potential collision heights would be at risk of collision with wind turbines. The risk of collision with moving wind turbine blades is presumed to be related (although not necessarily linearly) to the amount of flight activity over the Site, the topography of the Site, species' behaviour and the ability of birds to detect and manoeuvre around rotating turbine blades. Collision rates are likely to increase with a wind farm's proximity to large concentrations of birds, whether these are breeding and foraging birds, wintering birds, or those utilising specific areas for local or large-scale migration (Gill *et al.* 1996²⁷).

Band *et al.* (2007²⁸) described a method of quantifying potential bird collisions with onshore Wind Turbines, in which the following estimates are combined:

²⁷ Gill, J.P., Townsley, M. and Mudge, G.P. (1996). Review of the impacts of Windfarms and other aerial structures upon birds. SNH Review 21: 68pp.

²⁸ 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.

- (i) the flight activity rate per unit area per season, extrapolated from a representative sample of observations; and
- (ii) the likelihood that a flight through the rotor swept area would result in a collision.

Finally, an 'avoidance rate' is applied to account for behavioural adaptation of birds to the presence of wind turbines. This results in a figure for the likely mortality rate associated with the Development which is then assessed within the context of the species' relevant populations to determine the significance of any losses.

It was assumed when preparing the Band *et al.* (2007) Collision Risk Model (CRM) that for surveys conducted since commissioning of the Operational Corriegarth Wind Farm, flight activity within up to 500 m of existing wind turbines is lower than would be expected in the absence of wind turbines, because birds are showing avoidance behaviour, as assumed in the CRM (extent based on previous studies showing avoidance, reported by Haworth and Fielding (2013²⁹) Whitfield & Fielding (2017³⁰), as well as recommended golden eagle PAT model methodology in MacLeod *et al.* (2003³¹). To avoid underestimating collision rates by the possibility of incorporating avoidance behaviour twice (once due to an absence of already displaced birds during surveys, and again by adding an avoidance rate correction factor in the CRM), all flight data within 500 m of the Operational Corriegarth Wind Farm wind turbines has been excluded from the model (see extent of CRAA taking this into consideration in Figures 8.3 and 8.4). This is considered to be precautionary because activity rates around proposed wind turbine locations that are slightly within the 500 m exclusion buffer (and therefore outside of the CRAA) are likely to be lower than in areas which are part of the CRAA and further from Operational Corriegarth Wind Farm wind turbines.

CRM methods and results are detailed in Appendix A8.3.

8.3.8 Assessment Limitations

8.3.8.1 2019 Breeding Season Surveys

The target minimum survey effort recommended in SNH (2017⁹) guidance is 36 hours per vantage point per season. Although this effort was exceeded at all vantage points, when excluding hours lost due to poor visibility (<1 km), total valid hours were 35 or 35.5 for each vantage point. When considering the availability of operational monitoring data since 2015, this slight reduction in target hours is unlikely to affect the robustness of results.

Due to surveys commencing in late April 2019, additional flight activity surveys were undertaken in that month to make up for the lack of survey effort in March. This is not considered to be a major limitation to the assessment due to the availability of data associated with the ongoing monitoring of the Operational Corriegarth Wind Farm where flight activity data have been collected in March in 2016, 2017, 2018 and 2020.

Similarly, 2019 raptor surveys commenced later than the period recommended by Hardey *et al.* (2013²³) for checking occupied home ranges of the target raptor species. However, the recommended total number of survey visits were carried out and consistency of results between the visits, and with previous survey years, showed that the later than recommended start was not a limitation for this assessment.

²⁹ Haworth, P. F. and Fielding, A. H. (2013). Edinbane Windfarm: Ornithological Monitoring. A review of the spatial use of the area by birds of prey. Report for Vattenfall.

³⁰ Whitfield, D.P. & Fielding, A.H. 2017. Analyses of the fates of satellite tracked golden eagles in Scotland. Scottish Natural Heritage Commissioned Report No. 982.

³¹ McLeod, D. R. A., Whitfield, D. P., Fielding, A. H., Haworth, P., McGrady, M. J. 2003. Predicting home range use by golden eagles *Aquila chrysaetos* in western Scotland. Avian Science 2: 183-198.

Part of the scarce breeding bird survey area lying within the Garrogie Estate could not be visited until 15th May 2019 due to access restrictions. Although this meant that the final walkover of Visit 1 was not completed until 15 days after the initial visits on 25th and 29th April, this is not considered to be a major limitation of the study as the recommended four visits were carried out within this part of the survey area during the breeding season.

Although every effort was made to ensure that surveys were undertaken during the most optimal weather conditions, on occasion surveys were undertaken during rain showers and/or times of reduced visibility in order to ensure that they were completed within the correct survey periods. Where weather deteriorated significantly during a visit, surveys ceased and were rescheduled in order to ensure the welfare of birds and the collection of robust data. As a result, periods of inclement weather were not considered to have had a major impact on the results.

8.3.8.2 2015-2018 and 2019-20 Operational Monitoring Surveys

The overall target for VP watches was 36 hours per VP in the breeding season and 36 hours in the non-breeding season. Surveys in 2015/16 and 2017/18 had limitations in access to the site in the winter months because of snow cover. There were no limitations to the survey in 2016/17.

The loss of survey hours in December 2015 due to snowfall was made up in other months such that the total for 2015/16 was only 10.5 hours short of the 360-hour target. Similarly, 12 hours were completed in February 2018 and six hours in April 2018, due to snowfall, but this was made up in other months such that the total for 2017/18 was only 21 hours short of the 360-hour target.

Valid survey effort per VP also fell short of the target 36 hours for four of the five VPs (range of 28.25 and 31 hours) during the 2019-20 non-breeding season. However, overall, the limitations of lower survey effort are considered to be not significant, given the total size and longer-term duration of the dataset.

8.3.9 Embedded Mitigation

The following considerations relating to ornithological features were incorporated into the Development design:

- Wind turbines, wherever possible, were located as close to Operational Corriegarth Wind Farm Wind Turbines, to minimise the extent of area potentially subject to displacement of birds; and
- The design process made efforts to consider ornithological receptors by avoiding at sufficient distance, the locations of key species' nest sites and take into consideration any associated spatial patterns of foraging activity, to minimise the likelihood of disturbance-displacement and collision risk effects.

8.4 BASELINE CONDITIONS

8.4.1 Designated Sites

Results from the desk-based study identified 12 designated sites with ornithological qualifying features within 20 km of the Site (Figure 8.1, Table 8.7).

Table 8.7: Summary of Designated Sites within 20 km of Site Boundary

Designated Site	Distance from Site	Qualifying Features	Status
Monadhliath SSSI	6.0 km South-east	Dotterel, breeding Breeding bird assemblage	Unfavourable, no change Jul 2011 Favourable, maintained Jun 2008

Designated Site	Distance from Site	Qualifying Features	Status
Loch Knockie and nearby Lochs SPA	9 km west	Slavonian grebe, breeding	Unfavourable no change Jul 2002
Glendoe Lochans SSSI	9 km west	Common scoter, breeding Slavonian grebe, breeding	Favourable, maintained Mar 2005 Favourable, maintained Aug 2002
Loch Ruthven SPA, SSSI, Ramsar	12.5 km north	Slavonian grebe, breeding Breeding bird assemblage	Favourable, maintained May 2009 Favourable, maintained Jun 2010
Knockie Lochs SSSI	16 km west	Slavonian grebe, breeding	Unfavourable no change Jul 2002
North Inverness Lochs SPA	18.3 km north-west	Slavonian grebe, breeding	Favourable, maintained May 2009
Dubh Lochs SSSI	18.3 km north-west	Slavonian grebe, breeding	Favourable, maintained Jul 2003
Balnagrach SSSI	19 km north-west	Slavonian grebe, breeding	Favourable, maintained Jul 2002
River Spey – Insh Marshes SPA, SSSI, Ramsar	18.8 km south-west	Hen harrier, non-breeding Spotted crane, breeding Wigeon, breeding Osprey, breeding Wood sandpiper, breeding Whooper swan, non-breeding	Favourable, maintained Feb 2010 Favourable, maintained Dec 2000 Unfavourable, no change May 2009 Favourable, maintained Sep 2009 Unfavourable, declining Dec 2000 Favourable, maintained Dec 2000
Loch Ashie SPA, SSSI	19.1 km north-east	Slavonian grebe, breeding	Favourable, maintained Jul 2002
Creag Meagaidh SSSI	19.8 km south	Breeding Bird Assemblage	Favourable maintained (June 2013)
Creag Meagaidh SPA	19.8 km south	Dotterel, breeding	Unfavourable declining (July 2011)

8.4.2 Birds Recorded During Desk and Field Surveys

The following paragraphs summarise the baseline ornithological field survey results from the 2019 breeding season, and data obtained during the desk study from the operational monitoring 2015-18, 2019-20, and any other sources. Further details can be found within Appendices A8.1 and A8.2, and Confidential Appendix A8.5.

8.4.2.1 Flight Activity Surveys

A summary of all target species recorded during flight activity surveys at the Site is presented in Table 8.8. This includes all flights observed during monitoring for the Operational Corriegarth Wind Farm (2015 to 2018, and 2019-20) and 2019 breeding season baseline surveys. This includes flights recorded outwith the CRAA, which are therefore not included in collision modelling since these flights would not be at risk of collision with a wind turbine ('at-risk' being a flight at potential collision height and within the CRAA). It should be noted that post-construction monitoring was undertaken from five VPs, whereas baseline surveys during the 2019 breeding season were completed from three VPs. For further details of seasonal breakdown and flights included in the collision model, see Appendix A8.3.

Table 8.8: Species Recorded During Flight Activity Surveys 2015 to 2019

Species	Number of flightlines recorded			Number of individuals recorded			Number of flights (indivs.) recorded 'at-risk'		
	2015-18	2019	2019-20	2015-18	2019	2019-20	2015-18	2019	2019-20
Dunlin	1	2	-	1	2	-	-	-	-
Golden eagle	100	6	5	111	6	5	22 (24)	3 (3)	-
Golden plover	15	3	-	26	3	-	3 (3)	3 (3)	-
Greylag goose	6	-	-	72	-	-	2 (30)	-	-
Hen harrier	13	-	-	13	-	-	3 (3)	-	-
Merlin	4	1	-	4	1	-	1 (1)	-	-
Peregrine falcon	51	1	4	55	1	4	20 (20)	-	2 (2)
Pink-footed goose	12	-	8	1145	-	855	1 (30)	-	-
Red kite	357	17	28	397	17	30	126 (137)	9 (9)	8 (9)
Short-eared owl	1	-	-	1	-	-	-	-	-
White-tailed eagle	31	2	1	33	2	1	11 (12)	-	-
Whooper swan	1	-	-	22	-	-	1 (22)	-	-

8.4.22 Wildfowl

Greylag goose and pink-footed goose were recorded infrequently during flight activity surveys. Flocks of up to 22 and 300 individuals respectively were recorded during the non-breeding seasons only, suggesting that birds were from migratory Icelandic populations. During the baseline EIA surveys for the Operational Corriegarth Wind Farm, SLR (2007) did not record any geese during baseline flight activity surveys, and there was no evidence of birds utilising the Site during any survey period.

A flock of 22 whooper swans flew over the Site once in 2015 but the species has not been recorded since.

Wigeon was recorded once in 2019, likely to be breeding at a location over 2 km from the nearest proposed wind turbine location.

8.4.23 Raptors*Red Kite*

Red kite was not given consideration in the planning conditions for the Operational Corriegarth Wind Farm as they were not found in the area during the baseline surveys. However, during operational monitoring and baseline surveys for the Development, red kite was the most frequently observed Schedule 1 raptor species recorded, with usage widely across the Site (Figure 8.6). No evidence of breeding was recorded within the 2 km survey area in any year, due to the absence of woodland or forestry plantation, and so most records were of individual foraging birds.

In June 2020, site personnel at the Operational Corriegarth Wind Farm reported a red kite carcass in proximity to the operational wind turbine T7 near the centre of the Wind Farm (wind turbine located at NH569135), which was an apparent, although unconfirmed, victim of a collision with a rotor blade. Although systematic carcass searches have not been undertaken during the operational period of the Operational Corriegarth Wind Farm, this is the first record of a collision since installation in 2015.

Golden Eagle

Three active golden eagle territories are located within 6 km of the Site (Confidential Figures 8.2.1 and 8.2.2). In 2019 two out of three nest attempts were successful, whereas in 2018 one pair was successful.

In 2019, one pair nested successfully (one fledged chick) on the Dunmaglass Estate, approximately 3.0 km from the nearest proposed wind turbine location, and 3.3 km from the nearest Operational Corriegarth Wind Farm wind turbine. This pair unsuccessfully nested at a separate location within the Dunmaglass Estate in 2018, further from the nearest proposed wind turbine location.

A second breeding pair on the Garrogie Estate successfully reared two chicks, 4.4 km from the nearest proposed wind turbine location, and 4.8 km from the nearest Operational Corriegarth Wind Farm wind turbine. This pair unsuccessfully nested at a different location within the Garrogie Estate in 2018.

A third pair's nesting attempt, within the Corriegarth Estate, was roughly 5.7 km from the nearest proposed wind turbine location, and 6.2 km from the nearest Operational Corriegarth Wind Farm wind turbine. Though the adult pair built up the nest in preparation of a breeding attempt, they did not successfully lay any eggs. This pair fledged a chick from a nest location approximately 1 km closer in 2018, and within the territory in 2017.

Golden eagles have also been frequently recorded within the 2 km Scarce Breeding Birds Study Area during operational monitoring and 2019 surveys (Figure 8.7). Most flight lines were associated with hunting behaviour, and mountain hare is considered to be the main prey species within the survey area. Six roost sites were recorded in 2019 within the 2 km Scarce Breeding Birds Study Area, although all were at least 1 km from the proposed wind turbines.

Across all years, 93 % of records were of single birds. Approximately 46 % of flights were made by sub-adult birds and 25 % by adult birds (age class was not defined in 29 % of flights).

No golden eagle breeding was reported within 6 km of the Site during pre-construction surveys for the Operational Corriegarth Wind Farm although it was considered in the report (SKM Enviros, 2013¹⁸) that a pair possibly bred in the area in 2012. Records were made of at least seven different birds within the survey area. SLR (2007²¹) reported regular flight activity by at least four individual birds within their survey area but identified no occupied breeding territories within 6 km of the Site. SLR also identified that a high proportion of flights within the Operational Corriegarth Wind Farm survey area were by sub-adult birds.

White-tailed Eagle

The only known nesting location for white-tailed eagle in the wider area is approximately 9.8 km south-west of the Site. Despite records of white-tailed eagle within the local area in previous years, the nest location was only discovered in 2019, when the pair fledged two chicks.

Survey records were initially infrequent but, during the 2018 post-construction monitoring, there was more white-tailed eagle activity recorded than in all previous years combined (2015 to 2017). However, of the 17 flight events recorded during that season, nine were over a two-day period in late March 2018 (when a bird was seen feeding and carrying carrion away from the Carn a'Chorie Sheilich area) and a further five on 31 May 2018. This is consistent with the likelihood that transient individuals were attracted to a temporary food source just outside of the Operational Corriegarth Wind Farm. A small number of white-tailed eagle observations were made in April and May 2019, comprising an adult and a first-year bird, suggesting it is possible that breeding individuals (from the

surrounding areas) may be found within the Operational Corriegarth Wind Farm area on occasion.

Peregrine

One probable peregrine territory was recorded within the 2 km Scarce Breeding Bird Study Area in 2019 (Confidential Figure 8.2.3). A pair were seen together in flight and in suitable nesting habitat. A roost and plucking point were recorded nearby, with evidence of golden plover kills. However, the location of the nest was not confirmed, and it was considered that it may have been located outside of the 2 km Scarce Breeding Bird Survey Area.

Numbers of peregrine flights recorded during flight activity surveys for the Operational Corriegarth Wind Farm survey area have declined since monitoring began. Flightlines were recorded in 2015/16, 15 in 2016/17, nine in 2017/18 and five in 2019/20.

SKM (2013¹⁸) recorded one probable breeding territory at the periphery of the 2 km Operational Corriegarth Wind Farm survey area. SLR (2007²¹) recorded some activity and a roost/feeding site approximately 2 km from the Operational Corriegarth Wind Farm but concluded that peregrine had not bred within the survey area.

Other Raptor and Owl Species

Data from flight activity surveys suggest that hen harrier activity has been declining in the area over the past five years. No hen harrier or signs of hen harrier breeding were recorded during any of the surveys undertaken in 2019. A small number of flights have been recorded annually in previous survey periods, but there has been no evidence of breeding within 2 km.

Surveys recorded no evidence of breeding merlin in 2019 and only a single flight was recorded during flight activity surveys. Similarly, low levels of flight activity have been recorded during previous survey years with a small number of individual sightings. Baseline surveys for the Operational Corriegarth Wind Farm concluded that merlin possibly bred within 2.5 km of the site in 2006.

No short-eared owls were recorded during any of the surveys in 2019. One flightline of an adult was recorded in May 2017. Baseline and pre-construction surveys for the Operational Corriegarth Wind Farm did not record any sightings of this species.

A single adult osprey was recorded flying over the Site during a raptor survey in June 2019. No ospreys were recorded during surveys between 2015 – 2018 and only a small number of records were made in the baseline and pre-construction periods for the Operational Corriegarth Wind Farm. There are no suitable nesting habitat or waterbodies within at least 2 km of the Site.

8.4.24 Waders

Golden Plover

Surveys in 2019 recorded eight golden plover territories within or just outside of the 500 m survey area (Figure 8.13). Three golden plover flights were recorded during the 2019 flight activity surveys (Figure 8.13). Post-construction monitoring recorded eight flights in 2015/16, one flight in 2016/17 and three flight lines in 2017/18.

Pre-construction surveys recorded a total of eight territories within a survey area which included the Operational Corriegarth Wind Farm site and a 500 m buffer. Baseline surveys reported a total of 26 territories, although this included a much larger survey area, and a higher level of flight activity in 2004/5 (17 flights) and 2006 (28 flights).

Dunlin

Eight dunlin territories (including two confirmed breeding) were recorded within 2 km in 2019 (Figure 8.13), and two display flights were recorded during flight activity surveys. One flight was recorded in 2016. Pre-construction surveys recorded a total of three territories within the Operational Corriegarth Wind Farm and a 500 m buffer. A total of four territories were recorded in 2006 over a larger survey area, with low levels of flight activity in 2004/5 (one flight) and 2006 (two flights).

Snipe

No snipe was recorded during any of the surveys in 2019. One flight by a displaying snipe was observed in June 2016 along with ground registrations of chipping snipe in March and June 2016 and a further sight record in July 2017. Pre-construction surveys reported no snipe within the Operational Corriegarth Wind Farm area but seven pairs within 500 m of the access track. Baseline surveys found one territory in the vicinity of the access track.

8.5 ASSESSMENT OF POTENTIAL EFFECTS

8.5.1 Scoped-in Important Ornithological Features

The assessment is applied to those 'scoped-in' IOFs of Medium or High nature conservation importance (see Table 8.3) that are known to be present within the Site or surrounding area (as confirmed through survey results and consultations outlined above). These comprise: **red kite, golden eagle, white-tailed eagle, peregrine, golden plover** and **dunlin** (Table 8.9).

Table 8.9: Scoped in IOFs

IOF	Nature Conservation Importance	Reason for inclusion
Red kite	Medium	Annex I; Schedule 1
Golden eagle	Medium	Annex I; Schedule 1
White-tailed eagle	Medium	Annex I; Schedule 1
Peregrine	Medium	Annex I; Schedule 1
Golden plover	Medium	Annex I
Dunlin	Medium	Annex I

In addition, it is necessary to consider the species' conservation status when assessing the likely effects. Relevant conservation status information for the 'scoped in' IOFs is detailed within Table 8.10.

Table 8.10: Conservation Status of Scoped-In IOFs

IOF	Conservation Status	Information
Red kite	Green List	The Scottish red kite population was estimated using Scottish Raptor Monitoring Scheme (SRMS) data as at least 273 pairs, as of 2015 (Challis <i>et al.</i> 2019 ³²). According to the Wilson <i>et al.</i> (2015 ³³) review of regional population estimates, there were no breeding pairs within NHZ 10 in 2013, based on SRMS data. The most recent SRMS

³² Challis, A., Eaton, M., Wilson, M.W., Holling, M., Stevenson, A. & Stirling-Aird, P. (2019). Scottish Raptor Monitoring Scheme Report 2018. BTO Scotland, Stirling.

³³ Wilson, M. W., Austin, G. E., Gillings S. and Wernham, C. V. (2015). Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned report number SWBSG_1504. pp72. Available from: www.swbsg.org

IOF	Conservation Status	Information
		report recorded eight active territories in Inverness-shire in 2018 (out of 11 home ranges checked) suggesting that the population has slowly expanded westwards from its initial reintroduction on the Black Isle in the early 1990s. Although the NHZ 10, as well as the national population appears to be steadily increasing, the NHZ 10 population is considered as being in unfavourable, recovering condition due to its small size.
Golden eagle	Green List	The Scottish golden eagle population has been relatively stable over the last few decades, with a total of 442 breeding pairs estimated at the 2003 national census (Eaton <i>et al.</i> 2007³⁴). The most recent survey of golden eagle in Britain, in 2015, found that the population had increased by 15 % to 508 territorial pairs (Hayhow <i>et al.</i> 2017³⁵). Results from the most recent national census in 2015 suggest that the south-central Highlands population has grown over the last few decades (up from 31 pairs in 2003 to 53 pairs in 2015 according to Hayhow <i>et al.</i> 2017) and data provided by the HRSRG put the NHZ 10 population at 25 territorial pairs in 2019, up from 12 active golden eagle territories in 2003 according to Whitfield <i>et al.</i> (2008³⁶). The NHZ 10 is therefore considered to be in favourable conservation status.
White-tailed eagle	Red List (HD, BR)	In Wilson <i>et al.</i> (2015) the NHZ 10 white-tailed eagle population was given as zero territorial pairs, based on 2013 SRMS data. The national population was estimated to be 82 pairs. Challis <i>et al.</i> (2019) provided 2018 information for one occupied home range in Inverness-shire, and another one in Badenoch & Strathspey, suggesting that the current NHZ 10 breeding population is very small, even when including the Loch Knockie pair first recorded in 2019. Therefore, despite the SRMS's national population estimate rising to 104 breeding pairs in 2018, the NHZ 10 population's conservation status is likely to remain unfavourable due to its small size.
Peregrine	Green List	Preliminary analysis of the data from the 2014 Peregrine Survey, carried out in the UK and the Isle of Man, estimated the overall number of breeding pairs at 1,505 ³⁷ . Although this is similar to the estimate from the previous survey in 2002, the regional estimates are more divergent, with the Scottish population declining since 2002 (-11 %). The NHZ 10 population was estimated by Wilson <i>et al.</i> (2015) to be 7 pairs in 2014, although 11 home ranges were found by the Scottish Raptor Study Group to be occupied in Inverness-shire in 2019. Whereas the national population is likely to be stable, the regional/NHZ population is considered to be in unfavourable conservation status due to its low size.

³⁴ Eaton, M.A., Dillon, I.A., Stirling-Aird, P. & Whitfield, D.P. (2007). Status of the Golden Eagle *Aquila chrysaetos* in Britain in 2003. *Bird Study*, 54, 212-220.

³⁵ Daniel B. Hayhow, Stuart Benn, Andrew Stevenson, Patrick K. Stirling-Aird & Mark A. Eaton (2017): Status of Golden Eagle *Aquila chrysaetos* in Britain in 2015, *Bird Study*, DOI: 10.1080/00063657.2017.1366972.

³⁶ Whitfield, D P, Fielding, A H, McLeod, D R A and Haworth, P F (2008). A conservation framework for golden eagles: implications for their conservation and management in Scotland. Scottish Natural Heritage Commissioned Report No.193 (ROAME No. F05AC306).

³⁷ Available at: <https://www.bto.org/our-science/projects/peregrine-survey/results>. Accessed on: July 2020.

IOF	Conservation Status	Information
Golden plover	Green List	The UK golden plover breeding population is estimated to be 38,000-59,000 pairs³⁸, although Forrester <i>et al.</i> (2007³⁹) give a Scottish breeding population estimate of 15,000 pairs, stating that this represents 80 % of the British breeding population. The NHZ 10 population was estimated by Wilson <i>et al.</i> (2015) to be 2,702 (range 2,476-2,928) pairs in 2005. The BTO BirdTrends website⁴⁰ states that the Scottish breeding population has shown slight long-term decline (-10 %), although more recent trends over the last five and ten years have been positive (+18 % and +1 % respectively), and this is likely to be reflected in the regional/NHZ population, which is considered to be in favourable conservation status.
Dunlin	Amber List (BDMr1, BL)	The Scottish breeding population belonging to the <i>Calidris alpina schinzii</i> race has been estimated as 13,313 pairs (CLs = 5,904 – 28,939) by Wilson <i>et al.</i> (2015). The NHZ 10 population was estimated by Wilson <i>et al.</i> (2015) to be 105 (range 33-266) pairs in 2000. As outlined in Humphreys <i>et al.</i> (2017⁴¹), the national population is probably in decline, and this is likely to be reflected in the regional/NHZ population.

BoCC criteria (Eaton *et al.* 2015):

HD Historical Decline. A severe decline in the UK between 1800 and 1995, without substantial recent recovery.

BDMr Breeding Range Decline. Moderate decline (by more than 25 % but less than 50 %) in the last 25 years (BDMr1) or over longer term BDMr2).

BR Breeding rarity. Species qualified as rare breeders (BR) if the UK breeding population was <300 pairs.

BL Breeding localisation. Species were considered localised if more than 50 % of the UK population was found at ten or fewer sites in the breeding season.

8.5.2 Scoped Out Designated Sites and Species

8.5.2.1 Designated Sites

As outlined in Table 8.1, during the consultation process the theoretical connectivity between the Site and qualifying features of the River Spey – Insh Marshes SPA was highlighted. The Site, approximately 19 km from the SPA, is likely to be well beyond territorial or foraging range for most species found within the SPA, based on information presented in Pendlebury *et al.* (2011⁴²) and SNH (2016⁵), with only osprey having the potential to extend that distance. Four SPA qualifying features were recorded during monitoring of the Operational Corriegarth Wind Farm and baseline surveys for the Development in 2019: osprey, hen harrier, wigeon and whooper swan. All of these species were recorded only on a very small number of occasions across the whole survey

³⁸ Musgrove, A., Aebischer, N., Eaton, M., Hearn, H., Newson, S., Noble, D., Parsons, M., Risely, K. and Stroud, D. (2013). Population estimates of birds in Great Britain and the United Kingdom. British Birds 106, pp. 64 –10.

³⁹ Forrester, R.W., Andrews, I.J., McInerny, C.J. et al. (eds). 2007. The Birds of Scotland. The Scottish Ornithologists Club, Aberlady

⁴⁰ Available at: <https://www.bto.org/our-science/publications/birdtrends>. Accessed on: July 2020.

⁴¹ Humphreys, E.M., Marchant, J.H., Wilson, M.W. & Wernham, C.V. (2015). Dunlin (*Calidris alpina*): SWBSG Species Dossier 14. Report by BTO Scotland to SWBSG as part of Project 1403. Updated by SWBSG 2017.

⁴² Pendlebury, C., Zisman, S., Walls, R., Sweeney, J., McLoughlin, E., Robinson, C., Turner, L. & Loughrey, J. (2011). Literature review to assess bird species connectivity to Special Protection Areas. Scottish Natural Heritage Commissioned Report No. 390.

period and it is clear that the Site is unimportant for them. It can therefore be reasonably concluded that, within the context of the HRA process, there are no likely significant effects predicted for the River Spey – Insh Marshes SPA, or indeed for any other SPA for similar reasons relating to distance and potential foraging ranges of qualifying features.

The conclusion of lack of connectivity due to distances, and unimportance of the site for qualifying features can also be extended to all Ramsar sites and SSSIs, and therefore all designated sites have been scoped out of the assessment.

8.5.2.2 Target Species

The following target species have also been scoped out due to either very low activity, few or no 'at-risk' flights recorded during flight activity surveys (and therefore low collision risk), a lack of breeding activity recorded during baseline surveys, and/or the general lack of suitable habitats within the Site:

- All wildfowl: no utilisation of the Site, and low estimated collision rates when considered in context with the national or flyway populations (up to one every 30 years for whooper swan, every 392 years for pink-footed goose and every 35 years for greylag goose – see Table 8.11);
- Target raptor species (except red kite, golden eagle, white-tailed eagle and peregrine): no breeding records within likely zone of influence of the Development and low activity rates recorded during baseline surveys. Very low, or zero collision risk (Table 8.11).
- All breeding waders (except for dunlin and golden plover), which were found breeding in low numbers within the context of NHZ 10 populations, and generally in areas away from infrastructure, with consequently no or low collision rates predicted (Table 8.11); and
- All passerine species, following SNH (2017⁹ and 2018a⁶) guidance.

Collision risk modelling was undertaken using the flight activity survey data collected from post-construction monitoring 2015-18, 2019-20 and baseline surveys in 2019 (four non-breeding seasons and four breeding seasons). The mean annual collision rate for each species has been calculated by taking the sum of the breeding season mean plus non-breeding season mean collision rates. Results summarised in Table 8.11 have informed which species can be scoped-out of the assessment. Details of methodology used is presented in Appendix A8.3.

Table 8.11: Collision Risk Modelling Results (collision rate per season)

Species	2015-16 NBS	2016 BS	2016-17 NBS	2017 BS	2017-18 NBS	2018 BS	2019 BS*	2019-20 NBS	Mean Annual	Every X years
Red kite	0.059	0.111	0.112	0.109	0.059	0.305	0.097	0.037	0.222	4.5
White-tailed eagle	0.005	0	0	0.094	0	1.145	0	0	0.311	3.2
Whooper swan	0.134	0	0	0	0	0	0	0	0.034	29.8
Peregrine	0.002	0.009	0.005	0.047	0.010	0.004	0	0.002	0.020	50.5
Hen harrier	0.002	0.003	0.002	0	0	0	0	0	0.002	625.5
Golden eagle	0.006	0.012	0.065	0.011	0.001	0.256	0.019	0	0.093	10.8
Pink-footed goose	0.010	0	0	0	0	0	0	0	0.003	392.3
Golden plover	0	0.016	0	0	0	0.008	0.034	0	0.014	69.7

Species	2015-16 NBS	2016 BS	2016-17 NBS	2017 BS	2017-18 NBS	2018 BS	2019 BS*	2019-20 NBS	Mean Annual	Every X years
Merlin	0	0.018	0	0	0	0	0	0	0.005	218.9
Greylag goose	0	0	0.001	0	0.114	0	0	0	0.029	34.6

NBS = non-breeding season collision rate; BS = breeding season collision rate. * = baseline surveys undertaken from three vantage points overlooking Development Wind Turbine locations.

8.5.3 Construction Effects

The main potential effects of construction activities across the Site are the displacement and disruption of breeding, foraging and roosting birds as a result of noise and visual disturbance over a short-term period (either the duration of a particular construction activity within working hours, or the duration of the whole construction period).

Effects on birds would be confined to areas in the locality of proposed infrastructure as well as along existing access tracks. Few attempts have been made to quantify the impacts of disturbance of birds due to activities of this type, and much of the available information is inconsistent. However, as a broad generalisation, larger bird species such as raptors, or those that feed in flocks in the open tend to be more susceptible to disturbance than small birds living in structurally complex habitats (such as woodland, scrub and hedgerow) (Hill *et al.* 1997²⁵).

Direct habitat loss would also occur due to the Development's construction, which would be both temporary (e.g. construction compounds) and longer term (access tracks and turbines). This has the potential to impact on breeding, foraging or roosting individuals.

8.5.3.1 Red kite

Effect: Foraging red kites may be displaced from the Site during construction, either by disturbance or direct habitat loss.

Sensitivity: As an Annex I and Schedule 1 species, red kite is classified as being of Medium Nature Conservation Importance (Table 8.3). The regional/NHZ population is in unfavourable conservation status due to its small, albeit increasing size. Overall sensitivity is therefore considered to be Medium-High.

Magnitude of Change: According to Hardey *et al.* (2013²³) red kites usually forage within 3 km of a nest but can forage up to 6 km. Within this distance from the Site there are a number of wooded areas outside of the 2 km Scarce Breeding Bird study area, particularly to the north-west, which may currently host red kite nest or roost sites. The closest red kite nest and roost sites are therefore likely to be outside of potential disturbance range associated with construction of new infrastructure, with no suitable nesting habitat present within the local area. It is possible that a nest or roost site may be located in closer proximity to sections of the existing Operational Corriegarth Wind Farm access track to the west of the Study Area, but because associated activities would likely be non-intrusive (e.g. vehicular movements or brief personnel presence), or similar to existing activities, then no disturbance is likely.

Because of potential foraging distribution it is however possible that at least some activity on site may relate to breeding individuals. Most flight activity recorded was of single individuals, and was spread reasonably evenly throughout the year, with a peak in August-September, possibly related to post-breeding movements unrestrained by breeding requirements.

Given that red kites are often found nesting relatively close to human habitation and can take advantage of supplementary feeding opportunities, any disturbance due to

construction activities is unlikely to significantly affect individuals' ability to forage in the area or extend much beyond the disturbance source. Because of the opportunistic nature of feeding, direct habitat loss associated with the Development is also unlikely to result in a measurable adverse effect.

Overall, it is predicted that the effect of construction disturbance on the NHZ 10 red kite population over the construction period would result in an effect of Negligible spatial and Short-term temporal magnitude. For direct habitat loss, this would be Negligible spatial and Long-term temporal magnitude.

Significance of Effect: The unmitigated effect on the NHZ 10 red kite population from construction is classified as at worst, Minor adverse and is therefore Not Significant in the context of the EIA Regulations.

8.5.3.2 Golden Eagle

Effect: Breeding or foraging golden eagles may be displaced from the Site during construction, either by disturbance or direct habitat loss.

Sensitivity: As an Annex I and Schedule 1 species, golden eagle is classified as being of Medium Nature Conservation Importance. The regional/NHZ population is in favourable conservation status. Overall sensitivity is therefore considered to be Medium.

Magnitude of Change: The wind turbine locations proposed as part of the Development are a minimum of 2.9 km from the nearest identified golden eagle nest site in 2018 or 2019. The closest stretch of existing access track for the Operational Corriegarth Wind Farm is around 1.1 km from the nearest nest site. There is little evidence in the literature as to the minimum distance that nesting golden eagles may tolerate in proximity to wind farm construction, with efforts being made, in Scotland at least, to avoid siting wind farm projects close to occupied golden eagle nest sites. More evidence is available for human disturbance to golden eagles at their nest site, and based on expert reviews (e.g. Ruddock & Whitfield 2007²⁶), SNH (2015⁴³) advises that a 1 km exclusion zone should exist around an active golden eagle nest site (in that case for helicopter movements). It is considered that for the presence of various construction activities, this is likely to be a maximum distance applicable for direct disturbance effects at the nest site. As such it is considered unlikely that any nesting pair would be displaced as a result of construction disturbance.

The roost sites recorded in 2019 were within 2 km of an Operational Corriegarth Wind Farm Wind Turbine although would remain over 1 km from the nearest proposed Wind Turbine location and access tracks. Again, it is therefore considered that disturbance from roost sites due to construction activity is unlikely, particularly when construction working hours are unlikely to overlap with the period of time when birds would be roosting.

It is possible that foraging breeding or non-breeding individuals may be temporarily displaced by construction activities, thereby preventing them from accessing prey items in that locality. However, due to the abundance of available habitat within the local area, as evidenced by the widespread distribution of flight activity recorded during baseline and operational surveys (see Figures 8.7 and 8.8), it is unlikely that this would significantly affect the survival or productivity of any individual, with nesting birds foraging within an approximate 6 km radius of the nest location, and non-breeding birds being able to travel over larger distances. Similarly, the relatively small direct habitat loss due to the construction of Development infrastructure is unlikely to affect the viability of any territories because of the species' ranging capability, and general widespread suitability of habitat within each territory.

⁴³ SNH (2015). The use of helicopters and aircraft in relation to disturbance risks to Schedule 1 & 1A raptors and wider Schedule 1 species. Scottish Natural Heritage Guidance.

Overall, it is predicted that the effect of construction disturbance on the three resident pairs in the area, and the NHZ 10 golden eagle population over the construction period would result in an effect of Low spatial and Short-term temporal magnitude. For direct habitat loss, this would be Negligible spatial and Long-term temporal magnitude.

Significance of Effect: The unmitigated effect on the NHZ 10 golden eagle population from construction is classified as, at worst, Minor adverse and is therefore Not Significant in the context of the EIA Regulations.

8.5.3.3 White-tailed Eagle

Effect: Foraging white-tailed eagles may be displaced from the Site during construction, either by disturbance or direct habitat loss.

Sensitivity: As an Annex I and Schedule 1 species, white-tailed eagle is classified as being of Medium Nature Conservation Importance. The regional/NHZ population is in unfavourable conservation status due to its small size. Overall sensitivity is therefore considered to be Medium-High.

Magnitude of Change: As outlined above in Section 8.4.2.3, the closest known nest site is nearly 10 km from the Site, and so no breeding disturbance would result from the Development. No roost activity was recorded during baseline or operational monitoring surveys, and so the disturbance risk to roosting individuals is considered to be low.

White-tailed eagles appear to use the Site and the wider surrounding area on occasion for foraging. The majority of the recorded white-tailed eagle activity is therefore likely to reflect of food distribution at that time, and so there are no obvious areas of particular importance to the species within the Site. Although it is possible that some sources of carrion or prey may become unavailable for white-tailed eagle if in proximity to construction activities, this short-term disturbance is unlikely to affect the ability of any individuals to find sufficient food, with it being evident that the higher moorland habitats are not as important to white-tailed eagles in the area, compared to the more often favoured lower altitude habitats and waterbodies. Direct loss of moorland habitat well away from nest sites is also unlikely to affect individuals.

It is therefore predicted that the effect of construction disturbance on the NHZ 10 white-tailed eagle population over the construction period would result in an effect of Negligible spatial and Short-term temporal magnitude. For direct habitat loss, this would be Negligible spatial and Long-term temporal magnitude.

Significance of Effect: The unmitigated effect on the NHZ 10 white-tailed eagle population from construction is classified as Negligible adverse and is therefore Not Significant in the context of the EIA Regulations.

8.5.3.4 Peregrine

Effect: Nesting and foraging peregrines may be displaced from the Site during construction, either by disturbance or direct habitat loss.

Sensitivity: As an Annex I and Schedule 1 species, peregrine is classified as being of Medium Nature Conservation Importance. The regional/NHZ population is in unfavourable conservation status due to its small size. Overall sensitivity is therefore considered to be Medium-High.

Magnitude of Change: A likely peregrine nest site and roost site in close proximity were recorded within the 2 km Scarce Breeding Bird study area during surveys in 2019 (and probably during baseline and pre-construction surveys for the Operational Corriegarth Wind Farm), although both were over 1.5 km from the nearest proposed Development wind turbine location and new access tracks, and around 1 km from the existing access track.

A review of disturbance distances defined by Ruddock and Whitfield (2007²⁶) concluded 500-750 m as a maximum distance for passive disturbance effects, but that even this may be over precautionary with few observations of disturbance actually recorded (and where they were, the distances were considerably less than 500-750 m). Petty (1998⁴⁴) recommends a 400-600 m disturbance buffer for peregrine. In addition, peregrines are known to successfully nest in active quarries/urban settings (historically and in the more recent past as populations have recovered) and are considered to be highly tolerant (or at least easily habituate, Ruddock and Whitfield 2007²⁶) to human activity/disturbance. Disturbance to nesting or roosting birds due to construction activities is therefore unlikely.

Peregrine flight activity was occasionally recorded during post-construction monitoring, although only one flight was observed during 2019 breeding season baseline flight activity surveys. Evidence therefore suggests that the Site is relatively unimportant to local breeding birds, although parts may still be within their core territory which can extend out to 2 km from the nest (SNH, 2016⁵). With the ability to hunt wider however, any temporary disturbance to foraging due to construction activity is unlikely to affect the ability of breeding birds to obtain sufficient food.

The effect of construction disturbance on the NHZ 10 peregrine population over the construction period would result in an effect of Negligible spatial and Short-term temporal magnitude. For direct habitat loss, this would be Negligible spatial and Long-term temporal magnitude.

Significance of Effect: The unmitigated effect on the NHZ 10 peregrine population from construction is classified as at worst, **Minor adverse** and is therefore **Not Significant** in the context of the EIA Regulations.

8.5.3.5 Golden Plover

Effect: Nesting and foraging golden plovers may be displaced from the Site during construction, either by disturbance or direct habitat loss. Golden plover is present only occasionally within the 2 km Scarce Breeding Birds study area during the non-breeding season.

Sensitivity: As an Annex I species, golden plover is classified as being of Medium Nature Conservation Importance. The regional/NHZ population is in favourable conservation status and overall sensitivity is therefore considered to be Medium.

Magnitude of Change: Up to eight golden plover territories were recorded in 2019 within around 500 m of potential Wind Turbine locations. As a worst case, the loss of up to eight pairs from an NHZ 10 population of 2,702 pairs would represent a 0.3 % reduction in population. In practice, it is unlikely that this number of pairs would be lost to the population, with some birds likely to remain close to the Development, and others likely to move away from the disturbance areas into nearby suitable habitat. Sansom *et al.* (2016a⁴⁵) found that disturbance activity during a wind farm's construction had no significant effect on golden plover breeding abundance or distribution.

Baseline results in 2019 showed that at least two pairs probably bred in close proximity to Operational Corriegarth Wind Farm Wind Turbines (Figure 8.13) and so direct habitat loss is also unlikely to affect golden plover breeding.

The impact of construction disturbance and habitat loss on the NHZ 10 breeding population would result in an impact of Negligible spatial and Short-term (disturbance) or Long-term (habitat loss) temporal magnitude.

⁴⁴ Petty, S. J. (1998) Ecology and Conservation of Raptors in Forests. Research Information Note 118, issued by the Forestry Commission.

⁴⁵ Sansom, A., Pearce-Higgins, J. W. and Douglas, D. J. T. (2016a), Negative impact of wind energy development on a breeding shorebird assessed with a BACI study design. *Ibis*, 158: 541–555. doi:10.1111/ibi.12364

Significance of Effect: The unmitigated effect on the NHZ 10 golden plover population from construction is classified as Negligible adverse and is therefore Not Significant in the context of the EIA Regulations.

8.5.3.6 Dunlin

Effect: Nesting and foraging dunlin may be displaced from the Site during construction, either by disturbance or direct habitat loss. Dunlin is absent from the 2 km Scarce Breeding Bird Study Area during the non-breeding season.

Sensitivity: As an Annex I species, dunlin is classified as being of Medium Nature Conservation Importance. The regional/NHZ population is in unfavourable conservation status and overall sensitivity is therefore considered to be Medium-High.

Magnitude of Change: Of the eight dunlin territories recorded in 2019, four were located within 500 m of a proposed wind turbine location, with the other four within 1 km. With a core foraging range of 500 m given by SNH (2016⁵) it is therefore possible that around four territories may be disturbed by construction activity during the breeding season.

It is unlikely that all pairs present would be significantly affected. Pearce-Higgins *et al.* (2012⁴⁶) found evidence for no impacts on dunlin from wind farms. Indeed, if there was any effect, it appeared to be positive in that the average dunlin density was greater, although not significantly, during construction and operation than pre-construction. Fielding & Haworth (2015⁴⁷) recorded a decline in numbers of dunlin territories at Farr Wind Farm in the 2006 breeding season immediately following construction (9 territories), but this was down from a high of 15 territories during construction in 2005. Numbers in both cases were still larger than those recorded during the baseline period from 2002 to 2004 (up to 9 territories).

Although it is therefore unlikely that all breeding territories would be affected simultaneously during a breeding season, it is possible that at least one territory may be affected depending on the extent and nature of construction activities, which would result in the temporary loss of around 1 % of the NHZ 10 breeding population (105 pairs). This would equate to an effect of Low spatial and Short-term temporal magnitude. Direct habitat loss may also occur, but with SNH (2016) suggesting that dunlin has a maximum foraging range of 3 km, this is likely to be of a negligible spatial magnitude of effect, albeit Long-term temporal, for the dunlin population.

Significance of Effect: The unmitigated effect on the NHZ 10 dunlin population from construction is classified as Minor adverse and is therefore Not Significant in the context of the EIA Regulations.

8.5.4 Operational Effects

8.5.4.1 Potential Effects: Displacement and Barrier Effects

The displacement of nesting and foraging birds from the Site has the potential to extend beyond the construction phase and occur throughout the operational phase.

Displacement away from operational wind turbines has been found to occur in a number of individual wind farm studies, although the effects vary considerably between Sites and species. Considering a range of breeding bird species but predominantly waders and passerines at upland wind farms, Pearce-Higgins *et al.* (2012⁴⁶) showed that there were no displacement effects on any bird species from wind farms during the operational phase

⁴⁶ Pearce-Higgins, J.W., Stephen, L., Douse, A. and Langston, R.H.W. (2012). Greater impacts of Windfarms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. *Journal of Applied Ecology* 49: 386-394.

⁴⁷ Fielding, A.H. & Haworth, P.F. (2015). Farr wind farm: A review of displacement disturbance on dunlin arising from operational turbines 2002-2015.

other than those that had already occurred during construction, and for some species, the effects during construction were reversed during operation with numbers returning to pre-construction numbers. More recently Sansom *et al.* (2016a⁴⁵) have shown results which suggest that breeding golden plovers may be affected by operational turbines up to 400 m away, although displacement was less than complete, with an estimated 79 % reduction.

An additional consideration is the displacement of birds from larger areas where wind turbines act as a barrier to bird movement. The likelihood of this effect occurring tends to increase with wind farm size, with larger turbine arrays giving rise to a greater risk that birds are forced to alter their regular flight paths, resulting in an increase in distance flown and so energy expended. Modelling of energy costs to migrating bird species most likely to be sensitive to barrier effects (large and long-lived breeding birds such as seabirds) by Masden *et al.* (2010⁴⁸) found that there are unlikely to be any significant effects on populations. However, the increased cost of repeated diversions around a wind farm made by breeding birds moving between their nests and foraging areas may be more substantial (see Masden *et al.* 2010⁴⁸). This may also be the case for roosting birds such as geese regularly moving to feeding areas. Humphreys *et al.* (2015⁴⁹) concluded that the extent to which barrier and displacement effects have been differentiated between in the field is however highly debatable as both are manifested as a reduction of birds within the wind farm (Cook *et al.* 2014⁵⁰). It may be the case therefore that barrier effects during the breeding season have already been accounted for as displacement effects.

Pearce-Higgins *et al.* (2009⁵¹) observed certain species experiencing localised population increases with proximity to wind farm infrastructure, so while some birds may be displaced locally, others may benefit from the introduction of new structures into the habitat, or some other consequence of construction. This finding was further supported by Pearce-Higgins *et al.* (2012⁴⁶) who reported significant increases in breeding numbers of skylarks and stonechats at wind farms.

Red Kite

Effect: Red kites may be at risk of displacement from foraging habitat, thereby impacting on productivity, fitness and survival rates.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in unfavourable conservation status. Sensitivity is therefore Medium-High.

Magnitude of change: No suitable red kite nesting or roosting habitat exists within 2 km of the Site, and so displacement is not considered to be a risk within these contexts.

It has been evident that red kite activity within the 2 km Scarce Breeding Bird study area has greatly increased since the baseline survey period for the Operational Corriegarth Wind Farm, and individuals appear to have been able to forage largely unperturbed by the presence of operational wind turbines (see Figures 8.5 and 8.6). Thus, despite estate management removing known carrion sources close to the existing wind turbines as part of the mitigation measures undertaken for the Operational Corriegarth Wind Farm, there

⁴⁸ Masden, E.A., Haydon, D.T., Fox, A.D. & Furness, R.W. (2010). Barriers to movement: modelling energetic costs of avoiding marine wind farms amongst breeding seabirds. *Marine Pollution Bulletin* 60: 1085-1091.

⁴⁹ Humphreys, E.M., Cook, A.S.C.P., and Burton, N.H.K. (2015). Collision, Displacement and Barrier Effect Concept Note. BTO Research Report No. 669. British Trust for Ornithology, Thetford.

⁵⁰ Cook, A.S.C.P., Humphreys, E.M., Masden, E.A., & Burton, N.H.K. (2014). The avoidance rates of collision between birds and offshore turbines. *Scottish Marine and Freshwater Science Volume 5 Number 16*. Marine Scotland Science, Aberdeen.

⁵¹ Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P & Bullman, R. (2009). The distribution of breeding birds around upland wind farms. *Journal of Applied Ecology* 46: pp 1323-1331.

appears to be a continued availability of red kite food; potentially smaller prey items than taken by eagles; and undiscovered carrion sources, within and adjacent to the Site.

Because the large majority of flights recorded were of single individuals, it is likely that only a small number of birds utilise the Site, albeit relatively frequently. Evidence shown in Figures 8.5 and 8.6 suggests that red kites are likely to show some localised displacement immediately around the wind turbines of the Development (although this may be related to removal of potential prey items rather than avoidance *per se*), but this appears to be to a lesser extent than other raptor species. It is possible that some foraging habitat for a breeding pair would become unavailable around the wind turbines of the Development, but evidence suggests that it is likely that birds would be able to continue to forage widely across the local area, gathering prey items and carrion despite ongoing estate management to remove carrion. The magnitude of change on the NHZ 10 red kite population from operational displacement is therefore considered to be Negligible spatial and Long-term temporal.

Significance of Effect: The unmitigated effects on the red kite NHZ 10 population from operational displacement are classified as Minor adverse and therefore Not Significant in the context of the EIA Regulations.

Golden Eagle

Effect: Golden eagles may be at risk of displacement from foraging habitat, thereby impacting on productivity, fitness and survival rates.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in favourable conservation status. Sensitivity is therefore medium.

Magnitude of change: As described in section 8.5.3.2 for construction effects, due to the distance of nearest known nest sites from proposed wind turbines as part of the Development, no displacement of nesting birds is considered likely. Surveys in 2019 recorded a variety of roost sites within the study area, although all were over 1 km from the nearest proposed wind turbine. Based on this separation distance, and the low likelihood of any roosting commonly taking place closer to wind turbines due to the habitat type, no regular roost sites are likely to be affected.

Golden eagles are considered by SNH (2016⁵²), and by McLeod *et al.* (2002⁵²) for PAT modelling purposes, to occupy territories out to a distance of around 6 km from nest sites. The result of the PAT model run for the three nearest territories in the local area is shown in Confidential Figure 8.2.2. This has been based on a worst-case scenario whereby the three pairs all occupy the nest sites within their respective territories that are closest to the Development. It shows that most activity is likely to take place within approximately 1.5 km of a nest site, with pockets of slightly higher occupancy along favoured ridges beyond 1.5 km.

The PAT model assumes that, based on evidence at operational wind farms in Scotland, golden eagles would be excluded from a 500 m buffer around operational turbine areas; Confidential Figure 8.2.2 shows a no-activity area around the Operational Corriegarth Wind Farm and Stronelairg Wind Farms. The Development is partly within the 500 m exclusion buffer around the Operational Corriegarth Wind Farm.

The PAT model predicts that the Development would equate to a loss of range use occupancy of:

- 2.3 % for the Dunmaglass pair;
- 0.5 % for the Garrogie pair; and
- 0.0 % for the Corriegarth pair.

⁵² McLeod, D. R. A., Fielding, A. H., Haworth, P. F., Whitfield, D. P. and McGrady, M. J., 2002. Predicting home range use by golden eagles *Aquila chrysaetos* in western Scotland. *Journal of Avian Science*, 2:183-198.

Under the existing scenario where operational wind farms are present and already constrain territories (i.e. the territories are now effectively smaller), the range use occupancy loss associated with the Development would be increased to 3.3 % for the Dunmaglass pair, and 0.6 % for the Garrogie pair. As shown in Confidential Figure 8.2.2, although the Corriegarth pair nests within 6 km of the Development, its territory is shown to be constrained in extent by the Dunmaglass and Garrogie territories, and so the Site is not predicted to form part of the Corriegarth pair's territory.

As discussed in Whitfield *et al.* (2007⁵³), the significance of the potential loss of foraging extent for a golden eagle pair is likely to depend on the level of quality of both the territory and the breeding birds, which would in turn influence the probability of territory abandonment or reduction in productivity rate.

It appears that the three territories local to the area are established and, in 2019 at least, in common with much of the NHZ 10 population, were reasonably productive. The majority of habitat within each territory is open moorland likely to be suitable for eagles, which continue to breed despite the presence of the operational wind farms. Activity rates of not just golden eagle, but also other raptors, within the Study Area suggests that there is an abundance of available prey and carrion. As outlined in Table 8.10, NHZ 10 is in favourable conservation status for breeding golden eagle, and evidence indicates that territory occupancy rates are currently high, suggesting that there is spare capacity for non-breeding individuals to take up territory should an opportunity arise. Despite pairs being constrained by neighbouring territories, and the presence of wind farms, these factors combined are likely to make the risk of territory abandonment due to the addition of the Development relatively low.

On balance, it is therefore considered that despite some potential territory loss for two golden eagle breeding pairs, territories are likely to remain viable due to the remaining widespread availability of suitable habitat and food. It is possible that there may be some small impacts on productivity for the pairs due to further constraints within the territory, but within a NHZ 10 population context, the magnitude of effect is considered, at most, Low spatial and Long-term temporal.

Significance of Effect: The unmitigated effects on the golden eagle NHZ 10 population from operational displacement are classified as Minor adverse and therefore Not Significant in the context of the EIA Regulations.

White-tailed Eagle

Effect: White-tailed eagles may be at risk of displacement from foraging habitat, thereby impacting on productivity, fitness and survival rates.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in unfavourable conservation status. Sensitivity is therefore Medium-High.

Magnitude of change: With the nearest known nest site nearly 10 km away, and no known roost sites within the study area, no displacement of nesting or roosting birds is considered likely.

During post-construction monitoring and baseline surveys, white-tailed eagle flight activity within the study area was relatively infrequent. Although white-tailed eagle home ranges can be highly variable in size, particularly in areas of low-density breeding, evidence suggests that regular usage of the Site by breeding birds, including from the nearest nest site, is unlikely.

This conclusion may be in part reflected by the presence of breeding golden eagle in the local area. In Scotland white-tailed eagles generally occur at lower elevations and nearer

⁵³ Whitfield, D.P., Fielding, A.H., McLeod, D.R.A., Morton, K., Stirling-Aird, P. & Eaton, M.A. 2007. Factors constraining the distribution of Golden Eagles *Aquila chrysaetos* in Scotland. *Bird Study*, 54, 199-211.

open water than golden eagles, and are more likely to use tree nest sites. There has been little evidence of competitive effects in Scotland where the species co-exist, but aggressive interactions may occur within territories (Whitfield *et al.* 2008). As the Site is within or near three active golden eagle territories, current white-tailed eagle usage is likely to be infrequent. Whitfield *et al.* (2013⁵⁴) recorded significant differences in diet between the two species, with golden eagles more likely to take gamebirds (principally red grouse), rabbits, hares and other non-ungulate mammals, whereas white-tailed eagles more often fed on seabirds, waterfowl and waders, sheep and fish. Therefore, although some niche separation in foraging behaviour may take place on site, it is likely that much of the diet of the nearest white-tailed eagle breeding pair in particular would comprise items found closer to their nest site in lowland habitats and on or near waterbodies, with the habitat around the site more suitable for golden eagle prey species. According to Whitfield *et al.* (2013⁵⁴) even the shared habit of feeding on sheep, which has been emphasised previously as evidence of competition, is also likely to involve a large element of spatial (altitudinal) segregation, with sheep found at a range of altitudes, and taken more commonly by golden eagles on higher ground.

It is therefore likely that based on the above information, the white-tailed eagles present on site would be mainly transient non-breeding individuals (although breeding birds may on occasion use the Site), with the increase in frequency of records on site in recent years more reflective of the expansion of the species in the wider region rather than any nearby breeding activity. As such, displacement effects, both to any particular individuals, and the NHZ 10 breeding population, are considered to be of Negligible spatial, and Long-term temporal magnitude.

Significance of Effect: The unmitigated effects on the white-tailed eagle NHZ 10 population from operational displacement are classified as Minor adverse and therefore Not Significant in the context of the EIA Regulations.

Peregrine

Effect: Nesting, roosting and foraging peregrines may be displaced from the Site, thereby impacting on productivity, fitness and survival rates.

Sensitivity: Medium nature conservation importance and the NHZ 10 population is in unfavourable conservation status. Overall sensitivity is therefore Medium-High.

Magnitude of Change: With a likely peregrine nest site and roost site over 1.5 km from the nearest wind turbine location proposed as part of the Development, the risk of operational displacement to nesting or roosting birds is very low.

The core foraging range from the nest site is given by SNH (2016⁵) as 2 km, and so breeding birds may be at risk from displacement around the Development located towards the edge of the core breeding territory. Compared to red kite and golden eagle, peregrine was recorded relatively infrequently during post-construction monitoring and baseline surveys, although this may reflect the species' fast pursuit hunting style rather than the importance of habitat within the Site. Commonly in these upland areas, peregrines are likely to feed locally on red grouse, pigeons and gulls, and so in general, prey species are unlikely to be noticeably displaced by the presence of wind turbines. Although some displacement from hunting may occur around individual wind turbines, effects on breeding birds, and in particular on birds during the non-breeding season which range more widely are considered to be of Negligible spatial and Long-term temporal magnitude.

⁵⁴ Whitfield, D. P., Marquiss, M., Reid, R., Grant, J., Tingay, R. & Evans, R. J. 2013. Breeding season diets of sympatric White-tailed Eagles and Golden Eagles in Scotland: no evidence for competitive effects. *Bird Study*, 60, 67-76.

Significance of Effect: The unmitigated effects on the peregrine NHZ 10 population from operational displacement are classified as Minor adverse and therefore Not Significant in the context of the EIA Regulations.

Golden Plover

Effect: Golden plover may be at risk of displacement from nesting and foraging habitat, thereby impacting on productivity, fitness and survival rates.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in favourable conservation status. Sensitivity is therefore medium.

Magnitude of change: The likelihood and extent of any displacement on breeding golden plover is uncertain. Sansom *et al.* (2016a⁵⁵) showed that in their study, breeding golden plover abundance may be reduced by 79 % up to 400 m away from operational wind turbines, although hatching and fledging success were not affected by proximity to wind turbine locations. Pearce-Higgins *et al.* (2012⁴⁶) in contrast found population densities of golden plover were not affected by the presence of wind farms, and years since construction and the relative overlap between the survey area and the wind farm were unrelated to golden plover densities. A lack of displacement effects for breeding golden plovers has also been reported for Beinn Tharsuinn Wind Farm (Douglas *et al.* 2011⁵⁵) and Farr Wind Farm (Fielding & Haworth 2013⁵⁶).

Approximately six territories in 2019 were recorded within 400 m of a proposed wind turbine location as part of the Development, and so may theoretically be at risk of displacement. A 79 % reduction in abundance (from Sansom *et al.* 2016a⁴⁵) would result in the displacement of up to five pairs from the area around the Development. It is likely that some pairs could move to other parts of the Site without being lost to the NHZ 10 golden plover population but, as a worst case, the loss of up to five out of 2,702 pairs would represent 0.2 % of the population. An unmitigated effect of Negligible spatial and Long-term temporal magnitude within the context of the NHZ 10 breeding golden plover population is predicted.

Significance of Effect: The unmitigated effects on the golden plover NHZ 10 population from operational displacement are classified as Negligible adverse and therefore Not Significant in the context of the EIA Regulations.

Dunlin

Effect: Dunlins may be at risk of displacement from nesting and foraging habitat, thereby impacting on productivity, fitness and survival rates.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in unfavourable conservation status. Sensitivity is therefore Medium-High.

Magnitude of change: As noted above in section 8.5.3.6, studies on the effects of wind farms on dunlin by Pearce-Higgins *et al.* (2012⁴⁶) and Fielding & Haworth (2015⁴⁷) suggested that dunlin appear to be unaffected by the presence of wind farms, providing evidence for no displacement effects on this species. During 2019 baseline surveys, one dunlin territory was confirmed in close proximity to an Operational Corriegarth Wind Farm Wind Turbine (Figure 8.13), with two further possible territories also within approximately 250 m of a wind turbine.

Based on 2019 survey data, up to four territories may be within 500 m of a turbine proposed as part of the Development. Although it is possible that at least one pair may be displaced, it is unclear whether it would be lost to the NHZ 10 population, with

⁵⁵ Douglas, D.J.T., Bellamy, P.E. & Pearce-Higgins, J.W. (2011). Changes in the abundance and distribution of upland breeding birds at an operational wind farm. *Bird Study*, 58, 37–43.

⁵⁶ Fielding, A.H. & Haworth, P.F. (2013). Farr wind farm: A review of displacement disturbance on golden plover arising from operational turbines 2005-2013. Haworth Conservation, Isle of Mull.

alternative habitat available nearby, and birds showing apparent tolerance to Wind Turbines. Overall, an unmitigated effect of Negligible spatial and Long-term temporal magnitude within the context of the NHZ population is therefore predicted.

Significance of Effect: The unmitigated effect from operational displacement is classified as Minor adverse and is therefore Not Significant in the context of the EIA Regulations.

8.5.4.2 Potential Effects: Collision Risk

Birds that utilise the airspace within the Site at potential collision heights would be at risk of collision with wind turbines. For the CRM methods used see section 8.3.7.4 and Appendix A8.3.

Red Kite

Effect: Red kites flying within the Site may be subject to a collision risk with wind turbines, thereby increasing the annual mortality rate of the population above background levels.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in unfavourable conservation status. Sensitivity is therefore Medium-High.

Magnitude of change: A CRM was run based on the final wind turbine layout of the Development (as shown on Figure 8.3 and Figure 8.4), using the results summarised in Section 8.4.

The CRM for red kite predicted a mean annual collision rate of 0.222 birds, or one collision every 4.5 years (Table 8.12).

Table 8.12: Red Kite CRM Results

Season	Collision Rate	One bird every <i>X</i> Years
2015-16 Non-Breeding Season (NBS)	0.059	16.8
2016 Breeding Season (BS)	0.111	9.0
2016-17 NBS	0.112	8.9
2017 BS	0.109	9.2
2017-18 NBS	0.059	16.8
2018 BS	0.305	3.3
2019 BS	0.097	10.3
2019-20 NBS	0.037	27.2
Mean NBS	0.067	14.9
Mean BS	0.155	6.4
Mean Annual	0.222	4.5

Assuming a current NHZ 10 population of at least eight pairs, this additional mortality would represent an increase of up to 10 % over the baseline annual mortality rate (adult survival rate taken to be 0.86, as per Sansom et al. 2016b⁵⁷). This is likely to be an overestimate because, (i) a proportion of birds present are likely to be non-breeders; and

⁵⁷ Sansom, A., Etheridge, B., Smart, J. & Roos, S. (2016b). Population modelling of North Scotland red kites in relation to the cumulative impacts of wildlife crime and wind farm mortality. Scottish Natural Heritage Commissioned Report No. 904.

(ii) the NHZ 10 population appears to be expanding, and so the few individuals regularly using the Site are likely to form an increasingly small percentage of the population.

Nevertheless, as a precaution, the magnitude of effect associated with unmitigated collision risk is considered to be Medium spatial and Long-term temporal.

Significance of Effect: The unmitigated effect associated with collision risk is classified as Moderate adverse and is therefore potentially Significant in the context of the EIA Regulations.

Golden Eagle

Effect: Golden eagles flying within the Site may be subject to a collision risk with wind turbines, thereby increasing the annual mortality rate of the population above background levels.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in favourable conservation status. Sensitivity is therefore medium.

Magnitude of change: The CRM for golden eagle predicted a mean annual collision rate of 0.093 birds, or one collision every 10.8 years (Table 8.13).

Table 8.13: Golden Eagle CRM Results

Season	Collision Rate	One bird every X Years
2015-16 NBS	0.006	177.9
2016 BS	0.012	80.5
2016-17 NBS	0.065	15.3
2017 BS	0.011	93.4
2017-18 NBS	0.001	864.9
2018 BS	0.256	3.9
2019 BS	0.019	52.2
2019-20 NBS	0.000	n/a
Mean NBS	0.018	55.5
Mean BS	0.075	13.4
Mean Annual	0.093	10.8

If it is assumed as a worst-case, that all resultant mortality would be related to breeding birds, this would represent an increase in baseline mortality over existing background rates⁵⁸ within the current NHZ 10 population (25 pairs in 2019) by 3.8 %. This scenario is unlikely because of the presence of sub-adults recorded during baseline surveys, and likely presence of non-breeders in the NHZ 10 population. Nevis Environmental (2020⁵⁹) for example, reported that in 2017-18, 46 % of all golden eagle flights they observed during post-construction monitoring were of non-adults - either juvenile/ immature/ first-year or second-year birds, relating mainly to a locally fledged individual remaining for an extended period.

The significance of the predicted level of additional annual mortality depends on the effect it would have on the NHZ 10 population, in this case whether it would affect the current favourable conservation status of the population over the long-term. This can be investigated by modelling population trends with a Golden Eagle Population Model

⁵⁸ adult annual survival rate of 0.9512, which was used in Whitfield *et al.* (2008).

⁵⁹ Nevis Environmental (2020). Corriegarth2 Operational Monitoring 2015-2018.Unpublished report.

(GEPM), an approach which has been applied by Whitfield *et al.* (2008⁶⁰) among others, to determine effects on golden eagle populations in Scotland. The input parameters (survival and productivity rates, population size) used in the GEPM are presented in Appendix A8.4.

The main factor influencing NHZ 10 growth rates in the past has likely been the relatively low sub-adult (S1) survival rates. Whitfield *et al.* (2008⁶⁰) identified the main pressure acting on the NHZ 10 population as persecution, which has also been identified among the primary constraining factors in all NHZs in the wider area. Whitfield & Fielding (2017⁶¹) concluded in their review of the fates of young satellite-tagged golden eagles in Scotland that, "*there may have been some recovery in the Scottish regions (NHZs) of the central and eastern Highlands where the species' conservation status was previously unfavourable due largely to illegal persecution...But we would also expect, when there is still locally frequent killing of young eagles in some parts of these regions (many of which involve 'locally produced' birds), that this recovery is still not complete.*"

The ongoing Regional Eagle Conservation Management Plan⁶², set up by Dunmaglass Wind Farm to benefit the NHZ 10 population, may have contributed to the NHZ 10 population recovery since 2003, at least in part due to an associated reduction in persecution in recent years, but it appears that there is still scope for further recovery.

Taking the current constraints into consideration, the modelling of the potential effects of additional mortality due to collisions on the NHZ 10 population suggests that:

- Under a baseline scenario (zero additional collisions from the Development), based on a continuation of the observed positive population trend from 2003 to 2019 and best fit of demographic parameters⁶³, an annual growth rate of around 1.033 (3.3 %) is predicted, and growth would theoretically continue until the NHZ's carrying capacity of 37 pairs is reached after a projected period of 13 years from now (assuming all territories would be viable for occupancy); and
- With additional annual mortality due to predicted collisions with the Development's turbines (0.094 per year) taken into consideration, the annual growth rate would reduce to 1.031 (3.1 %), a reduction in the growth rate of 0.02 %, but with no delay in the number of years required to theoretically achieve carrying capacity.

The results of the GEPM therefore suggest that, with the NHZ 10 population in favourable conservation status, this additional mortality is considered to be of Negligible spatial and Long-term temporal magnitude.

Significance of Effect: The overall effect on the NHZ 10 golden eagle population is therefore assessed as Minor adverse and therefore Not Significant in the context of the EIA Regulations.

White-tailed Eagle

Effect: White-tailed eagles flying within the Site may be subject to a collision risk with wind turbines, thereby increasing the annual mortality rate of the population above background levels.

⁶⁰ Whitfield, D P, Fielding, A H, McLeod, D R A and Haworth, P F (2008). A conservation framework for golden eagles: implications for their conservation and management in Scotland. Scottish Natural Heritage Commissioned Report No.193 (ROAME No. F05AC306).

⁶¹ Whitfield, D.P. & Fielding, A.H. 2017. Analyses of the fates of satellite tracked golden eagles in Scotland. Scottish Natural Heritage Commissioned Report No. 982.

⁶² Haworth, P. (2014). The Dunmaglass Wind Farm Regional Eagle Conservation Management Plan. Haworth Conservation

⁶³ Adult mortality = 0.9512; Sub-adult survival = 0.279; fledging rate = 0.718 chicks per territorial pair (mean of 2015-2019 productivity for NHZ 10).

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in unfavourable conservation status. Sensitivity is therefore Medium-High.

Magnitude of change: A CRM for the Development, following similar assumptions to those made for red kite, predicted a mean annual collision rate of 0.311 birds, or one collision every 3.2 years (Table 8.14).

Table 8.14: White-tailed Eagle CRM Results

Season	Collision Rate	One bird every <i>X</i> Years
2015-16 NBS	0.005	211.5
2016 BS	-	-
2016-17 NBS	-	-
2017 BS	0.095	10.7
2017-18 NBS	-	-
2018 BS	1.145	0.9
2019 BS	-	-
2019-20 NBS	-	-
Mean NBS	0.001	846.2
Mean BS	0.310	3.2
Mean Annual	0.311	3.2

'-' = no at-risk flights recorded during that season.

Table 8.14 shows that results were highly skewed by flight activity recorded during the 2018 breeding season, and so the metric of one bird being killed every 3.2 years is likely to be much more variable than this initially suggests. Of the 17 flight events recorded during that season, nine were over a two-day period in late March 2018 and a further five on 31 May. This is consistent with the likelihood outlined in section 8.5.3 that activity recorded on site was of transient, non-breeding individuals attracted to a temporary food source, away from wind turbines for the Operational Corriegarth Wind Farm, but close to a wind turbine location proposed as part of the Development. Of the 17 flight events recorded since 2015 where an individual was identified by age, seven were immature birds and therefore at least some of the activity on Site was not associated with the breeding population. Additionally, nine out of 33 records were made during the non-breeding season. No white-tailed eagle collisions have been recorded to date for the Operational Corriegarth Wind Farm, and this may be partly due to removal of carrion from around the existing wind turbines as part of the associated habitat management plan.

With a very small current NHZ 10 breeding population of perhaps two pairs, and a high adult annual survival rate of 0.961 (Sansom *et al.* 2016c⁶⁴), even a slight increase in annual mortality would result in a potentially significant effect. From the information presented above however, the predicted mortality rate is likely to be an overestimate of the actual risk to the breeding population. Nevertheless, as a precaution, an effect of Medium spatial and long-term temporal magnitude is predicted on the NHZ 10 population, as it cannot be completely discounted that breeding individuals would avoid all risk of collision.

⁶⁴ Sansom, A., Evans, R. & Roos, S. (2016c). Population and future range modelling of reintroduced Scottish white-tailed eagles (*Haliaeetus albicilla*). Scottish Natural Heritage Commissioned Report No. 898.

Significance of Effect: The overall unmitigated effect on the NHZ 10 white-tailed eagle population is therefore assessed as Moderate adverse and therefore potentially Significant in the context of the EIA Regulations.

Peregrine

Effect: Peregrines flying within the Site may be subject to a collision risk with Wind Turbines, thereby increasing the annual mortality rate of the population above background levels.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in unfavourable conservation status. Sensitivity is therefore Medium-High.

Magnitude of change: The CRM for the Development predicted a mean annual collision rate of 0.020 birds, or one collision every 50 years (Table 8.11). This additional mortality would therefore equate to an effect of Negligible spatial and Long-term temporal magnitude on the NHZ 10 population, which is considered to be between seven and 11 pairs.

Significance of Effect: The overall effect on the NHZ 10 peregrine population is therefore assessed as Minor adverse and therefore Not Significant in the context of the EIA Regulations.

Golden Plover

Effect: Golden plovers flying within the Site may be subject to a collision risk with Wind Turbines, thereby increasing the annual mortality rate of the population above background levels.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in favourable conservation status. Sensitivity is therefore Medium.

Magnitude of change: A CRM for the Development predicted a mean annual collision rate of 0.014 birds, or one collision every 70 years (Table 8.11). This additional mortality would result in an effect of Negligible spatial and Long-term temporal magnitude on the NHZ 10 breeding population of 2,702 pairs.

Significance of Effect: The overall effect on the NHZ 10 golden plover population is therefore assessed as Negligible adverse and therefore Not Significant in the context of the EIA Regulations.

Dunlin

Effect: Dunlin flying within the Site may be subject to a collision risk with Wind Turbines, thereby increasing the annual mortality rate of the population above background levels.

Sensitivity: Nature conservation importance of the species is medium, and the NHZ 10 population is in unfavourable conservation status. Sensitivity is therefore Medium-High.

Magnitude of change: A total of three dunlin flights were recorded during all flight activity surveys since 2015, all of which were at low altitude, below rotor height, which is typical for the species. Although due to its small size dunlin may be under-recorded during surveys, the associated collision risk for dunlin is still likely to be very low. An effect of Negligible spatial and Long-term temporal magnitude on the NHZ 10 breeding population is predicted.

Significance of Effect: The overall effect on the NHZ 10 dunlin population is therefore assessed as Negligible adverse and therefore Not Significant in the context of the EIA Regulations.

8.6 MITIGATION AND RESIDUAL EFFECTS

8.6.1 Construction Phase Mitigation

Section 8.5.3 presented the assessment of unmitigated construction effects on IOFs. No potentially significant effects were identified.

In addition to the embedded mitigation integral to or inherent in the final design of the Development as identified in Section 8.3.9, the following mitigation measures would be employed to reduce the likelihood of a significant effect for all IOFs.

8.6.1.1 Breeding Bird Protection Plan

A Breeding Bird Protection Plan (BBPP) would be produced to ensure that disruption to nesting birds, and any disturbance to Schedule 1 breeding birds during the construction period is avoided. Pre-construction surveys carried out by a suitably qualified ornithologist would determine whether any breeding activity is taking place within potential species-specific disturbance zones of any proposed infrastructure. If breeding is found to occur within a potential disturbance zone, all construction works would be halted immediately, and a disturbance risk assessment would be prepared. The risk assessment would consider the likelihood and possible implications of the associated construction activities on the breeding attempt and set out necessary measures to ensure that no disturbance occurs. The proposed mitigation measures and, if required, the exact distance of any disturbance-free zone would be agreed with NatureScot, within which any construction activity that is considered to be potentially disturbing would be prohibited in that area until chicks are fledged.

To minimise the possibility of disturbance to any Schedule 1 species' nests within proximity to existing access tracks (distance would be species-specific), a maximum speed limit of 15 mph would be enforced, and personnel would remain within vehicles whenever possible.

8.6.2 Operational Phase Mitigation

Section 8.5.4 presented the assessment of unmitigated operational effects on IOFs. The following potentially significant effects were identified:

- Collision risk to red kite and white-tailed eagle (Moderate adverse).

In addition to the embedded mitigation integral to and inherent in the final design of the Development as identified in Section 8.3.9, the following mitigation measures would be employed to reduce potentially significant operational effects to Not Significant, and also reduce the likelihood of a significant effect for all other IOFs.

- Removal of carrion from within the Site: an Objective of the ongoing Operational Corriegarth Wind Farm HMP is to "*Remove deer and sheep carrion from the turbine area to reduce its attractiveness for golden eagle*". An expansion of this management, to remove carrion from within 200 m of the Development's wind turbines throughout the operational period would help reduce the attractiveness of areas near wind turbines, and therefore reduce collision risk, for red kite and white-tailed eagle, as well as golden eagle;
- A raptor monitoring programme would be conducted across the estate to determine whether there are any red kite (or white-tailed eagle) nests or roost sites present, helping to inform other management measures listed here;
- Within the north of the estate where there is woodland habitat, efforts would be made to conserve any mature trees used, or areas of suitable woodland for nesting red kite/white-tailed eagle, and develop existing stands of maturing trees so they can be used in the future. Annual monitoring would help inform estate management

and ensure no disturbance would occur to active nest or roost sites, and that suitable trees can be maintained/safeguarded for future use;

- There is uncertainty as to whether the Operational Corriegarth Wind Farm HMP Management Area A has been used by raptors to date, to the extent hoped, due to various reasons including fencing requiring maintenance (see for example, Nevis Environmental, 2019⁶⁵). To help determine usage across the estate in future years, effort would be made to satellite tag or tag red kites and/or white-tailed eagles from nests within the estate, or in the local area. Tagging would help determine birds' usage and flight activity near wind turbines and where they most often forage, to target any future management such as supplementary feeding locations and management of Area A of the existing HMP. Increasing tagging would also potentially decrease the likelihood of illegal persecution which continues to be reported in some parts of the Highlands (e.g. Sansom *et al.* 2016b⁵⁷); and
- A financial/ data sharing contribution would be made to the Regional Eagle Conservation Management Programme (RECOMP) within NHZ 10 to help continue the progress seen by the increase in active golden eagle territories in recent years.

8.6.2.1 Habitat Management Plan

A Habitat Management Plan (HMP) is planned within the land ownership boundary, which would be consistent with the aims and objectives of the Operational Corriegarth Wind Farm HMP, and provide mitigation and enhancement measures that are beneficial for IOFs.

The HMP would be finalised post-consent though an outline is presented in **Chapter 7: Ecology** Section 7.9.1 and would be agreed with consultees prior to construction of the Development. The main features of the OHMP that would benefit IOFs are:

- Determination of a Bog Restoration Area, which would be, as a minimum, equivalent in extent to the area of blanket bog to be lost by the Development. This would be located over 500 m from proposed turbine locations, and provide improved habitats for breeding waders and raptor prey, and therefore potentially encourage raptors to forage within; and
- Management of deer grazing, potentially as part of a Deer Management Plan if required, so that a diverse sward and shrub level can be created, thereby providing suitable nesting habitat for waders, grouse and potentially raptors.

8.6.3 Residual Effects

8.6.3.1 Construction Phase

All IOFs

No specific mitigation required. However, spatial and temporal restrictions on construction activities as part of the BBPP would ensure legal compliance and reduce the likelihood of significant disturbance effects on breeding birds occurring and therefore all predicted effects are unchanged (Negligible or Minor adverse, and therefore Not Significant).

8.6.3.2 Operational Phase

Red Kite and White-tailed Eagle

Various mitigation measures outlined in Section 8.6.2 have been designed to reduce the potential for significant effects on the red kite and white-tailed eagle NHZ 10 populations. With the main risk identified likely to be associated with collisions, efforts made to reduce the activity levels in proximity to wind turbines (removal of carrion, supplementary feeding, habitat improvements elsewhere within the estate) would potentially reduce the

⁶⁵ Nevis Environmental (2019). Corriegarth Wind Farm HMP Implementation Annual Report: Year 4 (2019).

collision risk. Other forms of mitigation, including monitoring, tagging and maintenance of woodland would help understand the level of risk during the operational phase to inform ongoing management, and help the small NHZ 10 populations become further established.

When taking this suite of measures into consideration, the significance of operational effects on red kite and white-tailed eagle can be reduced from Moderate to Minor adverse and Not Significant.

Golden Eagle

All of the above mitigation measures for reducing the collision risk for red kite and white-tailed eagle would also potentially reduce the likelihood of a significant collision risk for golden eagle. Potential loss of foraging habitat would be addressed with the management improvements within the existing HMP Area A which would provide better habitat for golden eagle prey. Additionally, the measures proposed to help red kite and white-tailed eagle at and near nest sites would potentially reduce competition for resources such as carrion, for golden eagles, in the higher altitude parts of the estate. A contribution to the RECMP would also assist in effort to maintain the favourable conservation status of the NHZ 10 population.

Overall, when taking these mitigation measures into consideration, the likelihood of a significant operational effect on golden eagle is lower; however, the level of significance is unchanged, i.e. Minor adverse and Not Significant.

Peregrine

Habitat improvements within existing HMP Area A would also provide better habitat for peregrine prey species, which would help address any losses of foraging range associated with the Development. Overall, predicted operational displacement and collision effects are likely to remain unchanged, i.e. Minor adverse and Not Significant.

Golden Plover and Dunlin

The improvements to blanket bog habitats (drain blocking) with existing HMP Area A would potentially benefit breeding waders. Overall, predicted operational displacement and collision effects are likely to remain unchanged, i.e. Negligible or Minor adverse and Not Significant.

8.7 CUMULATIVE EFFECT ASSESSMENT

This section presents information about the potential cumulative effects of the Development combined with other operational, consented or proposed wind farm projects that are located within NHZ 10.

8.7.1 Methods

SNH (2018b⁷) has provided guidance on assessing the cumulative effects on birds. This assessment follows the principles set out in that guidance.

Cumulative effects may include cumulative disturbance-displacement, collision mortality, and habitat loss or barrier effects. Some cumulative impacts, such as collision risk, may be summed quantitatively, but according to SNH (2018b⁷) "*In practice, however, some effects such as disturbance or barrier effects may need considerable additional research work to assess impacts quantitatively. A more qualitative process may have to be applied until quantitative information becomes available for developments in the area, e.g. from post-construction monitoring or research*".

The main projects likely to cause similar effects to those associated with the Development are other operational wind farms, or those under construction, consented, or in the planning process within NHZ 10 (Table 8.15).

Wind farm projects at scoping stage have been scoped out of the cumulative assessment because either they do not have sufficient information on potential effects to be included; because the baseline survey period is ongoing; or as results have not been published. Projects that have been refused (and no longer capable of appeal) or withdrawn have also been scoped out of the cumulative assessment.

Small wind farm projects with three or fewer turbines have also been scoped out from the cumulative assessment as often these projects are not subject to the same level of detail of ornithological assessment, and so there are no directly comparable data. Because of the small scale of such projects, effects are likely to be negligible on the IOFs assessed here. No other renewable or non-renewable projects within NHZ 10 were identified that could have a cumulative effect on the IOFs.

Table 8.15 identifies the wind farm projects that have been considered in the cumulative assessment.

Table 8.15: Other NHZ 10 Wind Farm Projects

Project	Number of Turbines	Status	Information Available
Operational and Under Construction			
Corriegarth	23	Operational	ES Chapter
Dunmaglass	33	Operational	ES Chapter
Farr	40	Operational	Fielding & Haworth (2013 ⁶⁶ ; 2015 ⁴⁷) and Aberarder ES
Stronelairg	67	Operational	ES Chapter
Berry Burn	29	Operational	ES Chapter
Hill of Glaschyle	12	Operational	ES Chapter
Paul's Hill I	28	Operational	Paul's Hill II ES chapter, Aberarder ES and Fielding & Haworth (2012 ⁶⁶)
Roths I	22	Operational	Paul's Hill II ES chapter, Aberarder ES, Roths III EIA Report
Roths II	18	Operational	Paul's Hill II ES chapter, Aberarder ES, Roths III EIA Report
Moy	20	Operational	S36 Report, ES chapter
Tom nan Clach Repowering	13	Operational	ES Chapter
Glen Kyllachy	20	Under construction	ES Chapter
Consented			
Aberarder	12	Consented	ES Chapter
Cairn Duhie	20	Consented	ES Chapter
Kellas	8	Consented	ES Chapter
Meikle Hill	6	Consented	ES Chapter
Dell	14	Consented	ES Chapter

⁶⁶ Fielding, A. H. and Haworth, P. F. 2012. Multi-species raptor monitoring - providing the evidence for future EIAs. SNH Workshop Assessing the impact of windfarms on birds. Post-construction monitoring - making the most of your data. SNH, Battleby, 3 April 2012.

Project	Number of Turbines	Status	Information Available
Application			
Paul's Hill II	7	Application	EIA Report
Cloiche	36	Application	EIA Report
Roths III	29	Application	EIA Report
Clash Gour	48	Application	EIA Report
Berry Burn Extension	9	Application	EIA Report

8.7.2 Scope of Assessment

Based on the conclusions of the assessment presented in section 8.5, and the committed mitigation outlined in section 8.6, peregrine and golden plover have been scoped out of the cumulative assessment due to the negligible/low magnitude, and not significant unmitigated effects predicted for the Development alone, which, when placed within the context of the NHZ 10 populations, are unlikely to contribute in a material way to any cumulative effects.

The remaining IOFs (red kite, golden eagle, white-tailed eagle and dunlin) are therefore considered in the cumulative assessment, which addresses the following effects:

- Cumulative disturbance effects during construction; and
- Cumulative displacement and collision risk effects during operation.

8.7.3 Red Kite

8.7.3.1 Predicted Cumulative Effects within NHZ 10 Relating to Red Kite

Table 8.16: Predicted Cumulative Effects within NHZ 10 Relating to Red Kite

Project	Disturbance-displacement	Collision Mortality	# CRM
The Development	No breeding or roosting activity of any pairs likely to be affected. Minor loss of foraging habitat due to displacement around Wind Turbines.	Mean annual rate of 0.222 collisions.	0.222
Operational and Under Construction			
Operational Corriegarth Wind Farm	Red kite was not recorded during baseline surveys, but operational monitoring since 2015 has shown regular usage of site, but no breeding evidence within 2 km.	No CRM undertaken for EIA. Collision rate assumed to be lower per wind turbine than Corriegarth 2, due to removal of carrion around existing operational wind turbines. One collision recorded since operation in 2015, so assumed minimum rate of 0.200 (one every 5 years).	0.200
Dunmaglass	One flight recorded during flight activity surveys and very infrequent presence. No breeding evidence.	0.04462 collisions/year at 98 % avoidance rate, converted to	0.022

Project	Disturbance-displacement	Collision Mortality	# CRM
		0.022 at 99 % avoidance.	
Stronelairg	No records.	No records.	0
Farr	No information.	No information.	0
Berry Burn	No records in EIA. Very infrequent records during post-construction monitoring.	No records.	0
Hill of Glaschyle	No records.	No records	0
Paul's Hill I	Unknown (no records for Paul's Hill II)	Unknown (no records for Paul's Hill II)	0
Roths I	Unknown (no records for Roths III)	Unknown (no records for Roths III)	0
Roths II	Unknown (no records for Roths III)	Unknown (no records for Roths III)	0
Moy	Regular flight activity recorded but no breeding or roosting within 2 km.	Annual collision rate of 0.25 at 99 % avoidance.	0.25
Glen Kyllachy	Regular flight activity but no breeding evidence within 5 km.	One death every 2.1 years, equating to c. 0.476 per year at 98 % avoidance rate, and 0.238 at 99 % avoidance.	0.238
Tom nan Clach Repowering	Flight activity recorded during the breeding season but no breeding evidence.	One collision every 8.7 years, equating to 0.115 per year	0.115
Consented			
Aberarder	Regularly recorded in flight but no evidence of breeding within survey area.	Annual collision rate of 0.874 at 98 % equating to 0.437 at 99 % avoidance.	0.437
Cairn Duhie	No records.	No records	0
Kellas	No records.	No records	0
Meikle Hill	No records.	No records	0
Dell	No records.	No records	0
Application			
Paul's Hill II	No records.	No records	0
Cloiche	Regular flight activity, particularly in eastern survey area, mainly in summer and early autumn. No breeding within survey area.	Annual collision rate of 0.08 .	0.08
Glenshero	No records.	No records	0
Roths III	No records.	No records	0
Clash Gour	No records.	No records	0
Berry Burn Extension	No records.	No records	0

8.7.3.2 Predicted Cumulative Effects during Construction

A total of four operational wind farm projects within NHZ 10 considered red kite as part of their impact assessment: Dunmaglass, Moy, Glen Kyllachy and the Tom Nan Clach Repowering project (Table 8.16). This reflects the historically low levels of red kite activity within NHZ 10, with more recent north Scotland population expansion not being reflected in the baseline results of these projects, as witnessed by the comparison of baseline and operational monitoring results for the Operational Corriegarth Wind Farm. Distribution of red kite within NHZ 10 is however still evidently sporadic, with, apart from the Development and the Operational Corriegarth Wind Farm, only Aberarder and Cloiche Wind Farm projects recording any regular presence.

No breeding activity was recorded within the study areas of any wind farm project and so construction is only likely to affect foraging activity. However, with construction activities likely to take place outside of core foraging areas of breeding birds, any temporary disturbance or habitat loss is unlikely to affect the productivity or survival of any individuals, with non-breeders in particular likely to be able to range widely to obtain food.

Overall, when considering any required mitigation measures at the Development and other projects, which would ensure avoidance of disturbance to breeding or roosting birds, the significance of cumulative construction effects on the NHZ 10 population is considered to be at worst Minor adverse and Not Significant.

8.7.3.3 Predicted Cumulative Effects during Operation

Displacement

As outlined above in Table 8.10, the NHZ 10 red kite population is currently likely to be small (perhaps up to 10 pairs), albeit gradually increasing. Wind farm projects within NHZ 10 tend to be in open moorland habitats, well away from woodland areas preferred for red kite nesting or roosting, and so displacement of nesting or roosting birds is considered unlikely. Foraging birds may be displaced in the immediate vicinity around individual wind turbines, although as evidenced in the results of monitoring at the Operational Corriegarth Wind Farm, individuals in general appear to be largely unperturbed by the presence of a wind farm as a whole, and regularly forage in proximity. Displacement effects on red kite are therefore likely to be very localised, and unlikely to affect the ability of any breeding pairs to breed successfully, or the survival of any breeding or non-breeding individuals.

Overall, when considering any habitat management or other mitigation measures associated with other projects, which are likely to benefit red kite as well as other raptor species, the significance of operational displacement effects on the NHZ 10 population is considered to be at worst Minor adverse and Not Significant.

Collision Risk

The collision rate associated with the Development alone was predicted to be on average 0.222 collisions per year (one every 4.5 years). When also including the predicted collision rate from all operational and consented projects (converted to an estimated collision rate under a NatureScot recommended 99 % avoidance rate where required), a total cumulative annual collision rate of 1.484 collisions per year is predicted (Table 8.16). When all projects at application stage are also included, a total cumulative collision rate of up to 1.564 collisions per year is predicted.

Due to the very small NHZ 10 breeding population, this would theoretically result in a significant effect, if as a worst-case, it is assumed all of this mortality is associated with breeding birds. However, based on available evidence it is likely that the large majority of this collision risk is attributable to non-breeding birds, with no breeding recorded within 2 km of any NHZ 10 project site during baseline surveys.

To put this level of potential additional mortality within a more relevant population context, reference can be made to Sansom *et al.* (2016b⁵⁷) who modelled the potential effects on red kite in North Scotland in relation to the cumulative effects of wildlife crime and wind farm mortality. In the report, the effects of cumulative mortality from wind turbines were modelled to examine what level of mortality could significantly constrain the North Scotland population (64 pairs), as of 2014. Scenarios used included the then-cumulative predicted annual mortality from wind farms around the core North Scotland kite breeding area of two to three birds (assuming an avoidance rate of 98 % rather than the now-accepted 99 % avoidance rate, which effectively halves mortality rate) as well as five and 10 birds.

The report concluded that a low level of mortality caused by collisions with wind turbines (i.e. predicted cumulative risks of two to three birds killed per year) is predicted to have only a small effect on the population growth of red kites in North Scotland. It was also concluded however that illegal killing is the major factor limiting the population growth of red kites in North Scotland, and the cumulative effects of this, alongside increased mortality due to collisions with wind turbines could, when wind turbine-related mortality exceeds five fatalities per year, severely lower the population growth rate of red kites in North Scotland.

The mean cumulative mortality rate of approximately 1.5 birds per year associated with the wind farms investigated within NHZ 10 would therefore be unlikely to have a significant effect on the North Scotland breeding population as a whole, which is likely to have increased since 2014. NHZ 10 is outside of the core breeding area of the North Scotland red kite population, as of 2016, as shown in Sansom *et al.* (2016a⁵⁷), which is reflected in the currently small NHZ 10 breeding population. The NHZ 10 population is however, likely to be closely integrated with the wider North Scotland population, meaning that determining effects at an NHZ level is problematic, particularly when no breeding activity was recorded in proximity to any wind farm projects within NHZ 10, and the large majority of foraging activity, and therefore collision risk, is likely to be associated with non-breeders.

As the North Scotland population is increasing, and according to Sansom *et al.* (2016b⁵⁷) has a high productivity rate, the predicted additional mortality, mainly to non-breeding birds, is considered to have an unmitigated Minor adverse and Not Significant effect on the North Scotland population.

As outlined in section 8.6.2, mitigation measures for the Development designed specifically to reduce the NHZ 10 red kite collision risk as far as possible would be employed. Measures such as increased monitoring and tagging would also potentially help increase the profile and reduce the likelihood of illegal persecution in the wider Highland area, which, alongside mitigation measures for other wind farm projects within NHZ 10, would help reduce the level of cumulative effect to Not Significant, in the context of the North Scotland and NHZ 10 breeding populations.

8.7.4 Golden Eagle

8.7.4.1 Predicted Cumulative Effects within NHZ 10 Relating to Golden Eagle

Table 8.17: Predicted Cumulative Effects within NHZ 10 Relating to Golden Eagle

Project	Disturbance-displacement	Collision mortality	# CRM
The Development	No breeding or roosting activity of any pairs likely to be affected. Minor loss of foraging habitat within two territories due to displacement around Wind Turbines.	Mean annual rate of 0.093 collisions. Sizeable proportion likely to be non-	0.093

Project	Disturbance-displacement	Collision mortality	# CRM
		breeding birds (46 % in 2017-18)	
Operational and Under Construction			
Operational Corriegarth Wind Farm	ES stated that site is used by non-breeding/sub-adults only, although reoccupation of territory is possible. Of the 32 flights recorded, two were of adults, outside the wind farm area. Operational monitoring since 2015 has shown that the site is now likely to overlap with two golden eagle breeding territories, with regular activity in wider area.	0.11 collisions per year at 99 % avoidance rate. All considered to be non-breeders, although operational monitoring since 2015 suggests that more than half of all activity now likely to be breeding adults.	0.11
Dunmaglass	Total of 43 flights. Birds present are non-breeders. No nest sites within 2 km. Some loss of foraging habitat possible.	0.14933 collisions/year at 98 % avoidance, converted to 0.075 collisions/year at 99 % avoidance. All considered to be non-breeders.	0.075
Stronelairg	Wind farm overlaps with three golden eagle territories, with land-take within territory predicted to affect one or two pairs. Effect reduced to non-significant by establishment of habitat management area and food provision (deer carrion).	Varies between 0.16348 collisions per year (1 bird every 6.1 years) to 0.05942 collisions per year (1 bird every 16.8 years) at 99 % avoidance rate. Mean of 0.111 collisions per year.	0.111
Farr	The Farr wind farm site had a very low level of use by golden eagle, with only 2 records reported in ES.	No CRM undertaken	0
Berry Burn	Single sightings of an immature in 2003 and 2004	No CRM undertaken	0
Hill of Glaschyle	No records	No records.	0
Paul's Hill I	Information presented in the Paul's Hill II ES and Aberarder ES states no golden eagle issues associated with Paul's Hill I. The site is not within a known breeding territory and unlikely to be used regularly by golden eagle. Close to Hill of Glaschyle and Berry Burn, which had few records of wandering individuals.	No CRM undertaken.	0
Roths I	No information available. Aberarder ES states no golden eagle issues. Unlikely to be present – no records at Roth's III and located close to Meikle Hill and Kellas Wind Farms which had no records of golden eagle.	Unknown	0
Roths II	No information available. Aberarder ES states no golden eagle issues.	Unknown	0

Project	Disturbance-displacement	Collision mortality	# CRM
	Unlikely to be present – no records at Rothes III and located close to Meikle Hill and Kellas Wind Farms which had no records of golden eagle.		
Moy	Recorded but no information provided	Unknown	0
Glen Kyllachy	Eight records during winter period. No breeding evidence within 15km. The site does not appear to be an important foraging area for golden eagle based on the low numbers of individuals recorded in the Wind Farm Area.	One non-breeding golden eagle collision approximately every 23 years, or 0.0425 per year	0.0425
Tom nan Clach Repowering	Small amount of flights during breeding season likely to be from sub-adults.	One collision every 61 years, at 99 % avoidance rate. 0.016 collisions per year.	0.016
Consented			
Aberarder	Seen regularly over the site during the vantage point surveys through the year, with a total of 35 sightings. Of these the large majority (81 % of birds that could be aged) were immatures, with only six confirmed sightings of adult eagles). There was no evidence that the site lies within an active eagle territory but rather is used primarily by young pre-breeding birds.	0.114 per year at 99 % avoidance rate	0.114
Cairn Duhie	No records	No records	0
Kellas	No records	No records	0
Meikle Hill	No records	No records	0
Dell	No nest sites within 2 km, although site is predicted to overlap with two territories. A PAT model predicted a loss of range of 0.2 % and 0.5 % for the two golden eagle ranges. 19 flights recorded during baseline surveys.	Collision rate of one bird every 45 year at 99 % avoidance rate. Equates to an annual collision rate of 0.022 .	0.022
Application			
Paul's Hill II	No records	No records	0
Cloiche	No nest sites affected. Minor loss of foraging habitat for up to four breeding pairs, during construction and operation.	A total of 0.18 collisions per year, the majority adults/ subadults	0.18
Glenshero	No breeding activity of any pairs likely to be affected. Minor loss of foraging habitat within three territories due to displacement around Wind Turbines.	Mean annual collision rate of 0.5131 .	0.5131
Rothes III	No records	No records	0

Project	Disturbance-displacement	Collision mortality	# CRM
Clash Gour	Two observations during all baseline surveys	No CRM undertaken	0
Berry Burn Extension	One observation during all baseline surveys.	No CRM undertaken	0

8.7.4.2 Predicted Cumulative Effects during Construction

A total of nine other wind farm projects within NHZ 10 considered golden eagle as part of their impact assessment, with other projects not recording, or very infrequently recording any golden eagle presence (Table 8.17).

There is the potential for the Development's construction phase to coincide with two Consented projects (Aberarder and Dell) and two Application stage projects (Cloiche and Glenshero) where golden eagle is present. At all sites, the distance from nest sites to closest turbine location is likely to be sufficiently far as to avoid potential direct disturbance effects (Table 8.17). With standard mitigation measures at the Development and other sites designed to ensure that breeding golden eagles will be unaffected by construction activities, it is considered unlikely that there are any additional cumulative effects of construction above those predicted for the Development individually. Despite some foraging habitat becoming temporarily unavailable due to construction at project sites, a continuation of breeding and foraging activity is likely for all pairs, and with results from HRSO monitoring suggesting that the NHZ 10 population has grown strongly over the last decade, a Minor adverse and therefore Not Significant residual cumulative effect in the context of the EIA Regulations is predicted for the NHZ 10 population.

8.7.4.3 Predicted Cumulative Effects during Operation

As outlined above, the NHZ 10 golden eagle population is currently likely to be in favourable conservation status, based on the criteria outlined in Whitfield *et al.* (2008⁶⁰), with a territory occupancy rate of >66 % and relatively high productivity.

The NHZ 10 golden eagle distribution has a distinct west/east split, with the more mountainous areas within Highland region hosting breeding territories, and the more lowland eastern areas in Moray being used only occasionally by wandering individuals. Potential effects during operation (displacement and collision risk) are therefore more likely to be associated with Wind Farm projects in the western half of NHZ 10, which includes the Development. These are described below.

Displacement

Results from other wind farm project EIAs show that for operational projects within NHZ 10, only the Operational Corriegarth Wind Farm and Stronelairg Wind Farm are located within the range of any breeding territories, and therefore have a potential for significant cumulative displacement risks.

As outlined above in Section 8.5.4.1, the Development is predicted to overlap with two golden eagle territories (Dunmaglass and Garrogie), both of which also overlap with the Operational Corriegarth Wind Farm, with Garrogie also overlapping with Stronelairg Wind Farm. When including the Development, total potential range use occupancy loss due to wind farms within each territory would be 5.6 % for the Dunmaglass pair, 6.1 % for the Garrogie pair.

The Stronelairg ES predicts that the wind farm overlaps with three golden eagle territories, one of which is the Garrogie pair, with the other two having a range use occupancy overlap of 4.1 % and 2.1 %. It is therefore possible that in total, four golden eagle territories may overlap with operational wind farms plus the Development.

As described above in Section 8.5.4.1, the viability of any territory is unlikely to be significantly affected by displacement associated with the Development alone, although it is possible that unmitigated, mean productivity of one or more territories may be reduced as a result of a decline in territory extent/quality when considering the Operational Corriegarth Wind Farm and Stronelairg, albeit these wind farms are also located towards the edge of territories, and therefore likely to be outside the core foraging range from nest sites.

The Garrogie territory with the largest predicted cumulative overlap, according to the Stronelairg ES, would be improved by the creation of a 485 ha habitat management area within it as part of the Stronelairg HMP, where a range of appropriate management works would be implemented to improve the habitat to optimal condition for key golden eagle prey species, particularly red grouse. Supplementary feeding would also occur throughout the winter months. These measures would help reduce the likelihood of a significant displacement effect.

When considering the potential cumulative displacement effects of consented or application projects (Table 8.17), Dell, Cloiche and Glenshero wind farms are also considered to overlap with eagle territories within NHZ 10. A review of the available EIA information on all projects (limited by confidentiality restrictions) indicates that up to six golden eagle territories within NHZ 10 may overlap with operational, consented or in application projects.

Of these six territories, the Garrogie territory is likely to have overlap with the most wind farm projects. If all became fully operational, evidence suggests the Garrogie territory may overlap with five projects (the Operational Corriegarth Wind Farm, Stronelairg, Dell, Cloiche and the Development) although it should be noted that the overlap with the Development and Operational Corriegarth Wind Farm would be minimal (0.5 % and 0.01 % range use occupancy respectively, based on the PAT modelling). Although all projects are towards the edges of the territory, there is a risk of territory abandonment due to cumulative displacement, although effects would be reduced somewhat by targeted mitigation measures and habitat management plans for Stronelairg, Dell and Cloiche.

Of the other five territories, overlap is likely to be less, occurring with either one or two projects at the edges of territories, although one territory may overlap with Stronelairg, Glenshero and Cloiche. With various habitat management plans and mitigation proposed to benefit golden eagle, a reduction in productivity is a more likely consequence than territory abandonment, which would have a non-significant effect at a population level, based on the relatively high productivity rates and growth of the NHZ 10 population in recent times. Food/habitat availability does not appear to be a limiting factor for territories within NHZ 10, and therefore it is more likely that a territory will remain viable despite a small decrease in extent.

Overall, therefore, the worst-case cumulative displacement effect on the NHZ 10 population is considered to be a possible loss of one territory, and a small reduction in overall productivity, if all projects were to become fully operational. The NHZ is currently in favourable conservation status, although the occupancy rate (25 out of 37 territories) is 67 %, which is close to the threshold Whitfield *et al.* (2008⁶⁰) used for a criterion of favourability. A reduction to 24 active territories would theoretically reduce the occupancy rate slightly below the threshold, but when considering the upward trajectory of the population since 2003, it is likely that by the time all projects would be operational, the population would be greater than 25 pairs, and so favourable conservation status would remain. As such, a Minor adverse and therefore Not Significant cumulative effect on the NHZ 10 population is predicted.

Collision Risk

The collision rate associated with the Development alone was predicted to be on average 0.093 collisions per year (one every 10.8 years). When also including the predicted collision rate from all operational and consented projects (converted to an estimated collision rate under a recommended 99 % avoidance rate where required), a total cumulative annual collision rate of 0.583 collisions per year, or one every 1.7 years is predicted. It is the case however that, based on survey results for a number of other projects, golden eagle collision risk is not necessarily attributable to NHZ breeding birds, and so this should be seen as a worst-case estimate.

When all projects at the application stage are also included, a total cumulative collision rate of up to 1.277 collisions per year, or one every 0.8 years is predicted. Again, a proportion of this is likely to be attributable to non-breeding individuals.

The GEPM in Appendix 8.2, as outlined above in Section 8.5.4.2 also considers this cumulative collision impact within an NHZ 10 context, assuming all losses are to NHZ 10 breeding birds, and all projects within the NHZ will become operational with a full rollout of the proposed number of turbines. The conclusions from running the model with this additional mortality were as follows:

- The GEPM predicts continued growth in the majority of modelled scenarios, with the exception of the most precautionary combinations of fledging rates (0.470 and 0.619) and S1 (sub-adult) survival rates (0.250 to 0.300); and
- Using a more realistic S1 survival rate of 0.279 (fitting trends from 2003 to 2019), and mean fledging rate of 0.718 (based on mean of 2015-19 monitoring), the carrying capacity of the NHZ (37 territories) would be reached after 25 years at an average annual growth of 1.8 % (down from 3.3 %). This would result in an increase in duration for reaching theoretical carrying capacity from 13 years under both the baseline and Development alone scenario, although favourable conservation status would be maintained.

Overall, the results of the GEPM therefore suggest that the NHZ 10 golden eagle population is likely to be able to continue to expand, despite the additional mortality predicted to be associated with collisions at Wind Farm projects within NHZ 10, should all become operational. The main historical limiting factor of the expansion of the NHZ 10 population, persecution, is likely to be reduced as a result of the ongoing Regional Eagle Conservation Management Plan (Haworth, 2014⁶²) and ongoing monitoring associated with habitat management plans, which means that during the operation period of the Development, sub-adult survival rates in particular are likely to be higher than the conservative values considered above, which have been based on historic rates.

The overall significance of the cumulative collision effect on the NHZ 10 population is therefore considered to be Minor adverse and therefore Not Significant in the context of the EIA Regulations.

8.7.5 White-tailed Eagle

8.7.5.1 Predicted Cumulative Effects within NHZ 10 Relating to White-tailed Eagle

Table 8.18: Predicted Cumulative Effects within NHZ 10 Relating to White-tailed Eagle

Project	Disturbance-displacement	Collision mortality	# CRM
The Development	No breeding or roosting activity of any pairs likely to be affected. Minor loss of foraging habitat due to displacement around Wind Turbines.	Mean annual rate of 0.311 collisions.	0.311

Project	Disturbance-displacement	Collision mortality	# CRM
Operational and Under Construction			
Operational Corriegarth Wind Farm	White-tailed eagle was not recorded during baseline surveys, but operational monitoring since 2015 has shown occasional usage of site, but no breeding evidence within 2 km.	No CRM undertaken for EIA. Collision rate assumed to be lower per Wind Turbine than Corriegarth 2, due to removal of carrion around Wind Turbines.	0
Dunmaglass	No records.	No records	0
Stronelairg	No records for EIA. Observed on a number of occasions during pre-construction surveys according to Cloiche EIA.	No records	0
Farr	No information.	No information.	0
Berry Burn	No records.	No records	0
Hill of Glaschyle	No records.	No records	0
Paul's Hill I	Unknown (no records for Paul's Hill II)	Unknown (no records for Paul's Hill II)	0
Roths I	Unknown (no records for Roths III)	Unknown (no records for Roths III)	0
Roths II	Unknown (no records for Roths III)	Unknown (no records for Roths III)	0
Moy	No records.	No records.	0
Glen Kyllachy	No records.	No records.	0
Tom nan Clach Repowering	No records.	No records.	0
Consented			
Aberarder	No records.	No records	0
Cairn Duhie	No records.	No records	0
Kellas	No records.	No records	0
Meikle Hill	No records.	No records	0
Dell	No records.	No records	0
Application			
Paul's Hill II	No records.	No records	0
Cloiche	A total of 14 white-tailed eagle flights were recorded overall, mostly adult birds, during the summer and early autumn months. No evidence of breeding.	0.17 collisions per year	0.17
Glenshero	Occasionally recorded during baseline surveys, but there was no evidence of breeding within the 2 km survey area.	0.1090 collisions per year	0.109
Roths III	No records.	No records	0
Clash Gour	Single observation of two individuals.	No CRM undertaken.	0

Project	Disturbance-displacement	Collision mortality	# CRM
Berry Burn Extension	No records.	No records	0

8.7.5.2 Predicted Cumulative Effects during Construction

White-tailed eagle was not recorded during baseline surveys for any consented wind farms within NHZ 10 and, of those at application stage, was observed infrequently at Cloiche, Glenshero and Clash Gour (Table 8.18), with no evidence of breeding near any of these sites. The possibility of temporary cumulative construction disturbance to non-breeding individuals across NHZ 10, including for the Development, is therefore considered to have a Negligible and Not Significant cumulative effect.

8.7.5.3 Predicted Cumulative Effects during Operation

Displacement

No projects within NHZ 10 recorded any white-tailed eagle breeding activity in their vicinity, and therefore no nesting would be directly affected by the presence of Wind Farms. Occasional activity was recorded at some Wind Farm sites, and this was mainly likely to be wandering non-breeding individuals, with any foraging reflecting the temporary availability of food resources such as carrion. No white-tailed eagle territories are likely to be affected by the presence of wind farms within NHZ 10, and so overall, operational displacement is considered to have a Negligible and Not Significant cumulative effect.

Collision Risk

CRM was only undertaken for two more recent EIAs in addition to the Development: Cloiche and Glenshero. This may reflect the increased local presence of the species in recent years, albeit not reflected in breeding numbers. When combined with the Development, the cumulative collision rate is predicted to be 0.59 birds per year, or one every 1.7 years.

No CRM was conducted for the Operational Corriegarth Wind Farm due to a lack of records during baseline surveys, but operational monitoring suggests that white-tailed eagles are occasionally present on site. A theoretical collision risk therefore does exist, when considering that white-tailed eagles have been shown to be susceptible to collisions across Europe, and although this may more likely occur within breeding areas (e.g. Heuck *et al.* 2019⁶⁷), non-breeding birds may also be at risk, as witnessed in Scotland⁶⁸. Ongoing management to remove carrion from around wind turbines at the Operational Corriegarth Wind Farm is however likely to reduce the risk of collisions compared to the unmitigated rates predicted for the Development (as well as potentially increasing recorded activity rates during baseline surveys within the Development site), and so annual collision rates are likely to be considerably lower than those unmitigated rates predicted for the Development.

Evidence suggests that, with no breeding activity recorded during surveys, the majority of flight activity recorded at wind farm sites within NHZ 10 is likely to be non-breeding birds not associated with any NHZ breeding population. At a national level, the effect of this cumulative mortality on the breeding population of 104 pairs would be an increase in baseline mortality by up to 7.3 %. However, much, if not all, of the activity would be associated with non-breeding birds. Sansom *et al.* (2016⁶⁴) have modelled future ranging of the introduced white-tailed eagle population in Scotland and concluded that

⁶⁷ Heuck, Christian & Herrmann, Christof & Levers, Christian & Leitão, Pedro & Krone, Oliver & Brandl, Roland & Albrecht, Jörg. (2019). Wind turbines in high quality habitat cause disproportionate increases in collision mortality of the white-tailed eagle. Biological Conservation. 236. 44-51. 10.1016/j.biocon.2019.05.018.

⁶⁸ Available at: <https://community.rspb.org.uk/ourwork/b/scotland/posts/raptor-windfarm-deaths>. Accessed on: July 2020.

the number of breeding white-tailed eagle pairs has continued to grow almost exponentially, and wild-bred eagles now greatly outnumber released eagles. When modelling the impact of additional mortality, potentially caused by illegal killing and collisions with wind farms (up to 14 collisions per year), population growth was reduced, but not to the extent of causing a population decline. Overall, a Minor adverse and Not Significant cumulative effect is predicted for the Scottish white-tailed eagle population. As the risk to NHZ 10 breeding birds is likely to be minimal, this reference population is considered to be most relevant.

An extension of carrion removal practices to cover the area around the Development, as outlined in section 8.6.2 will help reduce the potential collision rate for both the Development and the Operational Corriegarth Wind Farm, and therefore reduce the likelihood of a significant effect.

8.7.6 Dunlin

8.7.6.1 Predicted Cumulative Effects within NHZ 10 Relating to Dunlin

No CRM was undertaken for dunlin for the Development, since no flights were recorded at risk height, which is typical for the species. Since the Development would contribute nothing, or a negligible amount to the cumulative collision risk for NHZ 10 (which is also likely to be very low based on species' flight behaviour), no assessment is required. Overall, a Negligible and Not Significant cumulative collision risk is predicted for the NHZ 10 dunlin population. Cumulative displacement effects are described below.

Table 8.19: Predicted Cumulative Effects within NHZ 10 Relating to Dunlin

Project	Disturbance-displacement
The Development	Up to 4 territories may be within 500 m of a proposed wind turbine location.
Operational and Under Construction	
Operational Corriegarth Wind Farm	ES reported up to 4 pairs present, 1 of which was within 500 m of a Wind Turbine. Breeding bird surveys in 2019 recorded 1 territory in close proximity to a Wind Turbine, with a second possible territory also within c.100 m of a Wind Turbine.
Dunmaglass	34 pairs recorded within survey area. 3 pairs within 250 m of a turbine.
Stronelairg	16 pairs of dunlin nested in the wider study area in 2009 and 2010, of which 9 pairs bred in the development area in 2009 and 11 pairs in 2010. c. 5 dunlin territories within the development area are relatively close to land-take areas and so could be susceptible to displacement.
Farr	Baseline surveys recorded up to 9 territories, 6 of which within 200 m of a Wind Turbine (Fielding & Haworth, 2015 ⁴⁷). In 2015 at the end of the reported monitoring period there were 12 territories, 6 of which were within 200 m.
Berry Burn	no records
Hill of Glaschyle	no records
Paul's Hill I	no records for Paul's Hill II or neighbouring projects – presumed absent
Roths I	no records for Roths III or neighbouring projects – presumed absent
Roths II	no records for Roths III or neighbouring projects – presumed absent
Moy	no records
Glen Kyllachy	1-2 breeding pairs
Tom nan Clach Repowering	one record, no breeding evidence
Consented	

Project	Disturbance-displacement
Aberarder	no records
Cairn Duhie	no records
Kellas	no records
Meikle Hill	no records
Dell	no records
Application	
Paul's Hill II	no records
Cloiche	16 apparent dunlin breeding territories were recorded in the western survey area and 6 in the eastern survey area. Of these, a total of 13 dunlin territories were located within 500 m of the nearest proposed wind turbines.
Glenshero	Up to 5 territories may be within 400 m of a proposed turbine location.
Roths III	no records
Clash Gour	no records
Berry Burn Extension	no records

8.7.6.2 Predicted Cumulative Effects during Construction

Dunlin was recorded at eight wind farm projects within NHZ 10, showing a west-east split, reflecting the availability of suitable higher upland habitats within the west.

The species was absent during baseline surveys for all consented projects but was a relatively common breeder within the area around Cloiche and Glenshero Wind Farms (Table 8.19). It is likely that some of the territories recorded overlap between the two projects, but when including territories found at the Site, around 17-21 pairs may be affected by construction disturbance. The NHZ 10 population was estimated by Wilson *et al.* (2015) to be 105 (range 33-266) pairs in 2000, and so this represents around 16-20 % of the population.

Evidence presented above in section 8.5.3.6 from studies by Pearce-Higgins *et al.* (2012⁴⁶) and Fielding & Haworth (2015⁴⁷) however suggests it is unlikely that totals approaching these numbers of pairs would be significantly affected during construction, with some territories remaining in proximity to the wind farms during the construction period.

Although some disturbance to particular territories cannot be discounted, depending on intensity and duration of works, overall, a Minor adverse and Not Significant cumulative effect is predicted for the NHZ 10 dunlin population.

8.7.6.3 Predicted Cumulative Effects during Operation

Displacement

Dunlin were regularly recorded during baseline surveys for operational projects within the western half of NHZ 10, closer to the Development. Although a number of territories are likely to be within 500 m of a Wind Turbine location, evidence from operational monitoring of local projects suggests long-term displacement is not likely to occur to a significant extent. Fielding and Haworth (2015⁴⁷) concluded that at Farr Wind Farm there was no evidence for an immediate, or even delayed, displacement away from the wind farm, with territories regularly recorded within 200 m of a Wind Turbine (e.g. six territories in the last year of study in 2015). Similarly, at the Operational Corriegarth Wind Farm breeding bird surveys in 2019 recorded 1 territory in close proximity to a Wind Turbine, with two further possible territories also within c.250 m of a Wind Turbine (only

one territory was recorded within 500 m of a proposed Wind Turbine location during baseline surveys).

Overall, a Minor adverse and Not Significant cumulative displacement effect is predicted for the NHZ 10 dunlin population.

8.8 SUMMARY OF EFFECTS

Table 8.20 provides a summary of the effects detailed within this chapter.

Table 8.20: Summary of Effects

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
Red kite	Disturbance and habitat loss	Minor adverse	BBPP	Minor adverse
Golden eagle	Disturbance and habitat loss	Minor adverse	BBPP	Minor adverse
White-tailed eagle	Disturbance and habitat loss	Negligible	BBPP	Minor adverse
Peregrine	Disturbance and habitat loss	Minor adverse	BBPP	Minor adverse
Golden plover	Disturbance and habitat loss	Negligible	BBPP	Negligible
Dunlin	Disturbance and habitat loss	Minor adverse	BBPP	Minor adverse
Operational Phase				
Red kite	Displacement	Minor adverse	Monitoring Tagging HMP improvements for prey species	Minor adverse
	Collision risk	Moderate adverse (NHZ 10 population) Minor adverse (North Scotland population – cumulative)	Removal of carrion Woodland management Tagging	Minor adverse
Golden eagle	Displacement	Minor adverse	Monitoring RECOMP contribution HMP improvements for prey species	Minor adverse
	Collision risk	Minor adverse	Removal of carrion	Minor adverse
White-tailed eagle	Displacement	Minor adverse	Monitoring Tagging HMP improvements for prey species	Minor adverse
	Collision risk	Moderate adverse	Removal of carrion Woodland management	Minor adverse

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
			Tagging	
Peregrine	Displacement	Minor adverse	Monitoring HMP improvements for prey species	Minor adverse
	Collision risk	Minor adverse	None required	Minor adverse
Golden plover	Displacement	Negligible	HMP improvements to blanket bog	
	Collision risk	Negligible	None required	Negligible
Dunlin	Displacement	Minor adverse	HMP improvements to blanket bog	Minor adverse
	Collision risk	Negligible	None required	Negligible

8.9 STATEMENT OF SIGNIFICANCE

For all IOFs, the predicted residual levels of significance of effects during the construction and operational stages of the Development, alone or cumulatively with other projects, are considered to be no more than of **Minor adverse** and therefore **Not Significant**, when taking into consideration any required mitigation measures.

8.10 GLOSSARY

Barrier effects	Where a wind farm creates an obstacle to regular movements of birds to and from breeding colonies or migration.
Collision Risk Analysis Area (CRAA)	The three-dimensional airspace within and surrounding the proposed turbine area where birds in flight are theoretically at risk of a collision with operational turbines. This forms the basis of calculations used in collision risk modelling.
Conservation status	The sum of the influences acting on a species which may affect its long-term distribution and abundance, within a geographical area of interest.
Cumulative effect	Additional changes caused by a proposed development in conjunction with other developments or the combined effect of a set of developments taken together.
Habitats Regulations Appraisal (HRA)	An assessment of projects (or plans) potentially affecting European Sites in the UK, required under the Habitats Directive and Regulations.
Important Ornithological Features (IOFs)	Ornithological features requiring specific assessment within an EIA. Ornithological features can be important for a variety of reasons (e.g. quality and extent of designated sites, species rarity).
Nature Conservation Importance	A level of importance attributed to a species population or habitat which may relate for example, to the quality or extent of designated sites or habitats, to habitat/species rarity, to the extent to which they are threatened throughout their range, or to their rate of decline.

9 ARCHAEOLOGY AND CULTURAL HERITAGE

9.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) evaluates the effects of the Corriegarth 2 Wind Farm (the Development) on the archaeological and cultural heritage resource. The assessment was undertaken by Heather Kwiatkowski, Principal Heritage Consultant at Arcus Consultancy Services Limited (Arcus) who is a full Member of the Chartered Institute for Archaeologists (MCIfA). The Chapter has been technically reviewed by Stuart Davidson, Registered EIA Practitioner and Operational Director at Arcus.

This chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Assessment of Potential Effects;
- Mitigation and Residual Effects;
- Cumulative Effect Assessment;
- Summary of Effects; and
- Statement of Significance.

The following terms are used within this Chapter:

- The Development: the whole physical process involved in the development of Corriegarth 2 Wind Farm, including all aspects of proposed infrastructure and the construction, operation and decommissioning phases (i.e. not a piece of land or an area);
- Operational Corriegarth Wind Farm: encompasses the as built operational wind farm of 23 turbines and associated infrastructure including the existing access track;
- The Core Study Area / 5 kilometre (km) Study Area / 10 km Study Area / 15 km Cumulative Study Area: various Study Areas used for the assessment, as defined in Section 9.3.4 of this Chapter and presented on Figures 9.1-9.4.

This Chapter of the EIA Report is supported by the following Technical Appendix documents provided in Volume 3 Technical Appendices:

- A9.1: Corriegarth 2 Wind Farm Archaeological Desk-Based Assessment (DBA); and
- A9.2: Historic Environment Scotland (HES) EIA Consultation.

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a: Figures excluding LVIA:

- Figure 9.1: Heritage Assets within Core Study Area;
- Figure 9.2: Heritage Assets within 5 km Study Area;
- Figure 9.3: Designated Heritage Assets in 10 km Study Area; and
- Figure 9.4: 15 km Cumulative Study Area.

This Chapter of the EIA Report is supported by the following visualisations and wirelines provided in Volume 2c: NatureScot Visualisations:

- Figure 6.22: Boleskine Parish Church (LB1846);
- Figure 9.5: SM4536 Dell Farm Burial Mounds Wireline;
- Figure 9.6: SM4538 Farraline Enclosure Wireline;
- Figure 9.7: SM11884 Dun Deardill Fort Wireline;
- Figure 9.8: LB540 Category B Farraline House Wireline;
- Figure 9.9: LB542 Category B Mains of Gorthleck Wireline;
- Figure 9.10: LB1860 Category B Dell Lodge Wireline;

- Figure 9.11: LB1883 Category B Garthbeg Wireline;
- Figure 9.12: LB50031 Category C Corrugated Iron Cottage Wireline; and
- Figure 9.13: LB51700 Category C Loch Mhor Dam Wireline.

Reference is also made to Landscape and Visual Amenity (LVA) Viewpoint (VP) 2 located at the Category B Listed Boleskine Parish Church (Figure 6.22) which is provided within Volume 2c: NatureScot Visualisations.

9.2 LEGISLATION, POLICY AND GUIDANCE

A detailed review of the relevant heritage legislation and guidance is provided within the DBA in Technical Appendix A9.1. A summary of the relevant legislation and guidance used within the EIA Report is provided below. Further details of energy and planning policy is found in Chapter 2 and within the Planning Statement submitted as part of the application.

9.2.1 Legislation

Heritage legislation of relevance includes:

- The Historic Environment Scotland Act 2014¹;
- The Ancient Monuments and Archaeological Areas Act 1979²;
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997³; and
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended)⁴ (the EIA Regulations).

9.2.2 Policy and Guidance

In addition to the aforementioned legislation, the following is a summary of the key heritage policy and guidance:

- Scotland's Third National Planning Framework (NPF3)⁵;
- Scottish Planning Policy (2014)⁶: Valuing the Historic Environment, Paragraphs 135-151;
- EIA Handbook⁷;
- Historic Environment Policy for Scotland (HEPS)⁸;
- Our Place in Time: The Historic Environment Strategy for Scotland⁹;

¹ Scottish Government (2014) The Historic Environment Scotland Act [Online] Available at http://www.legislation.gov.uk/asp/2014/19/pdfs/asp_20140019_en.pdf. (Accessed 23/6/20)

² UK Government (1979) The Ancient Monuments and Archaeological Areas Act [Online] Available at: <https://www.legislation.gov.uk/ukpga/1979/46> (Accessed 23/6/20)

³ Scottish Government (1997) The Planning (Listed Buildings and Conservation Areas) (Scotland) Act [Online] Available at: <https://www.legislation.gov.uk/ukpga/1997/9/contents> (Accessed 23/6/20)

⁴ The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 <http://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 23/6/20)

⁵ Scottish Government (2014) National Planning Framework 3. Available at <https://www.gov.scot/publications/national-planning-framework-3/> (Accessed 04/08/2020)

⁶ Scottish Government (2014) Scottish Planning Policy [Online] Available at <https://www.gov.scot/publications/scottish-planning-policy/> (Accessed 04/08/2020)

⁷ SNH and HES (May 2018). EIA Handbook. Available at <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0> (Accessed 04/08/2020)

⁸ HES (2019) Scottish Environment Policy for Scotland [Online] Available at: <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=1bcfa7b1-28fb-4d4b-b1e6-aa2500f942e7> (Accessed 04/08/20)

⁹ Scottish Government (2014) Our Place in Time: The Historic Environment Strategy for Scotland

- The Highland-Wide Local Development Plan 2012, Policy 57: Natural, Built and Cultural Heritage¹⁰;
- Planning Advice Note (PAN) PAN 2/2011: Planning and Archaeology¹¹;
- CIfA Standards and Guidance¹²; and
- HES (2016) Managing Change in the Historic Environment Series, specifically 'Managing Change in the Historic Environment: Setting'¹³.

9.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

9.3.1 Scoping Responses and Consultations

Consultation for this EIA Report topic was undertaken with the organisations shown in Table 9.1.

Table 9.1: Consultation Responses

Consultee	Summary of Consultation Response	Response to Consultee
HES Scoping Response 18 March 2020	HES is content with the scope of assessment and have not identified any impacts which they consider likely to be significant.	N/A
The Highland Council (The Council) Scoping Response 6 April 2020	The Highland Council responded with the following: <i>"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: -</i> • <i>the architectural heritage (Conservation Areas, Listed Buildings) and</i> • <i>the archaeological heritage (Scheduled Monuments),</i> • <i>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.</i> • <i>the inter-relationship between the above factors."</i> <i>We would expect any assessment 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 proposed development and views</i>	The assets selected for the final assessment are detailed in Section 9.4, with the assessment in Section 9.5. Consideration of landscapes is provided within Chapter 6: LVIA. Reference is made in Section 9.5 to visualisations, where appropriate.

¹⁰ The Highland Council (2012) Highland-Wide Local Development Plan [Online] Available at https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan (Accessed 04/08/20)

¹¹ The Scottish Government (2011) Planning Advice Note 2/2011 [Online] Available at <https://www.gov.scot/publications/pan-2-2011-planning-archaeology/> (Accessed 04/08/20)

¹² Chartered Institute for Archaeologists (2017) *Standard and Guidance for Historic Environment Desk-Based Assessment*, Published December 2014, Updated January 2017 [Online] Available at: http://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_3.pdf (Accessed 04/08/20)

¹³ HES (2016, updated February 2020) Managing Change in the Historic Environment: Setting [Online] Available at: <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=80b7c0a0-584b-4625-b1fd-a60b009c2549> (Accessed 04/08/20)

Consultee	Summary of Consultation Response	Response to Consultee
	<i>towards the asset with the development in the background would be helpful.</i> <i>Historic Environment Scotland (HES) will provide comment on the assessment methodology for heritage assets within their remit.</i> <i>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.</i> <i>There are a large number of heritage assets in the vicinity of the development, these need to be assessed. HES have provided detailed advice on potential setting impacts.</i> <i>We recommend that you liaise with colleagues in the Council's Historic Environment Team on the scope of the archaeological assessments."</i>	
HES EIA Preparation Consultation 23 July 2020	HES stated that it had not identified any impacts to its interests that were likely to be significant, and had no further comment of advice on the scope of assessment	N/A

Arcus undertook further consultation with HES and the Council's Historic Environment Team (July 2020) during the preparation of the EIA to agree heritage assets for inclusion. HES responded on 23 July 2020, with no response received from the Council. HES stated that it had not identified any impacts to its interests that were likely to be significant, and had no further comment of advice on the scope of assessment. Consultation correspondence for the EIA preparation is included as Appendix A9.2.

9.3.2 Scope of Assessment

9.3.3 Elements Scoped Out of Assessment

All non-designated heritage assets were scoped out of the indirect effects assessment as all non-designated assets are of low/negligible sensitivity and unlikely to result in a significant indirect effect in accordance with the EIA Regulations.

Following a review of the ZTV and likelihood of significance effects, designated assets beyond 10 km from the Site, or those within 5-10 km which do not lie within the ZTV, have also been scoped out of assessment. At this distance, significant effects are unlikely to occur if the Development is not visible from the asset. As detailed in Section 9.3.1, consultation was undertaken with HES and the Council's Historic Environment Team to confirm this approach (Appendix A9.2), with HES highlighting that it did not anticipate any significant effects to heritage assets within its remit.

9.3.4 Study Area / Survey Area

To assess the potential for on-site archaeology, Study Areas were defined based upon the likelihood of potential significant effects upon archaeology and cultural heritage, as

detailed in Technical Appendix A9.1.

The Development will utilise the Operational Corriegarth Wind Farm access track and existing hardstandings as laydown areas. Whilst some upgrades may be required to these, the main elements of new construction would occur at the turbine locations. Construction of the turbines and within the Core Study Area is the only part of the Site where new construction would occur within undisturbed ground, and in which direct effects to archaeology may occur. The Core Study Area around the turbines consists of approximately 1,540 hectares (ha), with the extents and location shown on Figure 9.1. This Core Study Area consists of rough upland moorland used for grazing and grouse shooting, with the Operational Corriegarth Wind Farm in the centre.

Due to the remote location of the Site, a 5 km Study Area was used to inform the archaeological potential of the Site, as also shown on Figure 9.1.

The potential for indirect effects has been assessed using an initial study area of 15 km surrounding the turbines, which was revised to 10 km following analysis of the ZTV and potential for significant effects, as detailed within consultation letter within Appendix A9.2. The selection of assets includes all designated sites and landscapes within 5 km, selected designated assets within the 5-15 km Study Area that fall within the ZTV, and any additional heritage assets highlighted during consultation.

The Study Areas are summarised as follows:

- Core Study Area (Figure 9.1) for which direct effects are likely;
- 5 km Study Area (5 km radius of Core Study Area) to inform archaeological potential (Figure 9.2);
- 10 km Study Area (10 km radius of Core Study Area) for which all designated heritage assets within the ZTV were assessed for changes to setting (Figure 9.3); and
- 15 km Cumulative Study Area (Figure 9.4).

9.3.5 Design Parameters

The parameters of the design that will influence the archaeological and cultural heritage assessment in relation to physical effects has been based on the turbine layout and associated infrastructure. No additional design parameters, other than those set out in **Chapter 4: Development Description** of this EIA Report, are required for the assessment presented in this Chapter.

As set out in **Chapter 4: Development Description**, the turbines and associated infrastructure may be micrositied up to 50 metres (m), where constraints allow. Such relocations have been considered when undertaking the assessment, and mitigation recommended, where appropriate.

9.3.6 Baseline Survey Methodology

For direct effects, a DBA was undertaken using available documentary, cartographic and photographic evidence to inform the baseline of the Site. The DBA is provided in Technical Appendix 9.1. The DBA has been based on readily available and relevant documentary sources. The following archives were consulted:

- Databases of cultural heritage assets maintained by HES;
- The Council's Historic Environment Record (HER);
- Aerial photography;
- Cartographic evidence including historic maps; and
- National Archives of Scotland.

A site visit was undertaken in November 2019 to identify and (where possible) record any previously unrecorded cultural heritage features within the Core Study Area. The

walkover survey focused on infrastructure locations (i.e. turbine locations, tracks and substation) and did not cover the entire Site. Setting site visits were undertaken to heritage assets within 10 km of the Core Study Area in November 2019 and July 2020 to validate the historic environment record of the area.

To identify heritage assets that may receive an indirect effect upon their setting, an initial search area of 15 km from the turbine locations was used. Due to the height and scale of the Development and its location in open moorland, the assessment of indirect effects includes all designated and nationally important heritage assets within 10 km that are also within the ZTV. For heritage assets between 10-15 km radius, it was determined that no heritage assets were likely to receive a significant effect, as detailed in Appendix A9. 2. Full details of the heritage assets selected for assessments are detailed in Section 9.4.

9.3.7 Methodology for the Assessment of Effects

The assessment of effects is based on the final design of the Development detailed in Chapter 4 of this EIA Report. The assessment considers the sensitivity of a cultural heritage feature and the magnitude of any potential change, to conclude whether the effect is significant. The assessment conclusions are informed by professional judgement.

9.3.7.1 Sensitivity of Receptors

The sensitivity of the cultural heritage assets/receptors has been initially equated with its designation status which reflects the assets cultural significance, as shown in Table 9.2. The greater the designation status, the greater the cultural significance and the presumed sensitivity to change. Listed Buildings are designated, subject to grading (Category A, B and C) and placed on a list that is maintained by HES. For the purposes of this assessment, the categorisation of each Listed Building has been used as an indication of a presumed level of sensitivity.

Table 9.1: Framework for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
Very High	World Heritage Sites - these are internationally important.
High	Scheduled Monuments, Category A Listed Buildings, Registered Battlefields, Gardens and Designed Landscapes, nationally important archaeological features and areas (as defined in The Highland Council's Historic Environment Record (HER) – these are considered to be nationally important.
Medium	Category B and C Listed Buildings, regionally important archaeological features and areas, and Conservation Areas – these are considered to be regionally important.
Low	Locally important sites and archaeological features – these are considered to be locally important.
Negligible	Badly preserved and/or damaged or very common archaeological features and buildings of little or no value at local or any other scale.

9.3.7.2 Magnitude of Change

Magnitude is the measure of change as a result of the Development. In relation to cultural heritage these changes are generally negative and are classified, for both direct and indirect effects, as shown in Table 9.3.

Table 9.2: Framework for Determining Magnitude of Change

Level of Magnitude	Description
Substantial	Major damage to or significant alteration to a site, building or other feature. Extensive change to the setting of a feature (e.g. loss of dominance, intrusion on key view or sightline).
Moderate	Damage or alteration to a site, building or other feature. Encroachment on an area considered to have a high archaeological potential for buried remains. Change in the setting of a feature (e.g. intrusion on designed sight-lines and vistas).
Slight	Minor damage or alteration to a site, building or other feature. Encroachment on an area where it is considered there is low potential for buried archaeological remains to exist. Minor change in the setting of a feature (e.g. above historic skylines or in designed vistas).
Negligible / None	Limited or no physical impacts to a site, building or other feature. Barely discernible or no change in setting and views.

For purposes of assessing indirect effects resulting in a change to setting, distance to the Development is considered the initial determinant in the degree of magnitude of any change that might be caused. Simple intervisibility with the Development is not necessarily considered to be harmful, unless this affects the cultural significance of the heritage asset so as to diminish its contribution to the understanding, appreciation or experience of the asset. Where considered appropriate, consideration has been given to the effect that the Development will have on the settings of historical assets in views towards and across the asset when moving through the landscape as well as in views towards the Development from the asset. It is also important to consider that forestry and vegetation, as well as buildings, can provide visual screening to cultural heritage features. However, it is noted that in managed forests the level of screening alters as trees are felled and replanted, and views may be opened up over time, which previously did not exist.

9.3.7.3 Significance of Effect

The significance of the potential effect is broadly determined by correlating the sensitivity of the asset against the magnitude of the expected change as shown in Table 9.4 with the final conclusion of the significance of the effect informed by professional judgement. Shaded cells indicate where a significant effect in accordance with the EIA Regulations will occur.

Table 9.3: Framework for Assessment of the Significance of Effects

Magnitude of Effect	Sensitivity of Resource or Receptor				
	Very High	High	Medium	Low	Negligible
Substantial	Major	Major	Major / Moderate	Moderate / Minor	Minor
Moderate	Major / Moderate	Moderate	Moderate / Minor	Minor	Negligible
Slight	Moderate / Minor	Minor	Minor	Negligible	Negligible
Negligible/None	Negligible / None	Negligible / None	Negligible / None	Negligible / None	Negligible / None

Using the matrix-based approach shown in Table 9.4, such features have been selected for a more detailed consideration. This includes a definition of its cultural significance and setting as it related to the understanding, appreciation or experience of the heritage asset of each feature, considering its designation status, essential attributes, etc.

An assessment is made using professional judgement of the extent to which the heritage asset or its setting is affected by the Development, and an assessment of significance is given. Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations and are shaded in light grey in the above table. Potential effects that are minor or negligible are considered to be not significant for purposes of the EIA Regulations and are not discussed in further detail within this EIA Report.

9.3.8 Mitigation and Residual Effects

Following the identification of the significance of effect, mitigation to avoid, reduce or enhance heritage will be recommended, where possible. An assessment of the residual effects (i.e. that after application of any mitigation) is made utilising the same methodology but with a final consideration for the post-mitigation significance of effect.

9.3.9 Cumulative Effects

A cumulative effect is considered to be an additional effect upon cultural heritage resources arising from the Development in combination with other existing, consented or proposed developments likely to affect the cultural heritage environment.

For the purposes of the assessment of cumulative effects, only wind farm developments over 100 m (operational, under construction, consented, or in planning) within the 15 km Study Area will be considered. The potential for a significant cumulative effect is considered most likely to occur within a 5-10 km Radius of the Core Study Area. As such, the Cumulative Study Area allows for the assessment of effects within a 15 km radius of the Development and other wind farms, specifically where the ZTVs for the Development and cumulative wind farms overlap, i.e. where each is theoretically simultaneously visible.

The potential for a significant cumulative effect is considered likely to occur only within the zone where the ZTVs for each wind farm development would overlap, i.e. where each is theoretically simultaneously visible.

Further detail on cumulative effects on the Landscape and Visual resource can be found in **Chapter 6: Landscape and Visual Amenity** of this EIA Report. Locations of developments considered as part of the Landscape and Visual cumulative assessment are shown in Figure 9.4, and those that are relevant to the Cultural Heritage assessment are listed in Table 9.5.

Table 9.5: Developments within 15 km of the Development

Wind Farm	Summary	Location and Direction (Figure 9.4)
Corriegarth	Operational, 23 turbines, 120 m to tip (considered as part of the baseline)	Located within Development
Dunmaglass	Operational, 33 turbines, 120 m to tip (considered as part of the baseline)	8.5 km NE
Aberarder	Consented, 12 turbines 120 m to tip	10.5 km NE
Dell	Consented, 14 turbines 130.5 m to tip	10.5 km
Stronelairg	Operational, 67 turbines 135 m to tip (considered as part of the baseline)	11.3 km
Cloiche	Application Submitted, 36 turbines 149.9 m to tip	13.5 km

Wind Farm	Summary	Location and Direction (Figure 9.4)
Glenshero	Appeal/Public Inquiry, 39 turbines 139 m to tip	14.5 km

9.3.10 Assessment Limitations

The walkover survey did not cover the entirety of the Site, but focused upon the higher elevations in which new infrastructure would be sited. There is the potential for additional low sensitivity archaeological remains (e.g. recessed grouse butts) to survive which were not recorded. It should be noted that the assessment undertaken is a desk-based assessment aided by site walkovers. No intrusive survey has been carried out.

9.3.11 Embedded Mitigation

The final layout of the Development has taken into account the consultation responses received from HES and the Council Archaeologist and has sought to reduce the impact of any potential setting effects on cultural heritage receptors.

In addition, the design of the layout has sought to avoid archaeological sites recorded within the Site, where feasible, in order to avoid direct impacts upon known archaeological features and securing preservation *in situ*.

9.4 BASELINE CONDITIONS

Full detail of the baseline conditions can be found with the DBA in Technical Appendix A9.1, which includes a brief description of the wider study area's archaeological and historical sites within the context of the area's background history, presented by period. A summary of the baseline conditions is provided in the following subsections.

9.4.1 Core Study Area

The Core Study Area is located south-east of Loch Ness and approximately 15 km north-east of Fort Augustus, as shown on Figure 1.1. The Operational Corriegarth Wind Farm and associated infrastructure, including part of its existing access tracks, lies within the centre of the Core Study Area and surrounded by open moorland, which is largely used for upland farmland grazing and grouse shooting.

The Development will utilise the operational Corriegarth Wind Farm access track. Whilst some upgrades may be required to facilitate the larger turbines, the main elements of new construction would occur at the turbine locations. As such, the Core Study Area focuses on the turbine locations within the Site Boundary as the main area in which new construction would occur within undisturbed ground and in which direct effects to archaeology may occur. The Core Study Area around the turbines consists of approximately 1,540 ha, with the extents and location shown on Figure 9.1.

The topography of the Core Study Area is bowl shaped with a number of hill tops bordering the boundary and the River E flowing east/west in the southern portion of the Core Study Area.

Within the Core Study Area, there are 13 heritage features as well as numerous modern grouse butts and wooden screens. These heritage assets are listed in Table 9.6 and shown on Figure 9.1.

Table 9.6: Heritage Features within the Core Study Area

Ref	Name	Description	Date
MHG26239 (CFA-1)	Carn na Saobhaide	Building	Post Medieval

Ref	Name	Description	Date
MHG46203	River E	Building	Undated
MHG46204	River E	Structure	Undated
CFA-2	Track	Track Identified through aerial photography - CFA	Undated
CFA-3	Field Bank	Identified by CFA	Undated
CFA-4	Sheiling	Identified by CFA	Undated
CFA-5	Sheiling	Identified by CFA	Undated
CFA-6	Sheiling	Identified by CFA	Undated
CFA-7	Settlement	Identified by Farrell (2002) – recorded 25 different structures in total	Undated
CFA-8	Sheiling	Identified by CFA	Undated
WS-1	Modern Bothy	Modern Bothy	Modern
HM-1 and HM-2	Unroofed Building or Enclosure	two additional unroofed structures (HM-1 and HM-2) along the Allt Dearg to the south of River E as shown on 2 nd Ed. OS Map	Post-Medieval
HM-3	Modern Cairn	Cairn shown on eastern boundary of Core Study Area on 1969 OS Map, still visible on current OS Map	Modern

9.4.2 Archaeological Potential – 5 km Study Area

Within the Core Study Area, there are 13 recorded heritage features with most of these related to post-medieval transhumance land use concentrated in close proximity to waterways. As such, the greatest potential for unknown archaeology to be encountered is along the waterways, with the design of the Development maintaining a 50 m buffer from all watercourses; the exception to this would be any requirement for watercourse crossings (see Figure 12.3). Potential to encounter further unrecorded archaeological remains is low due to the exposed upland nature of the Core Study Area except in close proximity to waterways where the potential is moderate.

A detailed baseline interpretation can be found within the DBA, Technical Appendix A9.1.

9.4.3 Designated Heritage Assets 10 km Study Area

There are no World Heritage Sites, Garden and Designed Landscapes (GDLs), Conservation Areas, or Registered Battlefields within the 10 km Study Area. There are five Scheduled Monuments and 29 Listed Buildings (of all categories) within the 10 km Study Area, as shown in Figure 9.3. These assets are shown in Figures 9.2 and 9.3 and have been initially considered for potential significant effects in Appendix A9.2 with the final selection summarised in the sections below.

9.4.3.1 Scheduled Monuments within 10 km Study Area

There are five Scheduled Monuments within the 10 km Study Area. These are detailed in Table 9.7 and shown in Figure 9.3. Three are situated within the ZTV in whole or part; however, all have been included in the assessment in Section 9.5.2.

Table 9.7: Designated Heritage Assets within the 10 km Study Area assessed for Indirect Effects

HER number	Name	Approximate Distance and Direction from the nearest turbine	Within ZTV
SM4532	Ceapmaol, settlement 300 m ENE of	9.8 km N of T12	N
SM4536	Dell Farm, burial mounds 350 m NE of	7.5 km NW of T16	Y
SM4538	Farraline, enclosure 780 m NE of	7.9 km N of T13	Y
SM11500	Druimantorran, hut circles and field	10.4 km N of T12	N
SM11884	Dun Deardail, forts 410 m and 520m ENE of Fasnagruig	10.2 km NW of T13	Y

9.4.3.2 Listed Buildings within 10 km Study Area

There are 29 Listed Buildings within the 10 km Study Area. This includes two Category A, 17 Category B and eight Category C Listed Buildings, as detailed in Table 9.8 and shown on Figure 9.3. Eleven of these fall within the ZTV and were selected for further assessment in Section 9.5.2. These have been assessed in groups where appropriate, based on their proximity to each other.

Table 9.8: Listed Buildings within the 10 km Study Area

Group	Listed Building Number	Listed Building Name	Category	Approximate distance and direction	Within ZTV
Farraline	539	Farraline House	B	7.3 km N of T13	Y
Farraline	540	Farraline House, Walled Garden	B	7.3 km N of T13	Y
Gorthleck	541	Gorthleck House	C	6.9 km N of T13	Y
Gorthleck	542	Mains of Gorthleck	B	7.2 km N of T13	Y
Not Included	1682	Dunmaglass Bridge (not included in EIA)	B	9.9 km N	N
Boleskine	1846	Boleskine Parish Church	B	6.9 km NW of T16	Y
Not Included	1847	Boleskine, Old Boleskine Parish Church (not included in EIA)	B	9.8 km NW	N
Boleskine	1848	Boleskine Old Manse	B	6.9 km NW of T16	Y
Not Included	1849	Boleskine House (not included in EIA)	B	9.8 km NW	N

Group	Listed Building Number	Listed Building Name	Category	Approximate distance and direction	Within ZTV
Not Included	1850	Boleskine House, Stables (not included in EIA)	B	9.8 km NW	N
Not Included	1852	Foyers Cemetery, Jane Fraser Memorial Obelisk (not included in EIA)	B	10 km	N
Dell Lodge	1860	Dell Lodge	B	7.7 km WNW of T16	Y
Not Included	1870	Inverfarigaig Bridge (not included in EIA)	B	9.7 km NW	N
Not Included	1871	Inverfarigaig Pier (not included in EIA)	B	9.6 km NW	N
Not Included	1874	Whitebridge, Old Bridge (not included in EIA)	A	6 km WNW	N
Not Included	1875	Whitebridge, New Bridge (not included in EIA)	B	6 km WNW	N
Not Included	1876	Knockie Lodge Hotel (not included in EIA)	C	9.8 km W	N
Not Included	1877	Boleskine House, Gate Lodge (not included in EIA)	B	9.8 km NW	N
Not Included	1879	Foyers Mains Steading, Dovecot and Hen House (not included in EIA)	C	10 km NW	N
Not Included	1880	Foyers, British Aluminium Factory (not included in EIA)	A	10 km NW	N
Not Included	1881	Foyers, Lower Foyers Bridge (not included in EIA)	B	10 km NW	N
Not Included	1882	Foyers, Upper Foyers, Bridge Over River Foyers (not included in EIA)	C	8.8 km NW	N
Garthbeg	1883	Garthbeg	B	5.3 km NW of T16	Y
Not Included	15016	Alltsigh House (not included in EIA)	B	9.9 km NW	N
Errogie	50029	Errogie, Former United Free Church including boundary walls	C	8 km N of T13	Y
Errogie	50031	Errogie, Corrugated-Iron Cottage	C	8 km N of T13	Y
Loch Mhor Dam	51700	Foyers Hydroelectric Power Scheme and Former Aluminium Smelter, Loch Mhor Dam	C	6.5 km NW of T16	Y
Not Included	51701	Foyers Hydroelectric Power Scheme and Former Aluminium Smelter, River Tarff Intake (not included in EIA)	C	8.8 km NW	N

9.5 ASSESSMENT OF POTENTIAL EFFECTS

9.5.1 Potential Construction Effects

9.5.1.1 *Direct Effects*

Within the Core Study Area, there are 13 undesignated heritage features as well as numerous modern grouse butts and wooden screens of no heritage significance. The undesignated heritage assets of significance are largely concentrated along the waterways and have been avoided as shown on Figure 9.1.

The grouse butts are three sided wooden structures with wooden floors sunk into the peat with peat piled up around the edges whilst the grouse screens are wooden panels. These have been largely avoided though some are in micro-siting distances; however, these are not heritage assets of any significance and if affected, could be removed or relocated elsewhere within the site boundary in consultation with the estate manager. As such, any effects on known undesignated heritage is considered negligible. This is assessed as **not significant** in accordance with the EIA Regulations.

The archaeological potential to encounter unknown heritage of significance is largely in the form of shieling huts along watercourses, with less significant archaeology in the form of sheepfolds. As the shieling huts are concentrated near water, these have been avoided as part of the watercourse buffers.

Site visits were undertaken to the watercourse crossings proposed as part of the Development and no evidence of shieling huts were noted at these locations. As such, the effect upon unknown archaeology of significance (medium sensitivity) is considered negligible and **not significant** in accordance with the EIA Regulations.

Other possible archaeology (e.g. sheepfolds and grouse butts) are more common features of little to no archaeological significance with any such features generally already recorded so that the potential is low to encounter unknown archaeology of significance. Any effect upon heritage of low sensitivity would be negligible and **not significant** in accordance with the EIA Regulations.

9.5.1.2 *Indirect Effects*

Any indirect effects on heritage assets during the construction phase will generally be limited to construction infrastructure (e.g. visual impact from cranes). Any effects would be short term and less than during the operational phase. As such, the operational phase of the Development is considered worst case and assessed in Section 9.5.2: Potential Operational Effects.

9.5.2 Potential Operational Effects

9.5.2.1 *Direct Effects*

There are no anticipated direct effects during operation out with the infrastructure area affected by construction. As such, no direct effects are anticipated during operation in addition to those considered in Section 9.5.1.1, which were assessed as being **not significant** in accordance with the EIA Regulations.

9.5.2.2 *Indirect Effects*

The assessment of indirect effects has considered designated and regionally significant sites and landscapes within the 10 km Study Area, as detailed in Tables 9.4 and 9.5. Where appropriate, these have been assessed in groups based upon proximity as detailed in the relevant sections below.

Scheduled Monuments

There are five Scheduled Monuments within the 10 km Study Area, all of which are assessed below and shown in Figure 9.3.

SM4532 Ceapmaol, settlement 300 m ENE of

This monument is located 9.8 km north of T12 as shown on Figure 9.3. It does not lie within the ZTV, as shown on Plate 1.

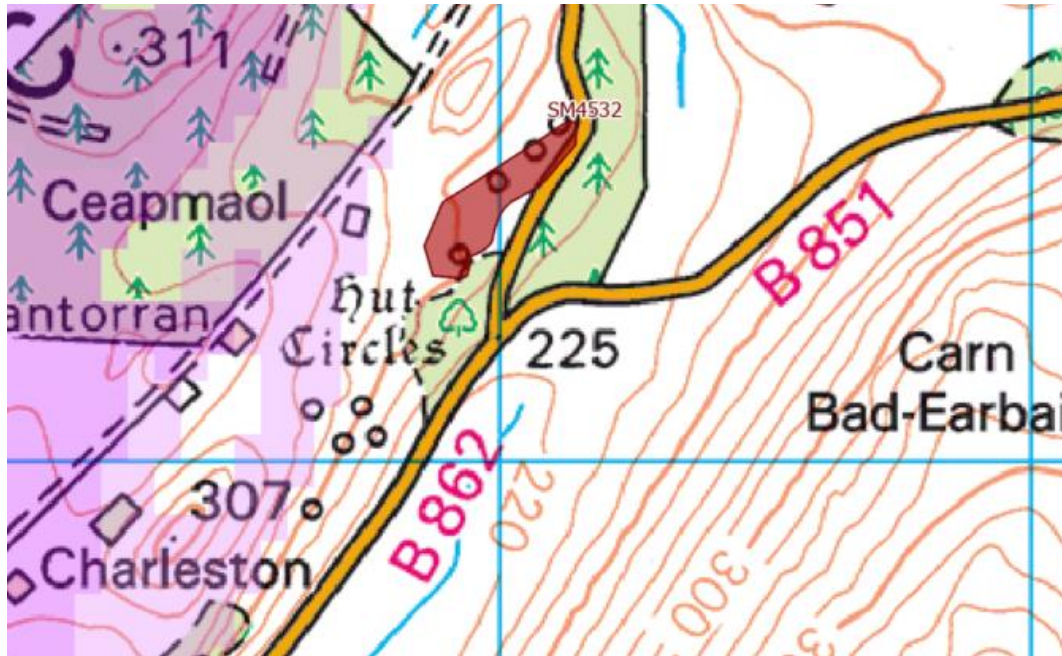


Plate 1: Close Up of Figure 9.3 showing the Scheduled Monument and ZTV (in purple)

The monument includes a settlement of four round houses, clearance cairns, and lynchets/field dykes representing cultivation plots. The monument is of national importance as an example of a non-nucleated settlement and field system containing clearance cairns, field walls and lynchets, and it has the potential to increase knowledge of the prehistoric house types and farming practices of the second and first millennia BC.

The settlement is on the southern slope of a small knoll with views looking across the lower elevations of the hills, generally east across the B851 and south-west down the B862 towards Loch Mhor and the SM4538 Farraline enclosure. The Development is located beyond this setting to the southwest past Loch Mhor and would not be visible from the monument. As such, there is no change to the setting.

As a Scheduled Monument of high sensitivity with no change to the asset, there is no effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

SM4536 Dell Farm, burial mounds 350 m

The Dell Farm burial mounds are located 7.5 km north-west of T16 as shown on Figure 9.3 and in Plate 2.

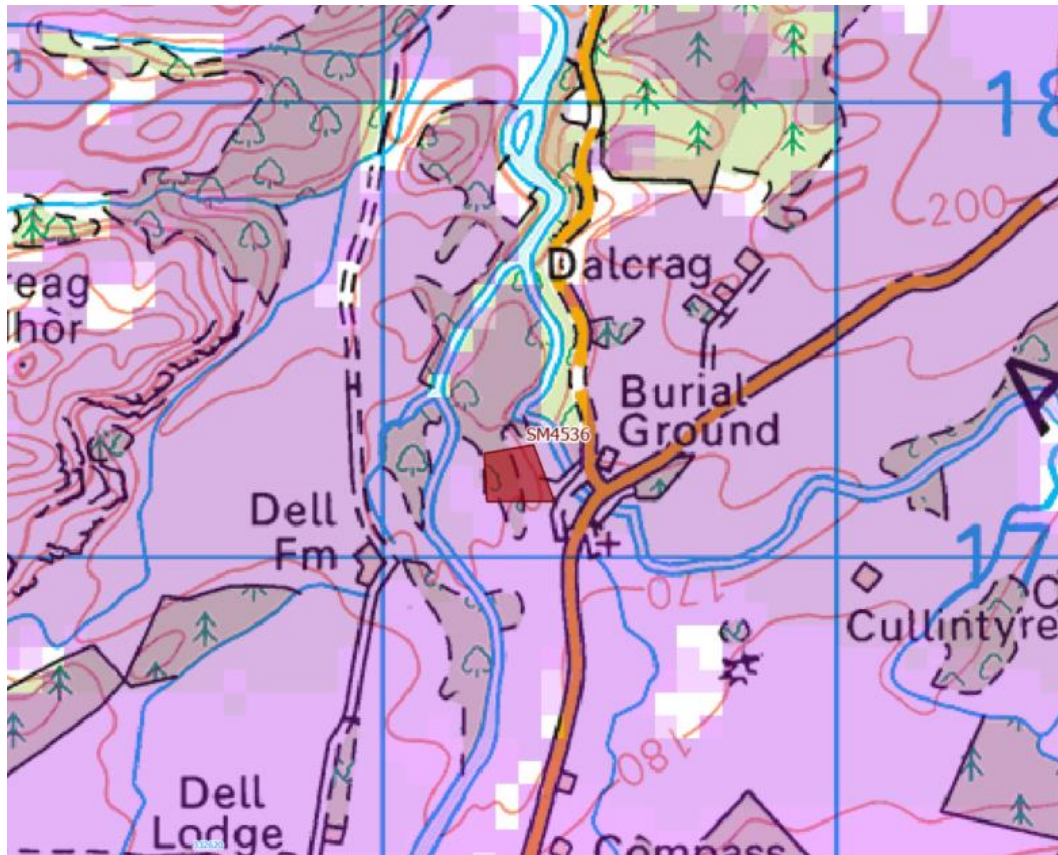


Plate 2: Close Up of Figure 9.3 showing the Scheduled Monument and ZTV (in purple)

The monument comprises at least seven burial mounds surrounded by shallow ditches and likely burial cists, all of the first millennium AD. In the same area, there are at least five small round cairns, as well as small enclosures and low banks, which may be the remains of later houses and domestic structures. The monument is of national importance as one of the few Pictish barrow and cairn cemeteries in Scotland, and because of its potential to increase understanding of burial customs in the first millennium AD.

The monument lies where two watercourses meet to form River Foyers which define its setting: River Fechlin, which flows from Loch Killin, and Allt an Loin, which flows from Loch Mhor and the River Gourag. The setting extends to the southern hills of Loch Ness which rise to the north of the monument and the foothills of the Monadhliaths to the south, as there are open views across the low-lying watercourses.

The Development lies beyond the foothills on the edge of the Monadhliaths with Operational Corriegarth Wind Farm visible on the distant horizon. Visually, the Development will appear as an extension of the Operational Corriegarth Wind Farm with a slight extension of turbine eastwards (Figure 9.5). The addition of the turbines into an area where turbines are already visible is a barely discernible change to setting at a distance of 7.5 km and does not alter the ability to understand, experience or appreciate the heritage assets, resulting in a negligible change.

As Scheduled Monuments of high sensitivity with a negligible change to setting, there is negligible effect as a result of the Development. This effect is assessed as **not significant** in accordance with the EIA Regulations.

SM4538: Farraline, enclosure 780 m NE of

The monument is located 7.9 km north of T13 as shown on Figure 9.3 and in Plate 3.

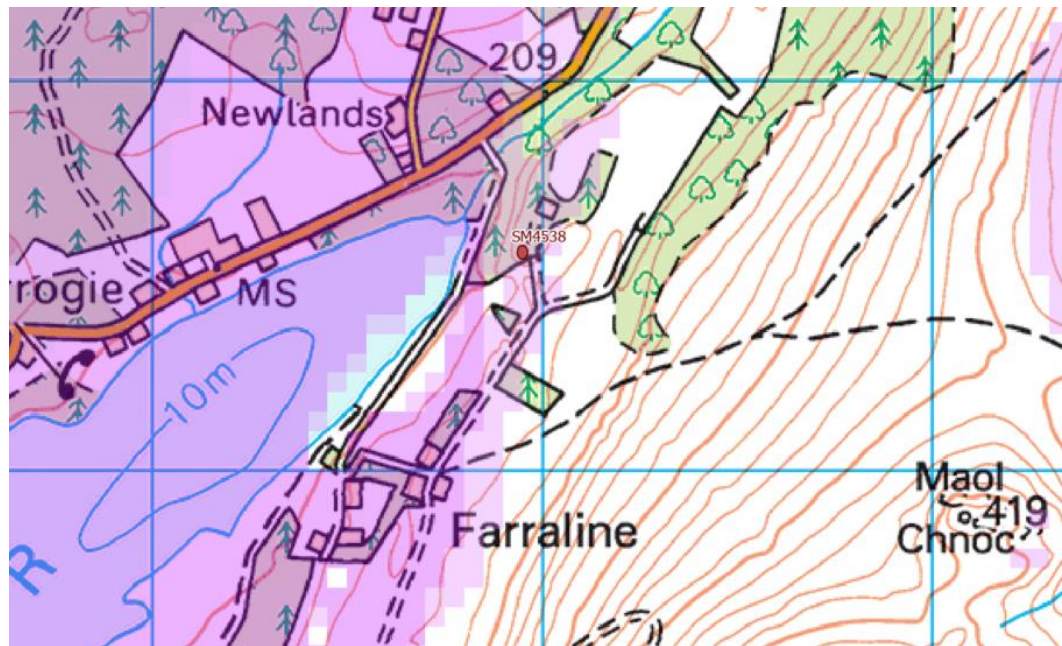


Plate 3: Close Up of Figure 9.3 showing the Scheduled Monument and ZTV (in purple)

The monument consists of a ring of contiguous boulders, the east edge of which has fallen down the side of the steep promontory on which the ring stands. The monument is of national importance as a rare example of a ritual enclosure, probably containing buried cremations and small cists. It is on a promontory which would have been clearly visible from a nearby group of substantial round houses (SM4532 Ceapmoal to the northeast) and is of further national importance for its potential contribution to understanding of burial practices in the second millennium BC.

The setting of the monument is defined by its elevated position with key views northeast towards Ceapmoal (SM4532) and southwest across the loch, which is emphasised by the higher elevations of the Monadhliaths to the south and southern ridge paralleling Loch Ness to the north. As such, the setting expands along the valley containing the B862, extending to the rising topography that defines the valley.

The Development would be located beyond this setting, at higher elevations within the Monadhliaths. The majority of the proposed turbines would be hidden behind the elevated ridgeline of the Monadhliaths, with the tips of four turbines visible in the gap between Creag a Chliabhain and Carn Choire Riabhaich (Figure 9.6). The proposed turbines would still be located below the highest point of that horizon view of Maol Chnóc, representing a marginal change to the distant landscape context, that is considered negligible.

As Scheduled Monuments of high sensitivity with a negligible change to the wider landscape, there is negligible effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

SM11500: Druimantorran, hut circles and field system 1525m NE and 1461m ENE of

The monument is located 10.4 km north of T12 as shown on Figure 9.3 and in Plate 4.

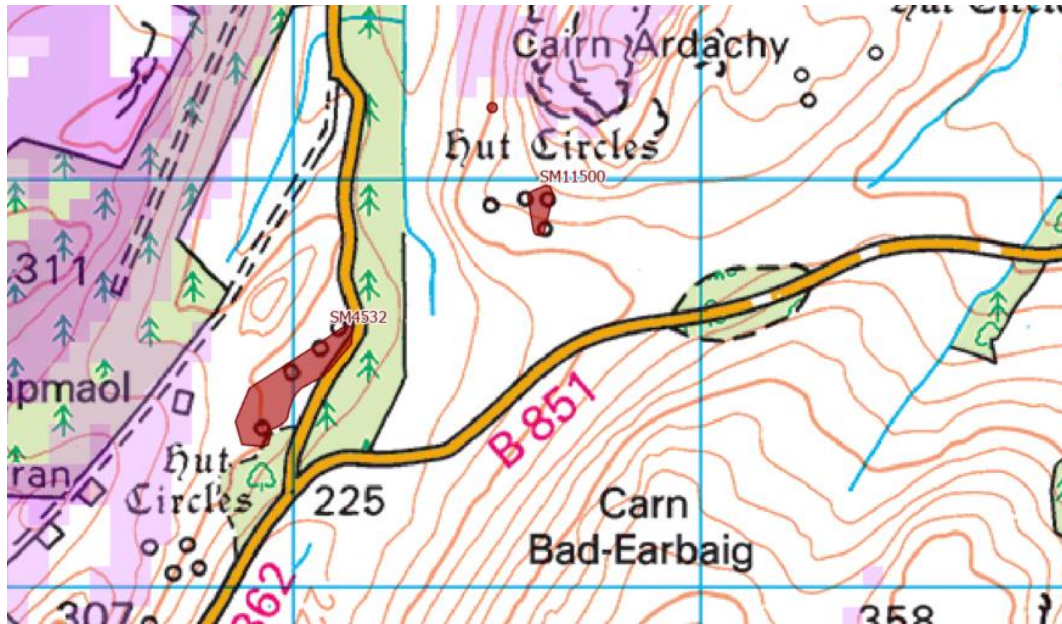


Plate 4: Close Up of Figure 9.3 showing the Scheduled Monument and ZTV (in purple)

The monument comprises the remains of four hut circles, the footings of the walls of roundhouses that are likely to be of Late Bronze Age or Iron Age date (the first or second millennium BC) together with associated field boundaries, including a gateway, and field clearance cairns. The remains are located on an area of gently sloping and relatively well-drained ground to the southwest of Cairn Ardachy.

The monument is on the south-westerly facing slope of a small knoll with views looking southwest down the B862 towards Loch Mhor. The Development is located beyond this setting to the southwest past Loch Mhor and is not within the ZTV. As such, the Development would not be visible from the monument, and there is no change to the setting.

As a Scheduled Monument of high sensitivity with no change to the asset, there is no effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

SM11884: Dun Deardail, forts 410 m and 520m ENE of Fasnagruig

The monument is located 10.2 km north of T13 as shown on Figure 9.3 and in Plate 5.



Plate 5: Close Up of Figure 9.3 showing the Scheduled Monument and ZTV (in purple)

The monument comprises two Iron-Age forts and associated outworks situated adjacent to and on the summit of a hill named Dun Deardail, east of Inverfarigaig Bridge on the south-east shore of Loch Ness. The north-easterly fort occupies the true summit knoll with the south-easterly fort occupying a second peak on the broad ridge below. A saddle separates the south-west fort from the north-east fort, up to which a natural access ramp leads from the River E. This ramp is the obvious place from which to make any ascent of the hill. The monument is of national importance because it is a pair of well-preserved Iron-Age forts with outworks, situated in a highly strategic location commanding views of an important coast-to-coast thoroughfare. Potential exists for the designated site to add to the understanding of the functional chronology of hill forts and outworks, and how this affects their morphology. The monument has the capacity to increase awareness of site intervisibility, as well as the potential to provide well-preserved archaeological deposits within the interior of each fort and the surrounding terraces enclosed by the outworks.

The setting of the forts is defined by its elevated location on the ridgeline to the south of Loch Ness, above the junction of the River Farigaig and Allt Mor. This position means that there are clear views up and down Loch Ness, with views north-east to the Moray Firth and south-west along the series of lochs leading to the Firth of Lorn. There is little connection to the Monadhliaths to the south-east, which form a more mountainous landscape background.

The Development is located on the northern edge of the Monadhliaths to the south, with Operational Corriegarth Wind Farm already visible on the distant horizon. Visually, the Development will appear as an extension of the Operational Corriegarth Wind Farm with a slight extension of turbines westwards (Figure 9.7). The addition of the turbines into an area where turbines are already visible is limited to the immediate west of the Operational Corriegarth Wind Farm, and is a barely discernible change to wider landscape context in this direction. This change does not alter the ability to understand, experience or appreciate the heritage assets, resulting in a negligible change.

As Scheduled Monuments of high sensitivity with a negligible change to setting, there is negligible effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

Listed Buildings

There are 29 Listed Buildings within the 10 km Study Area, 11 of which fall within the ZTV and are assessed below. Where appropriate, these have been assessed in groups based upon proximity as detailed in Table 9.5. Listed Buildings are shown in Figure 9.3.

Farraline Group: Category B Listed Farraline House (LB539) and Category B Farraline House, Walled Garden (LB540)

Farraline House and its walled garden are located 7.3 km north of T13 as shown on Figure 9.3 and in Plate 6.

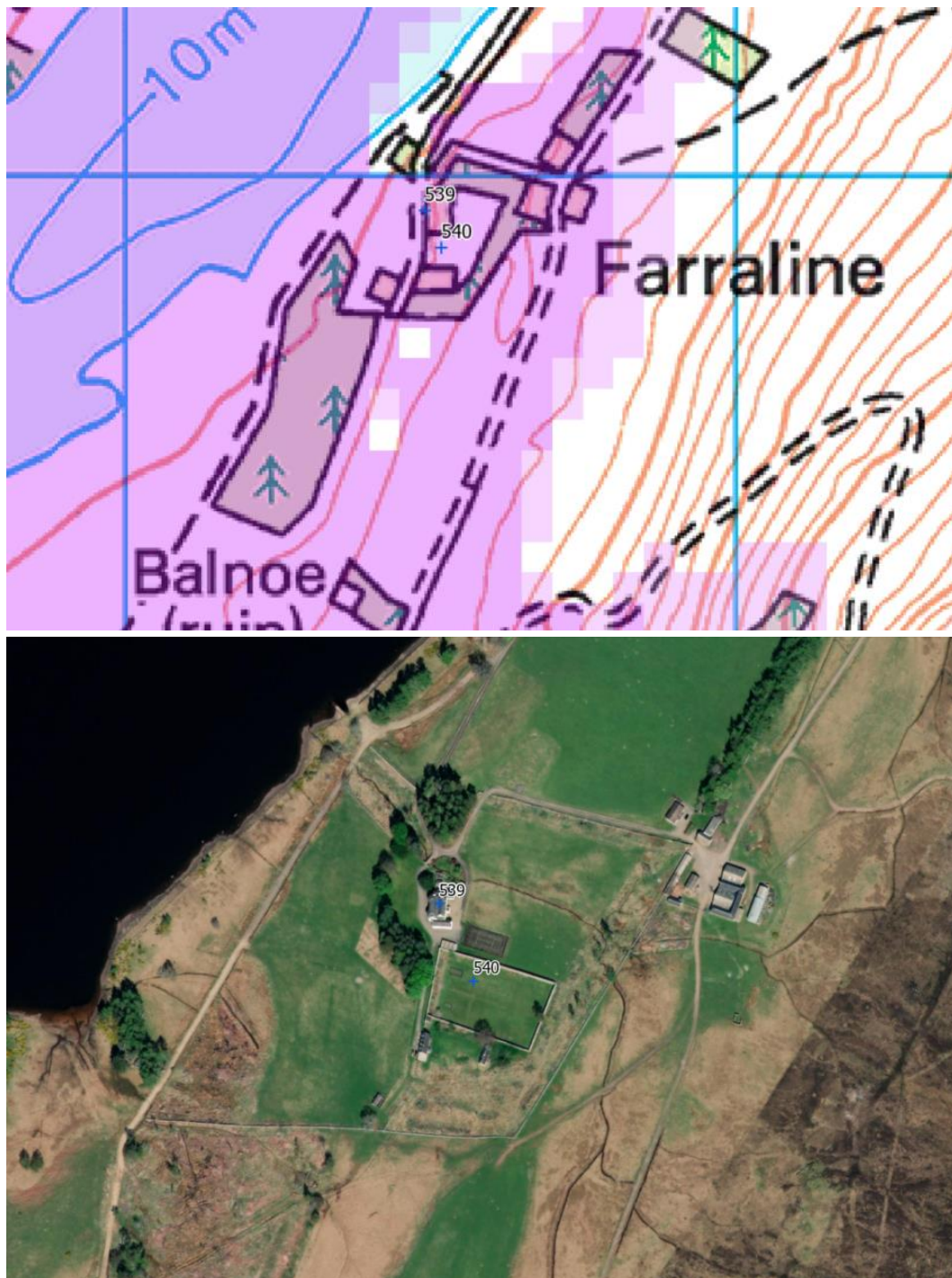


Plate 6: Close Up of Figure 9.3 showing the Listed Buildings and ZTV (in purple) at top, Satellite imagery on bottom

The house dates to the early 19th century and is the original property of Clan Fraser of Lovat. The house is a two storey, three-bay house that fronts an earlier dwelling. The house faces the north-west, overlooking Loch Mhor. The walled garden lies to the south and rear of the house. It is generally square-shaped, with an east/west alignment containing a semi-circular two-storey rubble tower to the east and a gazebo/garden room.

The setting of the house is the estate grounds as defined by Loch Mhor to the north, the improved pasture to the north-east extending to the B862 and to the south-east extending towards Aberchalder, and to the south extending to the hills of Meall Donn and Maol Chnoc. Key views are to the north-west looking across Loch Mhor.

The setting of the walled garden is the Farraline House, with the key alignment east/west so that the hill (Meall Donn) directly behind the tower to the east serves as the landscape backdrop and setting for the garden.

The Development will not be visible in key views to the north-west across Loch Mhor or when looking east towards Meall Donn. The tips of six turbines will be visible behind the ridgeline to the south where the tips of two of the Operational Corriegarth Wind Farm turbines are visible (Figure 9.8). Whilst this is not a key view, it does slightly intensify the visibility of turbines to the south. However, the visible turbines of the Development lie at the lower portion of the ridgeline between Creag a Chliabhain (to the south of Meall Donn) and Beinn Mheadhoin further to the south so that the increased visibility of turbines is in an area where turbines are already marginally visible and situated below the highest points of the hills within the ridgeline. The proposed turbines are therefore located within a saddle between the highest points of the adjacent hills so that the change to the setting is slight.

As Category B Listed Buildings are of medium sensitivity with a slight change to setting, there is a minor effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

Gorthleck Group: Category C Gorthleck House (LB541) and Category B Mains of Gorthleck (LB542)

Gorthleck House and Mains of Gorthleck are located 6.9 km and 7.2 km north of T13, respectively, on the north side of the B862, overlooking the narrow portion of the loch between Loch Mhor and Loch Farraline. They are shown on Figure 9.3 and in Plate 7.





Plate 7: Close Up of Figure 9.3 showing the Listed Buildings and ZTV (in purple) at top, Satellite imagery on bottom

Gorthleck Mains is a two-storey, five-bay house dating to early-mid 18th century and was the home of the Frasers of Gorthleck. Gorthleck house is a single storey with attack, three-bay house built circa 1830-40 by the Frasers of Gorleck.

The setting of the houses is the surrounding grounds and fields as defined by Loch Mhor to the south. These fields extend north towards Errogie and south towards Lochgarthside. Views from the houses are limited by woodland surrounding Gorthleck House and more dispersed woodland around Mains of Gorthleck so that only glimpsed views of the loch are available through the trees surrounding the houses and the B862.

The Development lies beyond this setting with the tips of six turbines theoretically visible along the ridgeline of the Monadhliaths to the south (Figure 9.9). Currently, the tips of three of the Operational Corriegarth Wind Farm turbines are visible from the open areas of setting, with only glimpsed visibility available through the treeline surrounding the house. As such, the increased visibility of turbines in open areas of setting where turbines are already marginally visible represents a negligible change to setting.

As Listed Buildings of medium sensitivity with a negligible change to setting, there is a negligible effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

Boleskine Group: Category B Boleskine Parish Church (LB1846) and Category B Boleskine Old Manse (LB1848)

Boleskine Parish Church and Old Manse are located 6.9 km north-west of T16 on the north side of the B862 and on a south-east facing slope above the River Gourag. They are shown on Figure 9.3 and in Plate 8.

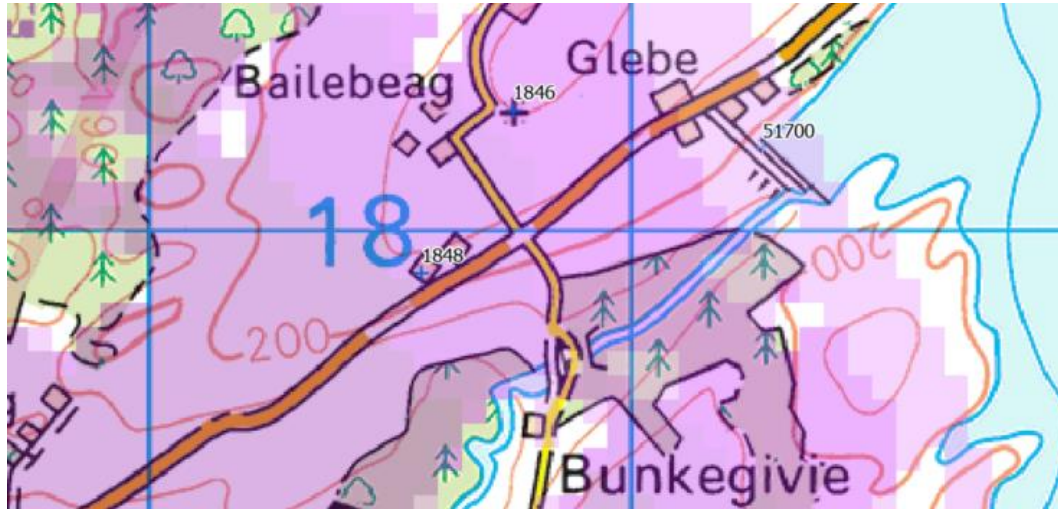


Plate 8: Close Up of Figure 9.3 showing the Listed Buildings and ZTV

Boleskine Parish Church dates to 1777 and is a long and narrow rectangular church with south facing six-bay principal elevation. The church lies within a square burial ground that surrounds the church on all sides. Boleskine Old Manse dates to 1773 and is a two storey, three-bay south facing house.

The church and manse are both south facing on the rising elevation to the north of River Gourag with the church lying at the top of the rise and the manse slightly below the rise. This elevated location defines its setting above the river. Both have clear views across the valley with the Operational Corriegarth Wind Farm visible (up to 18 turbines) extending out westwards from behind Carn na Saobhaidhe.

As shown in Figure 6.22, the Development would be visible within the same frame as the Operational Corriegarth Wind Farm, extending the visibility of turbines slightly further to the west. As such, the increased visibility of turbines in an area where turbines are already visible results in a change to the setting is slight.

As Category B Listed Buildings of medium sensitivity with a slight change to setting, there is a minor effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

Dell Lodge Group: Category B Dell Lodge and Rear Service Cottages (LB1860)

Dell Lodge is located 7.7 km west north-west of T16 on the north side of the B862 and on a west facing slope above the River Foyers. Dell Lodge shown on Figure 9.3 and in Plate 9.

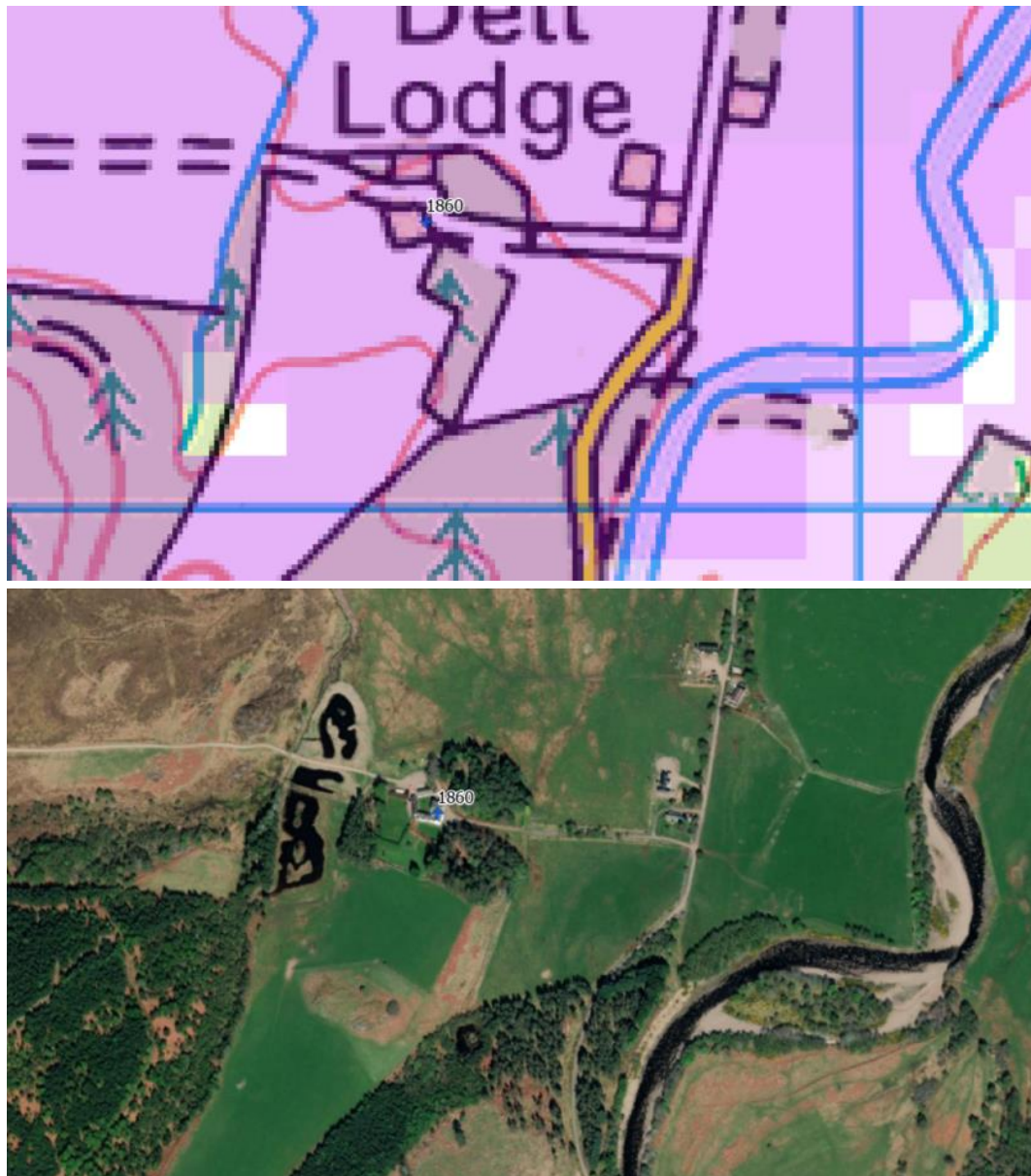


Plate 9: Close Up of Figure 9.3 showing the Listed Building and ZTV (in purple) at top, satellite imagery at bottom

Dell Lodge is a 18th century, two storey, five-bay east facing house associated with Andrew Fraser of Dell. The house has an unusual three storey iron extension, and a pair of late 19th century single storey service cottages abutting the rear wing of the main house to form U-plan court.

The immediate setting of the lodge is defined by the woodland that lies to the north and south of the drive which enables an easterly view down the drive across the river as well as the woodlands and loch to the rear of the gardens. Gaps within the woodland allow view to the north and south. The wider setting of the lodge encompasses the immediate gardens and consists of moorland to the west and pastoral land that extends north, south and east to the River Foyers.

The tips of 14 turbines of the Operational Corriegarth Wind Farm are currently theoretically visible, though largely screened by the woodland around the grounds of the house (Figure 9.10). The Development would introduce several more turbines, extending the view of turbine slightly further northwards on the ridgeline to the east as shown in Figure 9.10. The Development would be screened from the house itself due to the small blocks of woodland on either side of the drive, with glimpsed visibility similar to the Operational Corriegarth Wind Farm turbines. As such, the change to setting is negligible.

As a Listed Building of medium sensitivity with a negligible change to setting, there is a negligible effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

Garthbeg Group: Category B Garthbeg (LB1883)

Garthbeg is located 5.3 km north-west of T16, as shown on Figure 9.3 and in Plate 10.

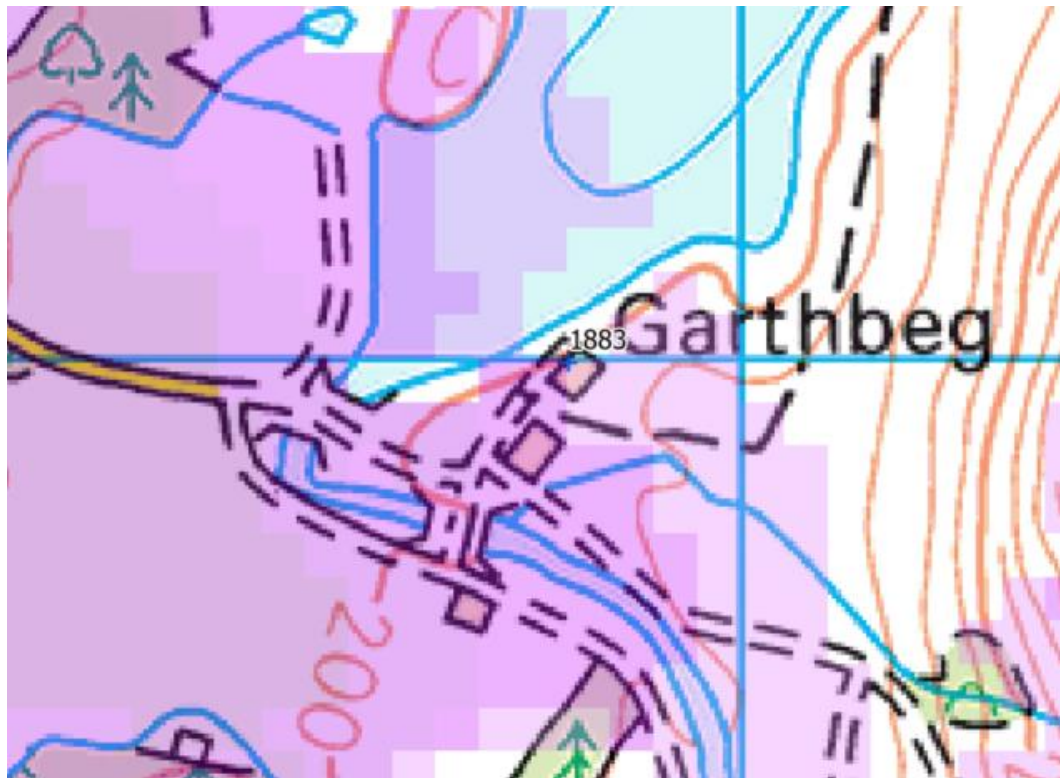


Plate 10: Close Up of Figure 9.3 showing the Listed Building and ZTV (in purple)

Garthbeg House dates to circa 1800 and is a symmetrical two storey, three bay house that faces Loch Mhor to the north.

The setting of the house is defined by its location between the River E and Loch Mhor with pasture to the north-east of the house and farm buildings to the south-west with further farm enclosures to the east. The setting extends to the areas of pasture to the south of the River E and up into the adjacent moorland where sheep graze. The house is fairly enclosed by topography and mature planting around the house with key view northwards across the loch.

The Development does not lie in key views across the loch to the north but rather lies beyond the adjacent moorland to the south and east, at higher elevations within the Monadhliaths. Currently, the tips of two turbines of the Operational Corriegarth Wind Farm visible in a saddle between Carn na Saobhaidhe and Carr Fliich-bhaid, and the Development will increase the number of tips visible from two to seven (Figure 9.11). This is a localised area between two hilltops; the increased visibility of turbines in this area where turbines are already visible results in a change to the setting that is negligible.

As a Listed Building of medium sensitivity with a negligible change to setting, there is a negligible effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

Errogie Group: Category C Errogie, Former United Free Church including boundary walls (LB50029) and Category C Errogie, Corrugated-Iron Cottage (LB50031)

The church and cottage in Errogie are located 8 km north of T13, as shown on Figure 9.3 and in Plate 11.

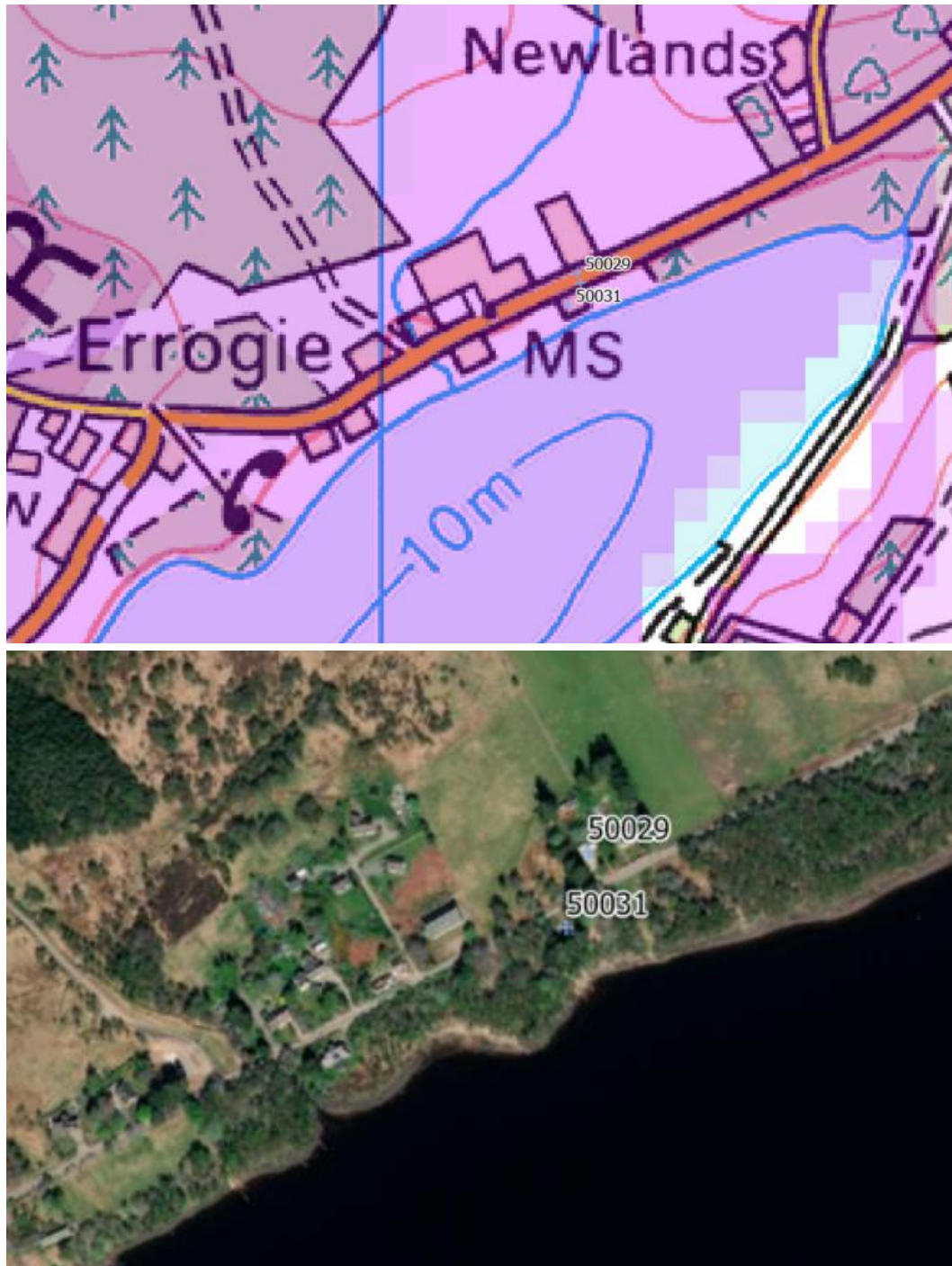


Plate 11: Close Up of Figure 9.3 showing the Listed Building and ZTV (in purple) at top, satellite imagery at bottom

The church is a rectangular plan corrugated iron clad church built in the early 1900s. The cottage is a modest single storey, two-bay iron clad timber framed cottage/bothy that

presumably dates to the latter part of the 19th or early 20th centuries. The church is located to the north of the B862 with the cottage generally opposite on the south side of the road; both face the road and are surrounded by woodland. Loch Mhor lies behind the cottage to the south, indicating it may have been a fishing bothy.

The setting of the church and cottage is the village of Errogie along the northern banks of Loch Mhor. Natural woodland lines the banks at this location and therefore long-distance views are generally obscured except when viewed directly from the open banks of the loch.

The Development is located to the south of this group, as part of a distant ridgeline of the Monadhliaths. The Development would not be visible from the church due to the woodland around the B862 and church itself. From the banks behind the bothy, the Operational Corriegarth Wind Farm has theoretical visibility of the tips (Figure 9.12); however, in actuality, these are not visible as the sightline is across the loch eastwards and views to the south are obscured by the irregular nature of the banks and woodland. The Development would increase the theoretical visibility of turbines in views to the south, those these would be obscured by the banks and woodland (Figure 9.12) so that any visibility is glimpsed so that the change is negligible.

As Listed Buildings of medium sensitivity with a negligible change to setting, there is a negligible effect as a result of the Development. This is assessed as **not-significant** in EIA Regulations.

Loch Mhor Dam: Category C Foyers Hydroelectric Power Scheme and Former Aluminium Smelter, Loch Mhor Dam (LB51700)

The Loch Mhor Dam is located at the south-western terminus of Loch Mhor with the River Gourag to the west, approximately 6.5 km north-west of T16, as shown on Figure 9.3 and in Plate 12.



Plate 12: Close Up of Figure 9.3 showing the Listed Building and ZTV

The Loch Mhor Dam dates to 1895-1896 and is part of the Foyers Hydroelectric Power Scheme, which is the earliest example of large-scale use of hydroelectric power in Scotland. The dam was likely designed by Cameron and Burnett (hotel architects) in partnership with the British Aluminium Company. The dam raised the level of two smaller lochs (Loch Garth and Loch Farraline) to create Loch Mhor, which provides water storage and flow regulation to Foyers.

The setting of the dam is the loch and River Gourag, with the rough moorland around the dam and residential properties to the north along the B862. Its placement in the landscape is functional rather than aesthetic, though the immediately adjacent moorland contributes to the setting as it retains its undeveloped, natural historic setting. When approaching the dam from the north, the surrounding rough moorland with Carn na Glaise Moire in the background retains the undeveloped historic setting; however, in views towards the south-west, human occupation is visible. This includes Garthbeg Farm, improved pasture and the road leading up to the Operational Corriegarth Wind Farm in the saddle containing the River E. In views to the north over the dam, the B862 is visible, along with residential properties and telegraph poles are visible so that it doesn't have the same sense of isolation as views southwards.

The Development is located to the north of the dam behind Carn na Glaise Moire and more distant hilltops (Carn Choire Riabhaic, Beinn Mheadhoin and Carn na Saobhaide), with two turbines visible to the right of the hilltops in the saddle containing the River E (Figure 9.13). This is a low point on the ridgeline which rises to either side of the saddle so that the turbine tips do not dominate the ridgeline but rather nestle in a small dip. The access road leading up to the Operational Corriegarth Wind Farm is visible within this dip so that the addition of the turbines within this saddle is not incongruous with modern development already visible in this direction. As such, the change to the setting is negligible.

As a Listed Building of medium sensitivity with a negligible change to setting, there is a negligible effect as a result of the Development. This is assessed as **not significant** in accordance with the EIA Regulations.

Operational Effects Summary

Table 9.7 summaries the operational effects as presented in Section 9.5.2.2.

Table 9.7: Operational Effects Summary

Designation Reference	Name	Sensitivity	Magnitude of Change	Significance of Effect
SM4532	Ceapmaol, settlement 300 m ENE of	High	No Change	Negligible and Not Significant
SM4536	Dell Farm, burial mounds 350 m NE of	High	Negligible	Negligible and Not Significant
SM4538	Farraline, enclosure 780 m NE of	High	Negligible	Negligible and Not Significant
SM11500	Druimantorran, hut circles and field	High	No Change	Negligible and Not Significant
SM11884	Dun Deardail, forts 410 m and 520m ENE of Fasnagruig	High	Negligible	Negligible and Not Significant
LB539 LB540	Farraline Group (Category B Listed Farraline House and Category B Listed Farraline House Walled Garden)	Medium	Slight	Minor and Not Significant
LB541 LB542	Gorthleck Group: Category C Gorthleck House and Category B Mains of Gorthleck	Medium	Negligible	Negligible and Not Significant

Designation Reference	Name	Sensitivity	Magnitude of Change	Significance of Effect
LB1845 LB1848	Boleskine Group: Category B Boleskine Parish Church and Category B Boleskine Old Manse	Medium	Slight	Minor and Not Significant
LB1860	Category B Dell Lodge and Rear Service Cottages	Medium	Negligible	Negligible and Not Significant
LB1883	Category B Garthbeg	Medium	Negligible	Negligible and Not Significant
LB50029 LB50031	Errogie Group: Category C Errogie, Former United Free Church including boundary walls and Category C Errogie, Corrugated-Iron Cottage	Medium	Negligible	Negligible and Not Significant
LB51700	Category C Foyers Hydroelectric Power Scheme and Former Aluminium Smelter, Loch Mhor Dam	Medium	Negligible	Negligible and Not Significant

9.5.3 Potential Decommissioning Effects

Decommissioning of the Development will involve similar processes to the construction effects but involve the dismantling and removal of the majority of the above ground infrastructure of the Development. As no direct effects upon any known features of cultural heritage interest are anticipated during construction, with the implementation of mitigation (as discussed in Section 9.6), no direct effects are likely from the decommissioning phase of the Development, assuming similar mitigation is implemented. Any effects arising from this phase are therefore considered to be not significant in terms of the EIA Regulations.

9.6 MITIGATION AND RESIDUAL EFFECTS

Known archaeological features have been avoided and no significant effects have been identified, therefore no mitigation is recommended.

The Core Study Area is characterised by upland moorland and the Operational Corriegarth Wind farm. Archaeological potential in the open moorland is low due to exposed nature and historic land use pattern characterised by transhumance with limited structures (i.e. shieling huts along watercourses). The greatest potential for unknown and unrecorded archaeology of significant is in proximity to the watercourses and most likely to be shieling huts; however, there was no visible sign of shielings at the proposed watercourse crossings associated with the Development so that this potential is low and not significant with no mitigation required.

No significant effect was identified in respect of potential effects upon the settings of features within the 10 km Study Area and, as such, no mitigation is proposed. Indirect visual effects upon cultural heritage features will continue throughout the operational phase of the Development; however, this effect is considered temporary, and reversible upon decommissioning.

9.7 CUMULATIVE EFFECT ASSESSMENT

This assessment considers the potential for significant cumulative effects to occur on the settings of cultural heritage features. This potential may arise from the addition of the Development to the landscape. The potential for a significant cumulative effect is considered likely to occur only within the zone where the ZTVs for each wind farm development, included in the cumulative effect assessment, would overlap within this range i.e. where each is theoretically simultaneously visible.

Although there are numerous wind farms in the wider area, only the wind farms that are currently within planning or consented and within 15 km of the Site were considered to have the potential for a significant cumulative effect as detailed in Table 9.5 in Section 9.3.9 and shown in Figure 9.4. Operational wind farms were considered as part of the existing baseline scenario so that any cumulative effect would be included in Section 9.5.2.

9.7.1 Dunmaglass and Aberarder

Dunmaglass is an operational wind farm located 8.5 km north-east of the Development with the consented Aberarder located adjacent to the north of Dunmaglass, as shown on Figure 9.4.

This creates two clusters of wind turbines along the northern edge of the Monadhliaths as shown on Figure 9.4. The potential for significant cumulative effects is most likely to occur between Corriegarth Cluster (i.e. Operational Corriegarth Wind Farm and the Development) and Dunmaglass/Aberarder cluster, where heritage assets lie in the combined ZTV and when assets become enclosed or dominated by views of turbines in multiple directions. There are no designated assets which lie between the Corriegarth cluster and Dunmaglass/Aberarder cluster.

The ZTV as shown on Figure 9.3 indicates limited visibility of the Development from heritage assets to the north-east, so that there is limited potential for both clusters to be visible from heritage assets at Abersky, Dunmaglass and Aberarder. Designated heritage assets, more generally to the north, are located along the B862 in Errogie (LB50029, LB50031), Farraline LB539, LB540, SM4538), Lochgarthside/Gorthleck (LB541, LB542), Boleskine (LB1846, LB1848, LB51700), and Garthbeg (LB1883). Where both clusters are visible, these would appear as two distinct separate clusters in the more distant landscape context where operational schemes are already visible, i.e. Corriegarth to the east and Dunmaglass to the north (see cumulative wirelines for Farraline in Figure 9.6 and Figure 9.8, Gorthleck in Figure 9.9, Garthbeg in Figure 9.11, and Errogie in Figure 9.12). The intensification of turbines within these existing clusters would not change the landscape baseline as turbine would already be visible with nominal extension in the field of view at the Corriegarth Cluster. As such, both of these discrete and separate clusters are part of a more distant upland landscape context and are distant enough from the closest heritage assets that they would not dominate or intrude upon any key sightlines, so that any cumulative landscape change is similar to that of the assets assessed in isolation which was of negligible and minor significance, and not significant in accordance with the EIA Regulations.

9.7.2 Stronelairg, Cloiche, Dell and Glenshero

Stronelairg is an operational wind farm located 11.3 km south-west of the Development with the consented Dell scheme located along its northern edge with Cloiche and Glenshero (in planning and at appeal, respectively) further surrounding it to the north, south and east as shown on Figure 9.4.

This creates two clusters of wind turbines along the northern edge of the Monadhliaths as shown on Figure 9.4. The potential for significant cumulative effects is most likely to

occur between the Corriegarth Cluster and Stronelairg/Cloiche/Dell/Glenshero Cluster, when assets become enclosed or dominated by views of turbines in multiple directions. There are no designated assets which lie between the Corriegarth cluster and Stronelairg/Cloiche/Dell/Glenshero cluster.

The ZTV as shown on Figure 9.3 indicates limited visibility of the Development from heritage assets to the south-west so that there is limited potential for both clusters to be visible from heritage assets to the west. Designated heritage assets to the west are located at Whitebridge and Boleskine along the B862 running through Stratherrick (LB1874, LB1875, LB1860, SM4536, LB1846, LB1848, LB51700). From Whitebridge (LB1874 and LB1974), the Corriegarth Cluster is not visible though both clusters may be visible from the other assets in Stratherrick (see cumulative wirelines for assets in Stratherrick provided in Figure 9.5, Figure 9.10, and Figure 9.13). Where visible, these would appear as two distinct separate clusters in the more distant landscape context where operational schemes are already visible, i.e. Corriegarth to the east and Stronelairg to the south. The intensification of turbines within these existing clusters would not change the landscape baseline as turbine would already be visible. As such, both of these clusters are part of a more distant upland landscape context and are distant enough from the closest heritage assets that they would not dominate or intrude upon any key sightlines, so that any cumulative landscape change is similar to that of the assets assessed in isolation which was of negligible and minor significance, and not significant in accordance with the EIA Regulations.

9.8 SUMMARY OF EFFECTS

Table 9.8 provides a summary of the effects detailed within this chapter.

Table 9.8 Summary of Effects

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
Known archaeological remains	Inadvertent encroachment into areas where archaeological features (largely grouse butts and screens) may survive	Not Significant	None	Not Significant
Unknown (buried) archaeological remains	Archaeological potential for unknown remains to survive is very low due to archaeological remains of significance being concentrated around waterways, with these areas protected by 50m watercourse buffers.	Not Significant	None	Not Significant

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
Operational Phase				
Non-Designated Heritage Assets	No direct effects during operation.	Not Significant	None	Not Significant
Designated Heritage Assets	No direct effects during operation.	Not Significant	None	Not Significant
Designated Heritage Assets	Indirect Effects of minor and negligible significance only.	Not Significant	No mitigation is proposed or considered practicable.	Not Significant
Decommissioning Phase				
Restoration of existing site conditions (visual)	None	No effect	None	None – Existing setting will be restored
Cumulative				
Dunmaglass and Aberarder	No significant effects to heritage assets with indirect effects of negligible / minor significance.	Not Significant	None	Not Significant
Stronelaig, Cloiche, Dell and Glenshero	No significant effects to heritage assets with indirect effects of negligible significance.	Not Significant	None	Not Significant

9.9 STATEMENT OF SIGNIFICANCE

Effects are considered to be significant for the purposes of the EIA Regulations where the effect is classified as being of 'major' or 'moderate' significance.

There are considered to be no significant direct effects likely upon known archaeological features within the Core Study Area, and there is low potential for damage to or destruction of unknown buried archaeological remains.

There are considered to be no significant indirect (settings) effects likely upon designated Cultural Heritage assets within the 10 km Study Area.

No significant cumulative indirect (setting effects) from the Development and other wind farm developments is likely. All cumulative effects are considered to be not significant.

10 NOISE

10.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) evaluates the effects of the Corriegarth 2 Wind Farm (the Development) on the acoustic environment of the area around the Development. This Chapter has been written by Michael Reid, Principal Acoustic Consultant at Arcus, who is a full member of the Institute of Acoustic (MIOA). The Chapter has been technically reviewed by Alan Moore MIOA, Senior Acoustic Consultant, and Stuart Davidson, Registered EIA Practitioner and Operational Director of Arcus.

This Chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Assessment of Potential Effects;
- Mitigation and Residual Effects;
- Cumulative Effect Assessment;
- Summary of Effects;
- Statement of Significance; and
- Glossary.

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a: Figures excluding LVIA:

- Figure 10.1: Construction Noise Receptors; and
- Figure 10.2: Cumulative Noise Contour Plot.

The following terms are used within this Chapter to describe the Development and various associated study areas:

- The Development: the whole physical process involved in the development of Corriegarth 2 Wind Farm, including wind farm construction, operation and decommissioning (i.e. not a piece of land or an area);
- The Site Boundary: the red line or application boundary as shown in Figure 1.2;
- The Site: the land within the Site Boundary available for turbine development and associated wind farm infrastructure; and
- Cumulative Assessment Study Area: the area defined by the orange shading within the purple 35 decibel (dB(A)) contour line shown in Figure 10.2.

10.2 LEGISLATION, POLICY AND GUIDANCE

10.2.1 Legislation

The following legislation is of relevance to the noise aspects of the Development:

- The Control of Pollution Act 1974 (CoPA 1974)¹; and
- The Environmental Protection Act 1990² (EPA 1990).

¹ UK Government (1974) The control of Pollution Act 1974, available at: <http://www.legislation.gov.uk/ukpga/1974/40> (accessed 07/09/2020)

² UK Government (1990) The Environmental Protection Act 1990. Available at: <http://www.legislation.gov.uk/ukpga/1990/43/contents> (accessed 07/09/2020)

10.2.1.1 The Control of Pollution Act 1974

CoPA 1974 provides Local Authorities with powers to control noise and vibration from construction sites.

Section 60 of the CoPA 1974 enables a Local Authority to serve a notice to persons carrying out construction work of its requirements for the control of site noise. This may specify plant or machinery that is or is not to be used; the hours during which construction work may be carried out; the level of noise or vibration that may be emitted; and provide for changes in circumstances. Appeal procedures are available.

Section 61 of the CoPA 1974 allows for those carrying out construction work to apply to the Local Authority in advance for consent to carry out the works. This is not mandatory, but is often advantageous for the developer, as once consent is issued, the Local Authority is no longer able to take action under Section 60 of CoPA 1974 or Section 80 of the EPA 1990, provided the works are carried out in accordance with the Section 61 consent. It does not, however, prevent nuisance action under Section 82 of the EPA 1990. The Application is expected to give as much detail as possible about the works to be carried out, the methods to be used, and the measures that will be taken to minimise noise and vibration.

10.2.1.2 The Environmental Protection Act 1990

The EPA 1990 specifies mandatory powers available to Local Authorities in respect of any noise that either constitutes or is likely to cause a statutory nuisance, which is also defined in the CoPA 1974. A duty is imposed on Local Authorities to carry out inspections to identify statutory nuisances, and to serve abatement notices against these. Procedures are also specified with regards to complaints from persons affected by a statutory nuisance.

10.2.2 Policy and Guidance

The following is a summary of the key policy and guidance of relevance to this Chapter.

10.2.2.1 Highland Council Local Development Plan Policy 67 – Renewable Energy Developments

Chapter 2 – Energy and Planning Policy of this EIA Report summarises all local planning policies applicable to the Development.

10.2.2.2 Construction Noise

Guidance relevant to the effects of noise and vibration during construction and decommissioning is provided by BS 5228³. This standard:

- Is published in two parts: Part 1 - Noise and Part 2 - Vibration;
- Refers to the need for the protection against noise and vibration of persons living and working in the vicinity of, and those working on construction and open sites;
- Recommends procedures for noise and vibration control in respect of construction operations;
- Stresses the importance of community relations, and states that early establishment and maintenance of these relations throughout site operations will go some way towards allaying people's concerns;
- Provides recommendations regarding the supervision, planning, preparation and execution of works, emphasising the need to consider noise at every stage of the operation;
- Describes methods of controlling noise at source and its spread; and

³ BS 5228:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites – Part 1: Noise and Part 2: Vibration

- Includes a discussion of noise control targets, and example criteria for the assessment of the significance of noise effects.

10.2.2.3 Operational Noise

The following guidance and information sources have been considered in the assessment of operational noise:

- The Scottish Government's web-based planning information on onshore wind turbines (last updated May 2014)⁴;
- Planning Advice Note 1/2011 (PAN 1/2011): Planning and Noise⁵;
- ETSU-R-97: The Assessment and Rating of Noise from Wind Farms⁶; and
- A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise⁷.

The Scottish Government's web-based planning information on onshore wind turbines

The Scottish Government's web-based information provides advice to Local Authorities on the planning issues associated with wind farm development. With respect to noise from wind farms, it refers to ETSU-R-97: The Assessment and Rating of Noise from Wind Farm and the Good Practice Guide.

It goes on to refer to PAN 1/2011 as providing advice on the role of the planning system in helping to prevent and limit the adverse effects of noise, and states that the associated Technical Advice Note (TAN) provides guidance which may assist in the technical evaluation of a noise assessment.

PAN 1/2011 promotes the principles of good acoustic design and the appropriate location of new potentially noisy development. The TAN offers advice on the assessment of noise impact and includes details of the legislation, technical standards and codes of practice appropriate to specific noise issues. Appendix 1 of the TAN: Assessment of Noise describes the use of ETSU-R-97 in the assessment of wind turbine noise.

ETSU-R-97

ETSU-R-97 provides a framework for the assessment and rating of noise from wind turbine installations. It is the standard for wind farm developments in the UK, and the methodology has therefore been adopted for the present assessment.

Both background noise and noise from wind turbines typically vary with wind speed. According to ETSU-R-97, wind farm noise assessments should therefore consider the site-specific relationship between wind speed and background noise, along with the particular noise emission characteristics of the proposed wind turbines.

ETSU-R-97 specifies the use of the LA_{90,10min} descriptor for both background and wind turbine noise. Therefore, unless otherwise specified, all references to noise levels within this Chapter relate to this descriptor. Similarly, all wind speeds referred to relate to a height of 10 metres (m) Above Ground Level (AGL) at the location of the Development, standardised in accordance with current good practice guidance.

The document recommends the application of external noise limits at the nearest noise sensitive properties, to protect outside amenity and prevent sleep disturbance inside dwellings. These limits take the form of a 5 dB margin above the prevailing background noise level, except where background noise levels are lower than certain thresholds,

⁴ Scottish Government (2014) Onshore Wind Turbines Planning Advice [Online] Available at: <https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/> (accessed 07/09/2020)

⁵ The Scottish Government 2011 Planning Advice Note Pan 1/2011 Planning and Noise and accompanying Technical Advice Note, 2011

⁶ ETSU 1996 ETSU-R-97 The Assessment and Rating of Noise from Wind Turbines, ETSU for the DTI, 1996

⁷ A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind turbine Noise, IOA, 2013.

where fixed lower limits apply. Separate limits apply for quiet daytime and night-time periods, as outlined below. The limits apply to the cumulative effects of all wind turbines that affect a particular location.

A 'simplified criterion' is also described which may be applicable where there are large separation distances between the proposed turbines and nearest noise-sensitive receptors. In such cases, a fixed limit of 35 dB, $L_{A90,10min}$ applies, without reference to background noise levels.

During daytime, the guidance specifies limits designed to protect the amenity of residents whilst within the external amenity areas of their properties. The limits are based on the prevailing background noise level for 'quiet daytime' periods, defined in ETSU-R-97 as:

- 18:00 – 23:00 every day; plus
- 13:00 – 18:00 on Saturday; and
- 07:00 – 18:00 on Sundays.

ETSU-R-97 recommends that the fixed lower noise limit for daytime should be set within the range 35 to 40 dB, $L_{A90,10min}$, with choice of value dependent on the following factors:

- i) The number of dwellings in the neighbourhood of the Development;
- ii) The effect of the noise limits on the number of kilo Watt hours (kWh) generated; and
- iii) The duration and level of exposure.

Different standards apply at night, where potential sleep disturbance is the primary concern rather than the requirement to protect outdoor amenity. Night-time is considered to be all periods between 23:00 and 07:00. A limit of 43 dB(A) is recommended at night at wind speeds or locations where the prevailing wind speed related night-time background noise level is lower than 38 dB(A). At other times, the limit of 5 dB above the prevailing wind speed-related background noise level applies. The value of night-time fixed lower limit was selected in order to ensure that internal noise levels remained below those considered to have the potential to cause sleep disturbance, taking account of the attenuation of noise when passing from outdoors to indoors, and making allowance for the presence of open windows.

Where the occupier of the property has a financial interest in the Development, ETSU-R-97 states that the fixed lower noise limit for both daytime and night-time can be increased to 45 dB(A) and that "...consideration should be given to increasing the permissible margin above background".

The IOA Good Practice Guide

The Good Practice Guide (GPG) was published by the Institute of Acoustics (IOA) in May 2013 and has been endorsed by the Scottish Government as current industry good practice. The GPG is supported by a suite of six Supplementary Guidance Notes (SGNs), published in 2014. The guide presents good practice in the application of the ETSU-R-97 assessment methodology at various stages of the assessment process. The recommendations provided in the GPG been followed throughout this assessment.

The GPG provides advice on the assessment of cumulative noise impact, detailing a number of possible cumulative scenarios and recommended approaches. Advice is also provided with regard to the geographical scope of a cumulative noise assessment, to determine the area within which a cumulative noise assessment is necessary.

Where a new noise source is introduced to a given scenario with a noise level which is predicted to be 10 dB or more below the existing level, the increase in the total noise level is considered to be negligible. On this basis, the necessary extents of a cumulative noise assessment can be determined. Paragraph 5.1.4 of the GPG states:

"If the proposed wind farm produces noise levels within 10 dB of any existing wind farm(s) at the same receptor location, then a cumulative noise impact assessment is necessary".

As noted in ETSU-R-97, noise from existing wind turbines should not form part of the background noise level from which noise limits for new wind energy developments are derived.

10.2.2.4 Low-Frequency Noise, Infrasound, Amplitude Modulation and Vibration

Low Frequency Noise

A study⁸, 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, but that complaints attributed to low frequency noise were in fact, possibly due to a phenomenon known as Amplitude Modulation (AM).

Infrasound

In February 2013, the Environmental Protection Authority of South Australia published the results of a study into infrasound levels near wind farms⁹. This study measured infrasound levels at urban locations, 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 wind farms; the results showed that there was no noticeable difference in infrasound levels whether the turbines were active or inactive.

Bowdler et al. (2009)¹⁰ concludes 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".

Amplitude Modulation

A study¹¹ was carried out on behalf of the Department for Business, Enterprise and Regulatory Reform (BERR) by the University of Salford, which investigated the incidence of noise complaints associated with wind farms and whether these were associated with AM. This report 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.

The study concluded that AM has occurred at only a small number of wind farms in the UK (4 of 133), 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 is not currently possible.

⁸ The measurement of low frequency noise at three UK wind farms, Hayes Mckenzie, The Department for Trade and Industry, URN 06/1412, 2006.

⁹ Environment Protection authority (2013) Infrasound levels near wind farms and in other environments [online] Available at: http://www.epa.sa.gov.au/xstd_files/Noise/Report/infrasound.pdf (accessed 07/09/2020)

¹⁰ Bowdler et al. (2009). Prediction and Assessment of Wind Turbine Noise: Agreement about relevant factors for noise assessment from wind energy projects. Acoustic Bulletin, Vol 34 No2 March/April 2009, Institute of Acoustics

¹¹ Research into aerodynamic modulation of wind turbine noise'. Report by University of Salford, The Department for Business, Enterprise and Regulatory Reform, URN 07/1235, July 2007.

This research was updated in 2013 by an in-depth study undertaken by Renewable UK¹², which 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 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.

In 2016, the IOA proposed a measurement technique¹³ to quantify the level of AM present in any particular sample of wind farm noise. This technique is supported by the Department of Business, Energy & Industrial Strategy (BEIS, formerly The Department of Energy & Climate Change) who have published guidance¹⁴, which follows on from 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. Notwithstanding this, the suggested outline planning condition is as yet unvalidated, remains in a draft form and would require site-specific legal advice on its appropriateness to a specific development.

Section 7.2.1 of the GPG therefore remains current, stating:

"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".

It is therefore not considered necessary to carry out a specific assessment of AM.

Vibration

Research undertaken by Snow¹⁵ found that levels of ground-borne vibration 100 m from the nearest wind turbine were significantly below criteria for 'critical working areas' given by British Standard BS 6472:1992 Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz), and were lower than limits specified for residential premises by an even greater margin.

Ground-borne vibration from wind turbines can be detected using sophisticated instruments several kilometres from the wind farm site as reported by Keele University¹⁶. This report clearly shows that, although detectable using highly sensitive instruments, the magnitude of the vibration is orders of magnitude below the human level of perception and does not pose any risk to human health.

Conclusion

No specific assessments of low frequency noise, infrasound, AM or vibration from the operation of the turbines is considered necessary, and therefore not considered any further.

¹² Renewable UK, 2013: Wind Turbine Amplitude Modulation: Research to Improve Understanding as to its Cause and Effects

¹³ Institute of Acoustics, (2016) A Method for Rating Amplitude Modulation in Wind Turbine Noise

¹⁴ BEIS, (2016), Review of the evidence on the response to amplitude modulation from wind turbines.

¹⁵ ETSU (1997), Low Frequency Noise and Vibrations Measurement at a Modern Wind Farm, prepared by D J Snow.

¹⁶ Microseismic and infrasound monitoring of low frequency noise and vibrations from wind farms: recommendations on the siting of wind farms in the vicinity of Eskdalemuir, Scotland". Keele University, 2005

10.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

10.3.1 Scoping Responses and Consultations

Consultation for this EIA Report topic was undertaken with the organisations shown in Table 10.1.

Table 10.1: Consultation Responses

Consultee	Highland Council, Environmental Health	
Type and Date	Scoping Response 6 April 2020	
Topic	Comment	Response
Operational Noise	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.	The stated guidance has been Followed, as discussed in Section 10.2.2.
Operational Noise	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.	As discussed in Section 10.3.6.2, the assessment has been carried out using the simplified criterion of 35 dB, LA90,10min.
Cumulative Noise	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.	The methodology used in the assessment of cumulative noise is discussed in Section 10.3.7.3 and follows the approach specified in the comment.
Cumulative Noise	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.	See Figure 10.2. No increase in operational noise limits for financial involvement has been applied.
Cumulative Noise	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	As the simplified criterion has been applied to cumulative noise, there is no requirement for this level of detail.

	reduction is made for a 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.	
Mitigation	The assessment should also include an outline for a mitigation scheme to be implemented should noise levels from the development be subsequently found to exceed consented levels.	Not required, see Section 10.6.2.
Background Noise Surveys	Background noise surveys 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 location 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 advised that the developer consults the Councils Environmental Health Officer at an early stage to discuss the proposed methodology.	As the simplified criterion has been met, no background noise survey is required.
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. However, where there is potential for disturbance from construction noise the application will need to include a noise assessment. A construction noise assessment will be required in the following circumstances: - • Where it is proposed to undertake work which is audible at the curtilage of any noise sensitive receptor, out with the hours Mon-Fri 8am to 7pm; Sat 8am to 1pm or • Where noise levels during the above periods are likely to exceed 75dB(A) for short term works or 55dB(A) for long term works. Both measurements to be taken as a 1hr LAeq at the curtilage of any noise sensitive receptor. (Generally, long term work is taken to be more than 6 months) If an assessment is submitted it should be carried out in accordance with BS 5228-1:2009 "Code of practice for noise and vibration control on construction and open sites – Part 1: Noise".	Construction noise is addressed in Section 10.3.2.1.

	Details of any mitigation measures should be provided including proposed hours of operation. 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. Attention should be given to construction traffic and the use of tonal reversing alarms	
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.	Amplitude Modulation is discussed in Section 10.2.2.4.
Noise Exposure	In addition to quantifying cumulative noise levels, the assessment must also consider any increase in noise exposure, for example where there is an existing house with a wind farm to the east and a new wind farm is proposed to the west. If the householder is likely to be subjected to wind turbine noise in all wind conditions with little or no respite then the development may be inappropriate even if recommended noise limits are met.	There are no properties where this situation could occur, see Figure 10.2. Scoped out in further consultation as detailed in this table below.
Consultee	Highland Council, Environmental Health	
Type and Date	Additional consultation response	
Topics	Comment	Response
Noise Exposure	Arcus asked: <i>"There is a significant distance between the development and the nearest noise-sensitive receptors (>3km). As such, the likelihood of any significant noise effects from the Development is very low. Likewise, there is a very low likelihood that the Development would result in any significant increase in exposure to wind turbine noise at any receptor.</i> <i>Would you be content to scope this aspect of your response out of the EIA Report? If not, could you please detail the locations for which you require additional information and what information you would require?"</i> EHO Responded: <i>"...yes that's fine to scope that side of things out for this development"</i>	As agreed, and stated within Section 10.3.3, this aspect has been scoped out.

10.3.2 Scope of Assessment

10.3.2.1 Construction Noise and Vibration

Noise and Vibration from Construction of Development Infrastructure

The distance between the closest turbine proposed as part of the Development and nearest noise receptor is approximately 3.8 km. The nearest Infrastructure element, other than access tracks is approximately 300 m from the nearest receptor (Laydown Area and Garthbeg Bungalow). However, the existing access track passes within 10 m of the nearest noise-sensitive receptor (see Figure 10.1). Also as shown in Figure 10.1, access track widening is required at points in the vicinity of Corriegarth Lodge and Keeper's Cottage. However, this is likely to be a short-term activity (less than one month) and therefore the effects of construction noise from track widening will not be significant.

It is unlikely that construction noise levels from the majority of elements of the Development, other than on-site haulage, would exceed the levels specified in the Council EHO Scoping Opinion (see Table 10.1). Furthermore, construction will not take place outside of those times specified in the Council EHO Scoping Opinion (Table 10.1). Therefore, other than as set out below, rather than assessing the effects of construction noise in terms of noise level, the mitigation measures outlined in Section 10.6.1 are to be adopted, which are considered to be Best Practice, as advocated in BS 5228 and not required to be assessed any further.

Due to the distance between Development infrastructure elements and receptors (approx. 300 m at the closest point, Garthbeg Bungalow to the Laydown Area), vibration from general construction activities will not be significant.

Construction Traffic Noise

Where existing traffic flows are present, the impact of noise from additional traffic is assessed in terms of the change in noise levels, which is dependent on the change in traffic numbers and composition (i.e. the proportion of HGV traffic).

The increase in traffic during construction is detailed in **Chapter 11: Traffic and Transport**. Table 11.19 shows that the worst-case increase in traffic at any of the traffic count points on the public road network is less than 100%. A 100% increase in traffic would result in a 3 dB increase in traffic noise. As 3 dB is the minimum typically perceptible change in noise levels, an increase in traffic flows of less than 100% will not result in a perceptible change in traffic noise levels. Construction traffic noise has therefore not been considered further for receptors located adjacent to the public road network.

Where there is no existing traffic, or existing traffic flows are very low, the significance of the effect is dependent on the absolute level of noise produced, rather than the change in traffic noise levels. Therefore, in the case of receptors located along the existing site access track, the effects of construction noise have been assessed using the method described in BS 5228 to calculate Haul Road noise levels. These are expressed as the equivalent continuous noise level during the working period (i.e. working day), which is similar to an average level across the whole of the working day (see Glossary).

Construction Traffic Vibration

Based on experience from other similar developments, vibration due to construction traffic is unlikely to be significant in terms of the EIA Regulations.

The numbers and types of vehicles associated with construction of the Development are unlikely to give rise to levels of vibration of sufficient magnitude to result in damage to buildings and will therefore not be significant in terms of the EIA Regulations.

10.3.2.2 Operational Noise

Typically, the operational noise assessment process comprises:

- i) Identification of potential receptors, i.e. residential properties and other potentially noise-sensitive locations;
- ii) Measurement of prevailing, wind speed dependant background noise levels at nearby properties;
- iii) Establishment of limits for acceptable levels of wind turbine noise, based on the measured background noise levels and appropriate fixed lower limits;
- iv) Prediction of the likely levels of wind turbine noise received at each receptor; and
- v) Comparison of the predicted levels with the noise limits.

Where the distance between the Development and nearest noise-sensitive receptors is such that predicted noise levels are no greater than the simplified criterion of 35 dB, $L_{A90,10min}$ defined in ETSU-R-97, the measurement of background noise is unnecessary, and the assessment is based on the simplified criterion.

10.3.2.3 Operational Noise Sources Other than Wind Turbines

Other sources of operational noise are limited to the on-site substation. The substation will be housed within a building, and located to the west of the turbines on the south slope of Carn na Saobhaidhe, approximately 3.8 km from the nearest residential dwelling. Given the low level of noise typically generated by such plant, combined with the attenuation afforded by the substation building and the large separation distance to residential dwellings, no significant substation noise effects are anticipated; substation noise has therefore not been considered further.

10.3.2.4 Decommissioning

Noise produced during decommissioning of the Development is likely to be of a similar nature to that during construction, although the duration of decommissioning will be shorter than that of construction. Any legislation, guidance or best practice relevant at the time of decommissioning would be complied with.

10.3.3 Elements Scoped Out of Assessment

The following elements have been scoped out of the assessment:

- Construction noise, other than construction haulage;
- Decommissioning noise;
- Low frequency noise;
- Infrasound;
- Amplitude Modulation;
- Vibration; and
- Operational noise from sources other than wind turbines.

10.3.4 Study Areas

The study area for the construction haulage noise assessment is shown in Figure 11.1.

The study area for the operational noise assessment has been defined in accordance with the GPG, is shown in Figure 10.2. It comprises the area where noise levels from the Development are predicted to be within 10 dB of, or 10 dB greater than, those from other relevant wind energy developments and the predicted cumulative wind farm noise level is at least 35 dB, $L_{A90,10min}$, i.e., the areas shaded orange which are also within the purple noise contour line.

10.3.5 Design Parameters

The GPG notes that most sites at planning stage will not have selected a preferred turbine, therefore a candidate turbine representative of a range of turbines should be selected to provide appropriate source noise levels. Once noise levels have been predicted at the potentially affected properties, compliance with noise limits can be assessed and design advice provided if compliance with the limits is considered unlikely.

The Nordex N133 4.8 MW turbine with a hub height of 83.5 m has been selected as the candidate turbine for this assessment. This assessment assumes the turbines are fitted with the serrated trailing edge (STE) blades, and operates at full power (Mode 0) at all times. The manufacturer's data excludes any margin for uncertainty, and as such an additional 2 dB has been included in the sound power levels in this assessment, as detailed in Table 10.2.

Table 10.2: Manufacturer's Noise Emission Data¹⁷ – Nordex N133 4.8 MW, 83.5 m Hub Height

	Standardised 10 m Wind Speed, ms ⁻¹								
	4	5	6	7	8	9	10	11	12
	Sound Power Level, dB(A)								
Sound Power Level, dB LWA, Mode 0	94.2	99.7	103.9	104.5	104.5	104.5	104.5	104.5	104.5
Sound Power Level, dB, LWA, inc. 2 dB allowance for uncertainty	96.2	101.7	105.9	106.5	106.5	106.5	106.5	106.5	106.5

The octave-band frequency spectrum at the wind speed for which the maximum sound power level is achieved (7 ms⁻¹ @ 10 m) is detailed in Table 10.3.

Table 10.3: Octave-band Spectra¹⁸

	Octave-band Centre Frequency, f, Hz							
	63	125	250	500	1000	2000	4000	8000
	Octave-band Sound Power Level, dB, L _{WA,f}							
Sound Power Level, dB, LWA	88.9	94.6	96.9	97.7	99.5	100.0	97.7	87.1
Sound Power Level, dB, LWA, Scaled to 106.5 dB(A)	89.4	95.1	97.4	98.2	100.0	100.5	98.2	87.6

10.3.6 Baseline Survey Methodology

10.3.6.1 Receptor Identification

Potential noise-sensitive receptors have been identified using Ordnance Survey MasterMap AddressBase, a database which combines the locations of buildings and other features from large-scale digital mapping with the Royal Mail's address database, along with aerial photography.

¹⁷ Nordex, Noise levels, Power curves, Thrust curves, Nordex N133/4.8, F008_272_A13_EN Revision 02, 2020-01-31

¹⁸ Nordex, Octave sound power levels, Nordex N133/4.8, F008_272_A19_IN Revision 01, 2018-07-24

10.3.6.2 Baseline Noise Survey

As cumulative predicted noise levels including the Development (as shown in Figure 10.2) would not exceed the simplified criteria of 35 dB(A), no baseline noise measurements are required.

10.3.7 Methodology for the Assessment of Effects

10.3.7.1 Construction Noise

As stated above, the assessment of construction noise has been limited to the effects of haulage at receptors located along the existing site access track.

Predicted traffic flow data presented in Figure 11.3: *Programme of Vehicle Movements* has also been used to model the effects of predicted HGV numbers using the existing on-site access track and public road close to the site entrance, using the 'Haul Road' methodology described in BS 5228. Facade noise levels have been calculated for the average daily flow (42 HGV vehicle movements) in the worst-case months (months 6 – 8) of the construction programme, as shown in Figure 11.3.

10.3.7.2 Operational Noise

The significance of the potential effects of the Development has been classified by professional consideration of the sensitivity of the receptor and the magnitude of the potential effect.

The acceptable limits for wind turbine operational noise are clearly defined in ETSU R 97, the methodology for assessment of wind turbine noise recommended by Government guidance. Therefore, this assessment determines whether the calculated immission levels at nearby noise-sensitive receptors lie below the noise limits derived in accordance with ETSU-R-97. Where the noise immission levels at noise-sensitive receptors are shown to be below derived noise limits, the effect is considered to be not significant in terms of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 as amended¹⁹ (the EIA Regulations).

As such, the approach to assessment followed in other technical chapters within this EIA Report is not applicable to the effects of noise and effects are not considered in terms of their magnitude and the sensitivity of receptors as these factors are implicit in the limits defined by ETSU-R-97.

Operational Noise Predictions

Noise predictions have been made using SoundPLAN software (v8.1), which implements the ISO 9613-2²⁰ methodology and takes account of the specific data and parameters recommended in the GPG, as summarised below:

- The turbine sound power levels should be stated and these should include an appropriate allowance for measurement uncertainty. If the data provided contains no allowance for measurement uncertainty, or uncertainties are not stated, an additional 2 dB should be included;
- Atmospheric absorption should be calculated based on conditions of 10°C and 70% relative humidity;
- The ground factor assumed should be G=0.5 (mixed ground) except in urban areas or where noise propagates across large bodies of water, where G=0 (hard ground) should be assumed;

¹⁹ Scottish Government (2017) Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 as amended

Available at: <https://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 07/09/2020)

²⁰ ISO 9613-2:1996 Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation

- A receiver height of 4.0 m should be assumed;
- Barrier attenuation should not be included, unless there is no line of sight from the receptor, in which case a 2 dB barrier effect may be included;
- An additional 3 dB should be added to noise immission levels at properties located across a valley or with heavily concave ground between the receptor location and the wind turbine(s)²¹; and
- The predicted noise levels ($L_{Aeq,t}$) should be converted to the required $L_{A90,10min}$ by subtracting 2 dB.

ISO 9613-2 provides a prediction of noise levels likely to occur under worst-case conditions; those favourable to the propagation of sound, i.e., down-wind or under a moderate, ground-based temperature inversion as often occurs at night (often referred to as stable atmospheric conditions). The specific measures recommended in the GPG have been shown to provide good correlation with levels of wind turbine noise measured at operational wind farms^{22,23}.

10.3.7.3 Cumulative Operational Noise

Table 10.4 (overleaf) details the other wind energy developments included in the cumulative noise assessment. The information on each development has been obtained from The Highland Council's online wind energy database (updated January 2020) and the list of cumulative developments contained in Table 6.8 of **Chapter 6: Landscape and Visual Amenity** of this EIA Report.

²¹ Equation to determine concave ground as presented in Section 4.3.9 of the GPG.

²² Bullmore et al. (2009). Wind Farm Noise Predictions and Comparison with Measurements, Third International Meeting on Wind Turbine Noise, Aalborg, Denmark 17 – 19 June 2009.

²³ Cooper & Evans (2013). Effects of different meteorological conditions on wind turbine noise.

Table 10.4: Cumulative Developments

Name	Planning Reference	Status	Hub Height (m)	Rotor Diameter (m)	Turbine Type	Planning Conditions / Headroom	Sound Power Level Modelled, dB(A) ²⁴
2km SE Of Easter Aberchalder	12/02927/FUL	Constructed	30	33.2	Windflow 500	No noise limit specified in planning conditions.	108.3 + 2 dB(A) for significant headroom
Aberarder	15/00737/FUL	Approved	70.85	117	Vestas V117 3MW	No noise limit specified in planning conditions.	108.0 + 2 dB(A) for significant headroom
Corriegarth (the Operational Corriegarth Wind Farm)	13/02456/S36	Constructed	78.3	82	Enercon E82 2.5 MW	No noise limit specified in planning conditions.	103. 0+ 2 dB(A) for significant headroom
Dell	14/02879/FUL	Approved	80	90	Vestas V90 3 MW	Planning condition specifying simplified 35 dB(A) limit, significant headroom.	109.0 + 2 dB(A) for significant headroom
Dumnaglass	05/00217/S36IN	Constructed	68.5	101	Siemens 3MW	Planning condition specifying simplified 35 dB(A) limit, significant headroom.	109.0 + 2 dB(A) for significant headroom
Stronelaig	12/02560/S36	Constructed	76.5 / 69	117 / 112	Vestas V117 / 112	Planning condition specifying simplified 35 dB(A) limit, significant headroom.	108.0 + 2 dB(A) for significant headroom
Cloiche	20/01796/S36	Application	82	138	GE 3.8-130 (candidate from EIAR Noise Chapter)	Noise Chapter of EIA Report shows significant headroom against the noise limits proposed therein.	109.0 + 2 dB(A) for significant headroom.

²⁴ Quoted values include appropriate additions for uncertainty in accordance with GPG.

10.3.7.4 Assessment Criteria (Noise Limits)

Construction Noise

In accordance with the recommendations of BS 5228, a significance threshold of 65 dB, $L_{Aeq,day}$ has been applied in relation to construction haulage noise.

Operational Noise

The ETSU-R-97 simplified criterion has been applied to the assessment of operational noise, namely 35 dB, $L_{A90,10min}$ at 10 m standardised wind speeds up to 10 ms^{-1} at all receptors.

10.3.8 Assessment Limitations

No limitations have been identified that could potentially affect the outcome of the assessment.

10.3.9 Embedded Mitigation

10.3.9.1 Construction Noise

On-site concrete batching plant will be employed during the construction of turbine foundations, rather than importing ready-mix concrete, in order to reduce traffic numbers and therefore associated haulage noise levels, avoiding a potential significant adverse effect. The use of the existing site access traffic reduces construction traffic by reducing the amount of material that is required to be imported for track construction, and therefore reduces the potential impact of construction traffic noise.

10.3.9.2 Operational Noise

Due to separation distances, no embedded mitigation was necessary for operational noise effects.

10.4 BASELINE CONDITIONS

10.4.1 Construction Noise

Figure 10.1 shows the location of potential noise-sensitive receptors located along the on-site access track. These receptors are detailed in Table 10.4.

Table 10.4: Potential Construction Noise Receptors

Name	Eastings	Northings
Corriegarth Lodge	250841	817086
Garthbeg Bungalow	251693	816724
Garthbeg	251796	816981
Keepers Cottage	250744	817148

10.4.2 Operational Noise

Figure 10.2 shows the locations of potential operational noise receptors.

10.5 ASSESSMENT OF POTENTIAL EFFECTS

10.5.1 Construction Noise and Vibration

Table 10.5 details the predicted construction haulage noise levels for an average day during the worst-case months of construction at each of the potential receptors listed in

Table 10.4 and identified in Figure 10.1. Levels greater than the 65 dB(A) threshold of significance are indicated in **bold text**.

Table 10.5: Predicted Construction Haulage Noise Levels

	Predicted Construction Noise Level due to Haulage, dB L _{Aeq,day}
Corriegarth Lodge	54
Garthbeg Bungalow	69
Garthbeg	46
Keepers Cottage	50

As can be seen from Table 10.5, the 65 dB(A) threshold would be exceeded during the worst-case months 6 – 8 at Garthbeg Bungalow, an effect that is **significant** in terms of the EIA Regulations.

10.5.2 Operational Noise

As can be seen from Figure 10.1, no noise-sensitive receptors are located within the Study Area, as defined in 10.3.4. The Development will therefore comply with the requirements of ETSU-R-97, and operational noise effects are assessed as **not significant** in terms of the EIA Regulations.

10.6 MITIGATION AND RESIDUAL EFFECTS

10.6.1 Construction Noise and Vibration

Mitigation for construction traffic noise will be offered to the residents of Garthbeg Bungalow, in the form of temporary noise control barriers installed at the boundary of their garden adjacent to the site access track. These are likely to reduce traffic noise levels by between 5 and 10 dB and would therefore result in residual effects which are **not significant**.

The good practice measures detailed below will be implemented to manage the effects of noise and vibration during construction operations, and will be required of all contractors:

- Operations shall be limited to times agreed with the Highland Council;
- Deliveries of turbine components, plant and materials by HGV to site shall only take place by designated routes and within times agreed with the Council;
- The site contractors shall be required to employ the best practicable means of reducing noise emissions from plant, machinery and construction activities, as advocated in BS 5228;
- Where practicable, the work programme will be phased, which would help to reduce the combined effects arising from several noisy operations;
- Where necessary and practicable, noise from fixed plant and equipment will be contained within suitable acoustic enclosures or behind acoustic screens;
- All sub-contractors appointed by the main contractor will be formally and legally obliged, and required through contract, to comply with all environmental noise conditions;
- Where practicable, night-time working will not be carried out. Local residents shall be notified in advance of any night-time construction activities likely to generate significant noise levels, e.g., abnormal load movement; and
- Any plant and equipment normally required for operation at night (23:00 - 07:00), e.g. generators or dewatering pumps, shall be silenced or suitably shielded to ensure that the night-time lower threshold of 45 dB, L_{Aeq,night} shall not be exceeded at the nearest noise-sensitive receptors.

Application of the above measures to manage construction noise will ensure that effects are minimised as far as is reasonably practicable and that the construction process is operated in compliance with the relevant legislation.

10.6.2 Operational Noise

No specific mitigation is required for operational noise. Residual effects are as previously assessed, i.e. **not significant** in terms of the EIA Regulations.

10.7 CUMULATIVE EFFECT ASSESSMENT

Where cumulative increases in traffic flows of more than 100% are identified in Chapter 11, Table 11.21, there is potential for increased traffic noise to be **significant**. This applies to the B851 and B862 between the A9 and site entrance (See Figure 11.1) and is subject to the assumptions detailed in Section 11.7 of Chapter 11, which also states:

"The likelihood of all of the identified developments receiving planning consent which coincides with construction of the Development is considered low. In the event that a number of the identified developments are scheduled to be constructed simultaneously, it is assumed that the respective TMPs would be agreed in consultation to ensure that the concrete pouring days would not coincide and generally to minimise disruption, furthermore a number of the identified cumulative developments may route construction traffic via alternative routes. For these reasons the likely impact is expected to be significantly lower than stated in Table 11.21."

Likewise, mitigation in the form of appropriate management of the traffic impacts of any developments which will undergo simultaneous construction would result in residual impacts which are **not significant** in terms of the EIA Regulations.

In accordance with ETSU-R-97 and the GPG, cumulative operational noise effects are included in the assessment of operational noise effects presented at 10.5.2 and are **not significant** in terms of the EIA Regulations.

10.8 SUMMARY OF EFFECTS

Table 10.7 provides a summary of the effects detailed within this chapter.

Table 10.7 Summary of Effects

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
Garthbeg Bungalow	Haulage noise, months 6 - 8	Significant	Temporary noise control barriers	Not Significant
Receptor on B851 and B862 between A9 and Site Entrance	Cumulative construction traffic noise	Potentially Significant	Construction unlikely to occur simultaneously, management of traffic from and construction which does occur at the same time.	Not Significant
Operational Phase				
All noise-sensitive receptors	Operational noise	Not significant	None required	Not Significant
All noise-sensitive receptors	Cumulative operational noise	Not significant	None required	Not Significant

10.9 STATEMENT OF SIGNIFICANCE

Significant effects have been identified during the construction phase of the Development, resulting from noise due to haulage traffic.

Cumulative construction traffic noise could also be significant if construction of several developments coincides, however this is unlikely to occur and would be managed through the agreement of traffic management plans for each development simultaneously under construction to minimise the impacts of traffic.

Operational noise has been assessed as not significant, both individually and cumulatively.

10.10 GLOSSARY

AGL: Above Ground Level

Background Noise: The background noise level is the underlying level of noise present at a particular location for the majority (usually 90%) of a period of time. As such it excludes any short-duration noises, such as individual passing cars (but not continuous traffic), dogs barking or passers-by. Sources of background noise typically include such things as wind noise, traffic and continuously operating machinery (e.g. air conditioning or generators).

Decibel (dB): The decibel is the basic unit of noise measurement. It relates to the cyclical changes in air pressure created by the sound (Sound Pressure Level) and operates on a logarithmic scale, ranging upwards from 0 dB. 0 dB is equivalent to the normal threshold of human hearing at a frequency of 1000 Hz. Each increase of 3 dB on the scale represents a doubling in the Sound Pressure Level, and is typically the minimum noticeable change in sound level under normal listening conditions. For example, while an increase in noise level from 32 dB to 35 dB represents a doubling in sound pressure level, this change would only just be noticeable to the majority of listeners.

dB(A): Environmental noise levels are usually discussed in terms of dB(A). This is known as the A-weighted sound pressure level, and indicates that a correction factor has been applied, which corresponds to the human ear's response to sound across the range of audible frequencies. The ear is most sensitive in the middle range of frequencies (around 1000-3000 Hertz (Hz)), and less sensitive at lower and higher frequencies. The A-weighted noise level is derived by analysing the level of a sound at a range of frequencies and applying a specific correction factor for each frequency before calculating the overall level. In practice this is carried out automatically within noise measuring equipment by the use of electronic filters, which adjust the frequency response of the instrument to mimic that of the ear.

Frequency: The frequency of a sound is equivalent to its pitch in musical terms. The units of frequency are Hertz (Hz), which represents the number of cycles (vibrations) per second.

Noise Emission: The sound power level emitted from a given source.

Noise Immission: The sound pressure level detected at a given location (e.g. nearest dwelling).

LA90,t: This term is used to represent the A-weighted sound pressure level that is exceeded for 90% of a period of time, t. This is used as a measure of the background noise level.

LAeq,t: This term is known as the A-weighted equivalent continuous sound pressure level for a period of time, t. It is similar to an average, and represents the sound pressure level of a steady, continuous noise which has the same energy as the actual measured noise.

Low-frequency noise: Noise at the lower end of the range of audible frequencies (20 Hz – 20 kHz). Usually refers to noise below 250 Hz. Should not be confused with infrasound, which is sound below the lowest normally audible frequency, 20 Hz.

Noise: Unwanted sound. May refer to both natural (e.g. wind, birdsong etc.) and artificial sounds (e.g. traffic, noise from wind turbines, etc.).

Noise-sensitive receptors: Locations that may potentially be adversely affected by the addition of a new source of noise (typically residential dwellings).

Sound power (W): The sound energy radiated per unit time by a sound source, measured in watts (W).

Sound power level (L_w): Sound power measured on the decibel scale, relative to a reference value (W_0) of 10^{-12} W.

Sound pressure (P): The fluctuations in atmospheric pressure relative to atmospheric pressure, measured in Pascals (Pa).

Sound pressure level (L_p): Sound pressure measured on the decibel scale, relative to a sound pressure of 2×10^{-5} Pa.

Tonal element: A characteristic of a sound where the sound pressure level in a particular frequency range is greater than in those frequency ranges immediately above higher or lower. This would be perceived as a humming or whining sound.

Vibration: In this context, refers to vibration carried in structures such as the ground or buildings, rather than airborne noise.

11 TRAFFIC AND TRANSPORT

11.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) evaluates the effects of the Corriegarth 2 Wind Farm (the Development) on Traffic & Transportation resources with the locality of the Development and on the wider road network. This assessment was undertaken by Kenneth Laing at Arcus Consultancy Services Limited (Arcus) and technically reviewed by Tomos ap Tomos, Technical Director of Engineering at Arcus, who is full member of the Chartered Institution of Highways and Transportation (CIHT).

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a: Figures excluding LVIA:

- Figure 11.1: Route to Site.

This Chapter is also supported by Technical Appendix documents provided in Volume 3 Technical Appendices:

- A11.1: Framework Construction Traffic Management Plan; and
- A11.2: Programme of Vehicle Movements.

This chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Assessment of Potential Effects;
- Mitigation and Residual Effects;
- Cumulative Effect Assessment;
- Summary of Effects;
- Statement of Significance; and
- Glossary.

11.2 LEGISLATION, POLICY AND GUIDANCE

Table details relevant legislation, policy and guidance documents considered during preparation of this assessment.

Table 11.1: Legislation, Policy and Guidance

Author	Title	Policy
The Scottish Government	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ¹ (the EIA Regulations)	These regulations establish in broad terms what is to be considered when determining the effects of development proposals on the transport network.
The Scottish Government	Scottish Planning Policy (2014) ²	This provides a statement of the Scottish Government's policy on nationally important land use planning matters including renewable energy and indicates that proposals for onshore wind

¹ The Scottish Government (2017) The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 [Online] Available at: <https://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 11/09/2020)

² The Scottish Government (2014) Scottish Planning Policy [Online] Available at: <https://www.gov.scot/publications/scottish-planning-policy/pages/2/> (Accessed 11/09/2020)

Author	Title	Policy
		should consider the impact on road traffic and on adjacent trunk roads.
The Scottish Government	National Transport Strategy ³	This document provides an overview of the Scottish National Transport Strategy 2, which discusses sustainable freight movements.
Institute of Environmental Management and Assessment (IEMA, 1993)	Guidelines for the Environmental Assessment of Road Traffic ⁴	Acknowledged that this guidance has been withdrawn, however in the absence of revised guidance this guidance still provides useful points on the principles of assessment. Sets out guidelines for determining the appropriate and significance of traffic effects as a result of a proposed development. The document focuses on the assessment of potential environmental effects associated with road traffic.
The Highland Council (May 2013)	Roads and Transport Guidelines for New Developments	Provides specific regional guidance on the preparation of transport assessments. Chapter 9 of guidance provides specific measures relating to renewable energy developments and outlines the process of assessing the impact of construction traffic and abnormal load vehicle deliveries.

11.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

11.3.1 Scoping Responses and Consultations

Consultation for this EIA Report topic was undertaken with the organisations shown in Table 11..

Table 11.2: Consultation Responses

Consultee	Summary of Consultation Response	Response to Consultee
The Highland Council (THC)	General requirements for assessing transport impacts of wind developments on the local road network set out in supporting note. Expect this proposal to adhere with same approach.	Noted. The EIA Chapter 11 has considered this supporting note.
THC	Welcome intention to use overall traffic and HGV traffic increases as triggers for assessing impacts. Expect 10 % HGV increases to be considered at sensitive locations. Sensitive locations to include local schools and community facilities within the towns and small communities along proposed access route (s).	Noted. The quoted thresholds have been used at sensitive locations in Section 11.5.11 of this EIA Chapter.

³ The Scottish Government (2020) – Scottish National Transport Strategy 2 [Online] Available at: <https://www.transport.gov.scot/publication/national-transport-strategy-2/> (Accessed 11/09/2020)

⁴ Institute of Environmental Assessment – Guidelines for the Environmental Assessment of Road Traffic

Consultee	Summary of Consultation Response	Response to Consultee
THC Scoping Response 6/4/2020	Expect inclusion of physical condition of the roads and their structural capability to accommodate proposed vehicle numbers and loadings without generating new road safety hazards. Document doesn't recognise the significant stretches that remain substandard in terms of geometry and structural form. South Loch Ness Road Improvement Strategy sets out approach for improving local roads which should be referred to for access. When reviewing stability of access routes and possible mitigation, discussions should be held with the Officers overseeing the above Strategy.	The Applicant has engaged in dialogue with THC to address this particular matter separately. Assessment of physical condition of roads is beyond the scope of the EIA and it is requested that this work, if required, is undertaken post consent and is secured through an appropriately worded condition of consent.
THC Scoping Response 6/4/2020	Disagrees with Section 10.6 of report that "the volume of construction traffic is unlikely to cause any significant disruption to traffic, cyclists or other road users." Such issues are likely to be felt most within the local communities along the proposed access route(s). Discussions with Officers involved in the South Loch Ness Road Improvement Strategy may identify the need for the development to deliver or contribute towards the implementation of such village improvement schemes.	Noted, this has been assessed using the aforementioned 10 % threshold of significance for sensitive locations in Section 11.5.11 of this EIA Chapter.
THC Scoping Response 6/4/2020	Traffic management measures will be required to safely operate an access strategy for this development that limits impacts on other road users and local communities. Submission should therefore include a Framework Construction Traffic Management Plan (CTMP) that sets out the access restrictions and management measures that any Contractor will be expected to work within when constructing this development	A framework CTMP has been prepared and is included as Appendix A11.1 within this EIA Report.
THC Scoping Response 6/4/2020	Given the scale of tourist traffic within Fort Augustus, consultee would not support light or heavy good traffic linked with the development via Fort Augustus. All such goods traffic serving the site should be routed from the A9 down the B851 and B862	Noted. The quoted route is the proposed route to site and no construction traffic will be routed via Fort Augustus. Detailed in Section 11.3.4 of this EIA Chapter.
THC Scoping Response 6/4/2020	When determining existing baseline traffic levels, data should consider traffic increases during peak tourist season. Appraisal should consider additional traffic from other committed developments expected to be making use of those routes when this development is due to be being constructed. Highland Council Planners should be asked to confirm if they agree with the assessment and to identify any potential developments they feel should be included which haven't been.	Review will be undertaken via existing planning permissions and application from THC planning portal. Consultation will be undertaken with Highland Council Planners to inform assessment. Cumulative effects are considered in Section 11.7 of this EIA Chapter.

Consultee	Summary of Consultation Response	Response to Consultee
THC Scoping Response 6/4/2020	Expect preferred route to undergo trial run using equivalent sized vehicle when assessing capability of route to accommodate abnormal route turbine components. Routes out of Inverness Harbour onto the strategic trunk road network, or from any other ports used, will need to be assessed.	Would request that this element is included as a condition of consent.
THC Scoping Response 6/4/2020	When selecting routing for abnormal loads, recommend that early consultation with team that considers abnormal load movements and to the structures team, is undertaken.	The ALRA will recommend consultations with the relevant authorities on structures.
THC Scoping Response 6/4/2020	No objection to the operational impacts being scoped out but ask that the predicted trip numbers and likely vehicle types are clarified in the submission to support approach.	Noted. Estimated operational traffic numbers are provided in Section 11.5.20 of this EIA Chapter.
THC Scoping Response 6/4/2020	Predicted trip numbers and vehicle types during the decommissioning process are fully set out and justified, including the worst case scenario of the access tracks needing to be removed. If demonstrated that predicted trip numbers and patterns will be significantly less than during the construction process, there would be no objection to decommissioning phase being scoped out.	Noted. Decommissioning effects are considered in Section 11.5.21 of this EIA Chapter.
Transport Scotland Scoping Response 17/4/2020	Note that base traffic flows will be established and detailed within the EIAR. Assessment to be undertaken in line with IEMA 'Guidelines for the Environmental Impact of Road Traffic' with the two threshold guidelines contained therein being used to identify the appropriate extent of the assessment area. Road links should be taken forward for assessment if: - Traffic flows will increase by more than 30%; - The number of HGVs will increase by more than 30%; and - Traffic flows will increase by 10% or more in sensitive areas. Content that no further assessment will be required if above thresholds are not exceeded.	Noted that IEMA Guidelines and thresholds will be applied in the assessment. The EIA chapter will assess using this methodology and this process is detailed in Section 11.3.6.1 of this EIA Chapter.
Transport Scotland Scoping Response 17/4/2020	Show that increased size of turbines proposed can negotiate the selected route and that transportation will not have any detrimental effect on structures within the trunk road route path. Full Abnormal Loads Assessment (ALA) report should be provided with the EIAR that identifies key pinch points on the trunk road network. Swept path analysis should be undertaken and details provided with regard to any required changes to street furniture or structures along the route.	An Abnormal Load Route Assessment is being undertaken and will be presented with the EIA chapter. This will not consider structural effects as this is beyond the scope of this assessment, it is requested that assessment of structural effects is undertaken post consent and is secured through an appropriately worded condition of consent.

Consultee	Summary of Consultation Response	Response to Consultee
	In relation to access tracks, if there is a justifiable need to retain some form of access route(s) through the landscape to the site, recommend that consideration is given to reducing the scale of any such track(s) and changing their form to limit their lasting visual impacts.	Access track would utilise existing Corriegarth Wind Farm track.
Stratherrick & Foyers Community Council	Meeting with Applicant 25/2/2020. CC stated that one of main issues with the proposals related to increased traffic along the B862 and through the villages. A Community Liaison Group has been established to work with developers to manage impacts of traffic in the local area.	A Traffic Management Plan (TMP) will be developed outlining proposed access routes, traffic management measures and details of advance warning for abnormal loads and abnormal load management. In particular as traffic will pass through Stratherrick all traffic management and routing measures will be discussed in advance with the Community Liaison Group.
THC Gatecheck Response 07/08/2020	THC do not agree that a structural assessment of the road and its structures is outwith the scope of the EIAR as it will have an effect on the acceptability or otherwise of the proposals.	The Applicant currently involved in discussion with the Highland Council representatives to determine if there are any specific structures for which THC has concerns so that we can come to an agreement upon the timing of the survey.
THC Gatecheck Response 07/08/2020	It is good practice to include an outline CTMP to advise on what principles will be adopted. We would welcome it if this was included as a Technical Appendix to the EIAR.	A framework CTMP is included Appendix A11.1 of this report.
THC Gatecheck Response 07/08/2020	Video Trial Run, we would expect that this is undertaken at the earliest possible opportunity.	The Applicant is currently involved in discussion with the Highland Council representatives to come to an agreement upon the timing of the survey. As the final turbine selection would occur post-consent and pre-construction, ideally this would be conditioned to avoid abortive work.

Consultee	Summary of Consultation Response	Response to Consultee
THC Structures – Email Response on Structures on Delivery Route 27/08/2020	It had been hoped that Phase 1 of Flichity Bridge Replacement would have been completed this year with progression in Phase 2 (final replacement phase) started and complete by spring 2021. In the event Flichity Bridge is not replaced prior to project start, this would need to be factored into the proposal with provision for replacing this structure should the development proceed prior to this bridge being replaced by others. Two further structures should be considered: • U1221 Gourag Bridge and adjacent bypass bailey bridge; and • B851 – Culvert at Croachy	Noted. The Applicant will monitor progress on this replacement and will develop plans accordingly. Structural assessment of these structures will be undertaken in advance of any construction phase of development.

11.3.2 Scope of Assessment

This assessment considers access, traffic and transportation effects of the Development during the construction, operational and decommissioning phases for the following:

- Traffic generation;
- Accidents and safety;
- Driver delay;
- Pedestrian amenity;
- Severance;
- Noise and vibration;
- Hazardous loads;
- Pedestrian delay;
- Visual effects; and
- Air quality.

11.3.3 Elements Scoped Out of Assessment

Operational traffic is expected to be minimal and negligible in terms of existing traffic flow levels on routes within the vicinity of the Development. Assessment of operational traffic has therefore been scoped out of this assessment.

Traffic associated with decommissioning of the Development will be less than that experienced during construction, this is due to the fact that all below ground infrastructure will be left in-situ. It is not possible to accurately forecast baseline traffic flow levels 25 years into the future. For the above reasons an assessment of decommissioning traffic effects will not be undertaken as part of this EIA, further work would be undertaken at the time of decommissioning to determine if significant transport effects might be experienced.

The above approach was detailed in the Scoping Report and was supported by Transport Scotland in their Scoping Response (detailed in Table 11.).

11.3.4 Study Area

Based on the location of the Development and the anticipated port of delivery (Invergordon), this study will primarily focus on the A9, B871 and B862 corridors. The study area will extend to those routes likely to be used by Abnormal Load Vehicles (ALVs) and by general construction traffic including staff.

Whilst all ALVs will originate at Invergordon the origin of general construction traffic is not currently known and is likely to be distributed throughout the region. It is assumed that general construction traffic will approach the Site using the A9, and therefore the route to site for general construction traffic for the purposes of this assessment is between the A9 and the site entrance.

The following subsection details the route to site for ALVs and general construction traffic. Figure 11.1 shows these routes.

11.3.4.1 Route to Site for Construction Traffic

ALV Route:

- Leave Port of Invergordon;
- Turn left onto B817;
- Right turn at mini-roundabout to continue on B817;
- Right turn onto A9 south-west bound;
- Continue straight at roundabout to cross Cromarty Bridge (A9);
- Continue straight through Tore Roundabout to continue on A9;
- Cross Kessock Bridge (A9) and continue through Longman Roundabout onto A9 southbound;
- Turn right onto B851;
- Continue on B851 through Inverarnie;
- Turn left onto B862; and
- Turn left onto site access road.

General Construction Traffic Route:

- Turn from A9 onto B851;
- Continue on B851 through Inverarnie;
- Turn left onto B862; and
- Turn left onto site access road.

11.3.5 Baseline Survey Methodology

Baseline traffic survey data was collected from publicly available traffic count information provided by the Department for Transport (DfT), and from a number of Automatic Traffic Counts (ATCs) located on the construction traffic route between the A9 and the Site Entrance.

The principal measurement which will be considered in this study is the average daily flow (ADF), or the average number of vehicles which pass a traffic count location during a 24 hour period. The ATCs were undertaken over a seven day period (14th – 20th of March 2020). These dates are considered a 'neutral week', that is one outside of school or public holiday periods, and therefore gives data which is representative of average daily traffic levels.

The selected survey period is also outside of the main season for tourism. This is considered to result in a conservative assessment as a lower baseline traffic flow would increase the predicted percentage increase in traffic flow which would occur during construction, and thus indicate a more severe effect on receptors. The following subsections provide detail on the assessment methodology.

11.3.6 Methodology for the Assessment of Effects

11.3.6.1 Screening

In accordance with the IEMA guidance, a screening exercise was be undertaken for routes within the study area. The screening process uses two thresholds as follows:

- Inclusion of roads where traffic will increase by more than 30% (or where the number of HGVs will increase more than 30%); and
- Inclusion of any other specifically sensitive areas where traffic flows will increase by 10% or more.

Where the predicted increase in traffic flows is lower than the thresholds, the guidelines suggest the significance of effects can be stated to be low or not significant and further detailed assessments are not warranted. Peak traffic flows will be identified to assess a worst case scenario.

11.3.7 Consideration of Further Assessment

On routes where traffic is predicted to increase above the thresholds identified in the screening process further assessment will be undertaken. This considers the potential for receptors to receive effects as outlined in Section 11.5 of this chapter.

The approach to assessing sensitivity and magnitude of effects is a judgement based approach. The sensitivity of road networks to changes in traffic levels, of any given road segment or junction is assessed by considering the residual capacity of the network under existing conditions. Where there is a high degree of residual capacity, the network may readily accept and absorb an increase in traffic, and therefore the sensitivity may be said to be low. Conversely, where the existing traffic levels are high compared to the road capacity, there is little spare capacity, and the sensitivity to any change in traffic levels would be considered to be high.

The determination of the magnitude of the effects will be undertaken by reviewing the outline proposals for the Development, establishing the parameters of the road traffic that may cause an effect, and quantifying these effects.

In brief, the steps involved in this study would be as follows:

- Establish baseline traffic flow conditions;
- Carry out route inspections including detailed observations of each community potentially affected by the proposals within the study area;
- Based on the route inspections, sensitive receptors would be identified;
- An initial assessment of traffic generation from the proposed construction works would be undertaken. Assignment of traffic to the network, and an initial assessment of effects. This will be based on professional judgement rather than transportation network modelling;
- Obtain refined project needs, refine traffic generation, and re-assess effects, using obtained baseline traffic data;
- Assess residual effects following the primary mitigation built in by virtue of the above-mentioned iteration, and any required residual mitigation needs; and
- Identify and assess the potential for cumulative effects based on other known developments.

11.3.7.1 Sensitivity of Receptors

Table 11.3 indicates the criteria used to assess the sensitivity of roads within the study area.

Table 11.3: Receptor Sensitivity

Sensitivity	Description
High	Receptors of greatest sensitivity to changes in traffic flow, would include: People whose livelihood depends upon unrestricted movement within their environment including commercial drivers and companies who employ them, local residents, schools and colleges. Accident hotspots would also be considered.
Medium	Traffic flow sensitive receptors, would include: People who pass through the area habitually, but whose livelihood is not wholly dependent on free access. Would also typically include: congested junctions, community services, parks, businesses with roadside frontage, and recreation facilities.
Low	Receptors with some sensitivity to changes in traffic flow: People who occasionally use the road network. Would also typically include: public open spaces, nature conservation areas, listed buildings, tourist attractions, residential roads with adequate footway provision and places of worship.
Negligible	Receptors with very low sensitivity to traffic flows: People not sensitive to transport effects. Would also refer to receptors that are sufficiently distant from the affected roads and junctions.

The criteria used to assess the magnitude of change are presented in Table 11.4.

Table 11.4: Magnitude of Change

Magnitude	Description
High	The proposals could result in an appreciable change in terms of length and/or duration to the present traffic routes or schedules or activities, which may result in hardship.
Medium	The proposals could result in changes to the existing traffic routes or activities such that some delays or rescheduling could be required, which cause inconvenience.
Low	The proposals could occasionally cause a minor modification to routes, or a very slight delay in present schedules, or on activities in the short-term
Negligible	No effect on movement of road traffic above normal level.

11.3.7.2 Significance of Effect

The sensitivity of the asset and the magnitude of the predicted change will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects. Table 11.5 summarises guideline criteria for assessing the significance of effects.

Table 11.5: Framework for Assessment of the Significance of Effects

Magnitude of Change	Sensitivity of Resource or Receptor			
	High	Medium	Low	Negligible
High	Major	Moderate	Moderate	Minor
Medium	Moderate	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light grey in the above table.

11.3.8 Traffic Growth

Consideration was given to estimating future baseline traffic levels through the use of traffic growth factors; however, at the time of writing there is considerable uncertainty in the validity of traffic growth forecasting as a result of the global Coronavirus pandemic and the consequent reduction in travel. Longer term effects may result in changes in travel patterns and frequency of commuting and therefore existing traffic growth predictions may no longer be valid.

Therefore, this assessment will not apply traffic growth factors to the collected baseline traffic flow data. This approach is considered conservative as a lower baseline traffic level would result in a higher percentage increase in traffic, and thus a more significant change from baseline.

11.3.9 Embedded Mitigation

Onsite batching of concrete for the wind turbine foundations has been specified. This construction methodology will allow the materials required for foundations to be imported to site throughout this phase of works. This will reduce the peak traffic increase compared with an off-site batching method.

11.4 BASELINE CONDITIONS

11.4.1 Baseline Traffic Flow Data

Baseline traffic flow data collected is presented in Table 11.6 below. The location of each of these traffic counts is presented on Figure 11.1.

Table 11.6: Baseline Traffic Flow Data

Ref.	Road	Location	Source	Year	ADF	HGV	%HGV
1	A9	South of B851	DfT	2018	7353	650	9
2	B851	South-west of A9	ATC	2020	802	267	33
3	B851	North of Aberarder	ATC	2020	347	135	39
4	B862	Bailebeag	ATC	2020	377	126	34

11.4.2 Theoretical Road Capacity

Typical capacity values for a variety of road types are provided within the Design Manual for Roads and Bridges (DMRB). Capacity is defined as the maximum sustainable flow of traffic passing in one hour under favourable road and traffic conditions and depends on the road type, speed limit and width. Table 11.7 gives the estimated capacity of each of the roads within the Study Area.

Table 11.7: Theoretical Road Capacities

Road	Type	Speed Limit (kph)	Capacity (veh/hour/direction)	Two-Way Hourly Flow	Two – Way Daily Flow
A9	Rural – Typical Single 6.0 m	96	900	1,800	43,200
B851	Rural – Poor Single 4.0 m	96	140	280	6,720
B862	Rural – Poor Single 4.0 m	96	140	280	6,720

11.4.3 Sensitive Receptors

A number of receptors of medium or high sensitivity to changes in traffic have been identified within the Study Area and are detailed in Table 11.8. These receptors are either located on the proposed delivery routes or located within close proximity and require access through the proposed delivery routes. The sensitivity of these receptors has been assessed using the criteria outlined in Section 11.3.7.1.

Table 11.8: Sensitive Receptors

Route	Receptor	Sensitivity	Justification
B851	Farr Primary School	High	Located directly on the proposed delivery route. Students use the delivery route on their journey to/from school and may be required to cross it.
B862	Stratherrick Primary School	High	Located near to the proposed delivery route. Students may use the delivery route on their journey to/from school and may be required to cross it.
B851	Farr Community Hall	Medium	Located just off the proposed delivery route. Users of this facility are likely to use the delivery route whilst travelling to and from the facility.
B851 and B862	Residential and Commercial Properties on or near the delivery route	High	There are a number of residential properties located directly on the proposed delivery route who require unrestricted use of the route in order to access their property. No alternative routes exist in most cases.
Trail of the Seven Lochs – Walking Route	Long distance walking route which is partially located on the construction delivery route.	Medium	The walking route is located on the construction delivery route on the U112 between the B862 and Garthbeg Lodge. Users of this route may be sensitive to change in traffic flow and composition.

11.4.4 Road Traffic Collision Assessment

Analysis of all 'slight', 'serious' and 'fatal' Road Traffic Collisions (RTCs) within the last five years was carried out, utilising Crash map⁵ for the route between the A9 and the site entrance junction.

'Slight' RTCs are defined as a collision in which nobody is fatally or seriously injured, but at least one person is slightly injured. 'Serious' RTCs are defined as those which result in hospitalisation of one or more of the parties involved. 'Fatal' RTCs are defined as those in which one or more parties dies within 30 days as a result of injuries sustained during the RTC.

One 'fatal' RTC was recorded on the B851 near Farr. A review of the detailed RTC report indicates that the collision involved a single vehicle colliding with a wall during daylight hours in fine weather.

A further two 'slight' classification RTCs were recorded on the B851 and another on the B862.

11.5 ASSESSMENT OF POTENTIAL EFFECTS - ANTICIPATED CONSTRUCTION DEVELOPMENT TRAFFIC

An indicative programme of anticipated construction traffic associated with the Development is provided in Appendix TA11.2. and is expected to run for a total of 18 months. The following sub-sections provide detail for each element of work. A summary of all predicted construction traffic is provided at the end of this section.

11.5.1 Site Mobilisation and Demobilisation

HGV and other vehicle movements will be required during site mobilisation. This will comprise the erection of welfare facilities, delivery of construction site vehicles and importation of plant and equipment. The majority of these movements will be as HGVs and low loaders which will deliver and then depart the Site empty.

During site demobilisation, the majority of this equipment will be removed from Site. Vehicle movements for demobilisation will result from empty HGVs and low loaders travelling to Site and then departing loaded. Table 11.9 indicates the anticipated number of vehicle movements associated with site mobilisation and demobilisation.

Table 11.9: Anticipated Vehicle Movements - Site Mobilisation / Demobilisation

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Site Mobilisation and Construction Compound	HGV	1, 18	120	60
Sub-Total			120	60

11.5.2 Access Track and Hardstanding Construction

The top 0.15 m layer of fine material required for all access tracks and hardstandings will be imported to site; the remaining aggregate required will be won from on-site borrow pits.

⁵ AGILYSIS (2019) CrashMap – UK Road Safety Map [Online] Available at: www.crashmap.co.uk (Accessed 20/03/20)

The volume of material required for a 0.15 m surface layer across all track and hardstandings is estimated to be 24,791 metres cubed (m³). Assuming each dump truck has a volumetric capacity of 9 m³, this will result in approximately 2,755 loads, or 5,510 total vehicle movements over the duration of this phase of works. Table 11.10 sets out the anticipated number of vehicle movements associated with access track and hardstanding construction.

Table 11.10: Anticipated Vehicle Movements - Access Track and Hardstanding Construction

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Stone Delivery	HGV Dumper	2-8	5,510	788
Sub-Total			5,510	788

11.5.3 Turbine Foundation Construction

The concrete for each turbine foundation will be formed from concrete batched on-site.

Each foundation will have a volume of approximately 500 m³. In order to assess the worst case scenario, it has been assumed that the aggregate won from the on-site borrow pit will not be suitable for concrete batching, therefore all aggregate will be imported. Therefore, in the event that borrow pit aggregate proves suitable for concrete the number of vehicles associated with this phase of works would be reduced.

Assuming a volumetric capacity of 9 m³ per dumper truck, 889 loads would be required to supply the 8,000 m³ of material for the 16 turbines. This would result in 1,778 HGV vehicle movements over this phase of works.

Table 11.11: Anticipated Vehicle Movements - Turbine Foundation Construction

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Aggregate Delivery	HGV Dump Truck	6-11	1,778	297
Sub-Total			1,778	297

11.5.4 Control Building and Substation Construction

Material for construction of the substation compound hardstanding will be imported in a total of 50 HGV movements. Electrical components and switchgear will require to be imported and is predicted to total 40 HGV movements over the eight month phase of this element.

Two transformers will require to be delivered by ALV due to their weight. Following delivery of components, the ALVs will retract to the size of an HGV for the return journey. This will result in four vehicle movements, 2 ALV movements and 2 HGV movements. Two escort vehicles are assumed to accompany each ALV resulting in eight vehicle movements.

Table 11.12 indicates the number of vehicles associated with substation construction.

Table 11.12: Anticipated Vehicle Movements - Substation Construction

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Electrical Components and Switchgear Delivery	HGV	3-10	40	5
Transformer Delivery	ALV	3-10	2	1
	HGV	3-10	2	1
	Escort Car/Van	3-10	8	4
Material Delivery	HGV	3-10	50	6
Overall			102	17

11.5.5 Electrical Cabling Delivery

Electrical cabling for wind farm power distribution will require to be delivered and will constitute 30 HGV movements over the period of delivery. Table 11.13 indicates the number of vehicle movements associated with electrical cabling delivery.

Table 11.13: Anticipated Vehicle Movements - Electrical Cabling Delivery

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Electrical Cabling Delivery	HGV	10-12	30	10

11.5.6 Crane Delivery

A large crawler or track mounted crane of approximately 1,000 tonne capacity will be required for turbine erection along with an additional 160 tonne pilot crane. The crawler crane will be transported in component form and assembled on the Site, this will require approximately 52 HGV movements to be undertaken prior to the commencement of turbine delivery. The pilot crane will be self-propelled although will constitute an ALV due to its weight.

The crane will remain on-site for the duration of the turbine assembly phase. Table 11.14 indicates the number of vehicle movements associated with crane delivery.

Table 11.14: Anticipated Vehicle Movements - Crane Delivery

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Crawler Crane	HGV	10, 14	52	26
	Abnormal Load Vehicle**	10, 14	2	1
Overall			54	27

**Self-propelled vehicles which arrive in one month and depart in another

11.5.7 Turbine Delivery

Turbines will be delivered as separate components the majority of which will require to be transported by ALV. The towers will be transported in three separate sections and each blade will be transported individually. Five further abnormal load vehicles will be

required to transport the nacelle and hub. For 16 turbines, 176 ALV deliveries will be required equalling 352 vehicle movements.

Following delivery of components, the ALVs will retract to the size of a standard HGV for the return journey. Two escort vehicles are likely to be required to accompany each ALV which will result in a worst-case of 704 additional vehicle movements. In practice, this figure may be reduced where ALVs approach the Site in convoy and fewer escort vehicles per ALV are required. Table 11.15 indicates the number of vehicle movements that are expected for turbine delivery.

Table 11.15: Anticipated Vehicle Movements - Turbine Delivery

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Turbine Components	ALV	10-17	352	44
	Escort Car or Van	10-17	704	88
Overall			1056	132

11.5.8 Fuel Delivery

Fuel will require regular delivery to the Site regularly throughout the construction period and is expected to total 1 HGV fuel tanker delivery per month from site mobilisation; totalling 36 vehicle movements over the duration of construction. Table 11. indicates the number of vehicle movements associated with fuel delivery.

Table 11.16: Anticipated Vehicle Movements - Fuel Delivery

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Fuel Delivery	HGV Fuel Tanker	1-18	36	2

11.5.9 Construction Personnel and Staff

It is anticipated that an average of 40 staff will be required on-site per day throughout the construction phase, months 1-18. For the purposes of this assessment, the most recent available Scottish private vehicle occupancy rate of 1.57 people per vehicle was used, equating to 26 vehicles per day during construction.

Assuming a 26 work days per month, this will result in 663 vehicles per month and a total of 11,934 vehicle trips for staff over the course of construction of the Development. Table 11.17 indicates the number of vehicle movements associated with staff.

Table 11.17: Anticipated Vehicle Movements - Staff

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Staff	Car or Minibus	1-18	11,934	663

11.5.10 Summary

Table 11.18 provides a summary of all deliveries expected throughout duration of construction. The values calculated in this section may differ from those generated in Appendix TA11.2 due to both rounding and assuming the worst-case scenario, which has led to an artificial inflation of the values in the Construction Development Programme.

Table 11.18: Anticipated Vehicle Movements - Summary

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Site Mobilisation and Demobilisation				
Site Mobilisation and Demobilisation	HGV	1, 18	120	60
Subtotal			120	60
Access Track and Hardstanding Construction				
Stone Delivery	HGV	2-8	5,510	788
Subtotal			5,510	788
Turbine Foundation Construction				
Aggregate Delivery	HGV	6-11	1,778	297
Subtotal			1,778	297
Control Building and Substation Construction				
Electrical Components and Switchgear Delivery	HGV	3-10	40	5
Transformer Delivery	ALV	3-10	2	1
	HGV	3-10	2	1
	Escort Car/Van	3-10	8	4
Material Delivery	HGV	3-10	50	6
Subtotal			102	17
Electrical Cabling Delivery				
Electrical Cabling Delivery	HGV	10-12	30	10
Crane Delivery				
Crawler Crane	HGV	10, 14	52	26
	Abnormal Load Vehicle**	10, 14	2	1
Subtotal			54	27
Turbine Delivery				
Turbine Components	ALV	10-17	352	44
	Escort Car or Van	10-17	704	88
Subtotal			1056	132
Fuel Delivery				

Operation	Vehicle Type	Operational Months	Total	Max Monthly
Fuel Delivery	HGV Fuel Tanker	1-15	36	2
Staff				
Staff	Car or Minibus	1-18	11,934	663
Totals			Total	Max Monthly
Total HGV and Abnormal Load Movements			7,982	1,099
Total Car and Van Movements			12,638	751
Overall Total			20,620	1,762***

*Includes transporter vehicle leaving and then returning to site during demobilisation

**Self-propelled vehicles which arrive in one month and depart in another

***Total flow in peak month

11.5.11 Traffic Generation

Reviewing the distribution of vehicular movements from the table in Appendix 11.1, the peak increase in traffic flow is anticipated to occur during months 6-8. During the peak months, the anticipated increase in traffic is estimated to be 68 additional vehicle movements per day, consisting of 42 HGV movements and 26 car/van movements.

In order to assess the potential effects on routes within the study area, the predicted peak month increase in traffic has been added to each of the measured baseline traffic flow levels. Table 11.19 indicates the percentage increase in traffic expected at each location within the study.

Table 11.29: Predicted Average Daily Traffic - Peak Month

Location	Total Vehicles			HGVs		
	2020 Baseline	Peak Month	% Increase	2021 Baseline	Peak Month	% Increase
1	7353	7421	0.9%	650	692	6.5%
2	802	870	8.5%	267	309	15.8%
3	347	415	19.5%	135	177	31.3%
4	377	445	18.0%	126	168	33.5%

As detailed in the assessment methodology, a screening exercise was undertaken in order to determine which routes warrant detailed assessment.

The lower threshold of significance (10%) was considered appropriate for those locations with identified sensitive receptors; this applies to reference locations 2, 3 and 4.

The upper threshold of significance (30%) was considered appropriate for other routes within the study, which applies to reference location 1.

Using the above thresholds, and assessing the estimated percentage increases in overall traffic and HGV traffic, further detailed assessment will be considered in the following locations/ cases:

1. At reference location 2 as a result of HGV increase; and

2. At reference locations 3 and 4 as a result of general construction traffic increase and HGV increase.

The following subsections detail considerations for each of the above cases.

11.5.11.1 1 – B851 (Location Ref. 2) as a result of HGV Traffic Increase

Location ref. 2 is on the B851 south-west of the junction with the A9. The predicted increase in HGV traffic during the peak months of construction is 15.8% which exceeds the lower 10% threshold of significance for this location. Overall traffic is expected to increase by 8.5% during this time.

As detailed in the assessment methodology, where considering increases in traffic on roads with a low baseline traffic flow, it is important to consider the overall and residual capacity of the road in question.

As detailed in Section 11.4.2 the theoretical road capacity for this section of road is 140 vehicles per hour per direction or 6,720 two-way vehicles per day (VPD). Comparing the theoretical capacity with the predicted total daily vehicle flow during the peak month of 870 vehicle movements per day, it can be seen that the theoretical capacity will not be exceeded.

It should be noted that the baseline HGV flow levels are low (267 VPD), and that the magnitude of the predicted increase is low in absolute terms (42 VPD). Additionally, the predicted increase is temporary and would be reversed following completion of construction of the Development. The effect of construction on traffic generation at location ref. 2 is therefore considered to be minor and **not significant** as per the EIA Regulations.

11.5.11.22 – B851 and B862 (Location Refs. 3 and 4) as a result of General and HGV Traffic Increase

Location refs. 3 and 4 are on the B851 and B862 respectively. At location 3, the predicted increase in overall traffic is 19.5% and for HGV traffic is 31.3% during the peak period of construction.

The theoretical capacities of these roads are 140 vehicles per hour per direction or 6,720 VPD. The absolute flow levels expected during the peak period at locations 3 and 4 are 415 VPD and 445 VPD, therefore there is sufficient residual capacity to accommodate the increase in traffic with a low magnitude of change. The effect of construction on traffic generation at reference locations 3 and 4 is considered to be minor and **not significant** in terms of the EIA Regulations.

11.5.12 Accidents & Safety

As detailed in Section 11.5.3, one 'Fatal' RTC and three 'Slight' RTCs were recorded within the study. The single 'Fatal' RTC involved only a single vehicle with no identifiable cause from the available data, the most statistically likely cause therefore being excessive speed. No further trends could be identified within the data.

In the absence of identifiable trends in RTCs or known accident hotspots, an increase in overall traffic flow or HGV composition is not sufficient to affect a change in safe operation of the road network.

Therefore, the temporary increase in overall traffic and HGVs for the duration of the construction of the Development is not likely to result in an effect on accidents and safety. The effect on accidents and safety is negligible and **not significant** as per the EIA Regulations.

11.5.13 Pedestrian Amenity

Pedestrian amenity, fear and intimidation can be affected by changes to traffic flow and composition. The B851 and B862 do not have pedestrian footways, except where they pass through settlements.

HGV traffic levels are predicted to increase above the relevant thresholds of significance throughout construction at Reference Location 2, 3 and 4. Additionally, HGV and overall traffic levels are likely to significantly increase on the U112 minor road to site, which is identified as containing a long distance walking trail.

Seven of the 21 identified sensitive receptors are located at the affected points of this route including Farr and Stratherrick Primary Schools. It is likely that students of these schools will walk on, and may cross, the delivery route on the way to and from school.

It is considered that the increase in overall traffic flow and HGV flow may have an effect on pedestrian amenity at these sensitive receptors which is considered moderate and **significant** in terms of the EIA Regulations.

In accordance with the EIA Regulations, Section 11.7 of this Chapter details mitigation measures which are to be adopted to reduce this effect.

11.5.14 Driver Delay

All roads within the Study Area are operating significantly below capacity and are predicted to continue to do so even during construction of the Development. The effect of general increase in traffic on driver delay is therefore considered to be negligible and **not significant** as per the EIA Regulations.

Some driver delay can be expected to occur on routes due to the slow movement of ALVs between the port of delivery and the Site. Where safe to do so, ALVs will occasionally stop to allow traffic to pass if necessary. A total of 176 ALVs associated with turbine delivery, are anticipated. These will be distributed through the duration of this elements of works.

Due to the overall limited number of loads across the construction programme resulting in a low magnitude of change, and the short term nature of this phase of works, the anticipated effect of abnormal loads on driver delay is minor and **not significant** as per the EIA Regulations.

11.5.15 Severance

Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The B851 and B862 pass through settlements along the route which have the potential to be affected by severance.

During construction of the Development, overall traffic is predicted to increase by 8.5%, 19.5% and 18.5 at locations 2, 3 and 4 respectively.

In these cases, the temporary change in traffic will exceed the lower 10% threshold of significance during the peak period. The absolute level of traffic expected during the peak period of construction is low, and below the theoretical capacity of each of the roads. The change in traffic is temporary, fully reversible and would only occur during construction hours. It has therefore been determined that the effect of severance is minor and **not significant** as per the EIA Regulations.

11.5.16 Noise and Vibration

Assessment of effects of Noise and Vibration as a result of off-site construction vehicle movements has been considered using the guidance contained in DMRB – LA 111⁶.

In accordance with the guidance the following points have been noted when considering the need for a quantitative assessment of off-site construction traffic noise and vibration:

- The level of detail of a noise and vibration assessment shall be proportionate to the quality of data available and the risk of likely significant effects occurring; and
- Are there any noise sensitive receptors where there would be a reasonable stakeholder expectation that a construction noise/vibration assessment would be undertaken?

It should be noted that all on-site construction noise and vibration effects, including delivery vehicle use of the private access track off the B862 and operational noise effects are considered in **Chapter 10: Noise** of this EIA.

Considering off-site transport related noise/vibration effects against the above bullet points, there are a number of sensitive receptors located close to the proposed general construction traffic route. However, this route is an established transport corridor, and there should be an expectation that it is used by HGV traffic. Therefore, there is no 'reasonable stakeholder expectation' that a quantitative noise/vibration assessment be undertaken for a temporary and fully reversible change in traffic flow as a result of the Development.

Furthermore ground-borne vibration resulting from HGV and AGV movements is generally only likely to be significant where vehicles traverse discontinuities, such as rough surfaces (including pot-holes) or speed-humps. Effects from the temporary increase in traffic are therefore only likely to be experienced at receptors located next to such road defects, in which case the maintaining authority (i.e. the local authority) would be responsible for enacting repairs.

Airborne vibrations resulting from low frequency sound emitted by vehicle engines and exhausts can result in detectable vibrations in building elements such as windows and doors and cause disturbance to local people. Due to the short-term and temporary nature of the increase in traffic movements, it is considered that the effect of vibration upon receptors along the route would be minor and **not significant** in terms of the EIA Regulations.

11.5.17 Hazardous Loads

Fuel will be regularly transported to the Site over the duration of construction of the Development. All fuel will be transported by suitably qualified contractors, and all regulations for the transportation and storage of hazardous substances will be observed. No other hazardous substances are expected to be transported to Site. It is therefore considered that the effect of the transportation of hazardous substances is negligible and **not significant** as per the EIA Regulations.

11.5.18 Visual Effects

The movements of ALVs could be considered visually intrusive. This effect would be short-term and would only occur during the movement of abnormal loads. It is therefore considered the visual effect as a result of the ALVs upon receptors along the routes would be negligible and **not significant** in terms of the EIA Regulations.

⁶ Department for Transport (May 2020) – Design Manual for Roads and Bridges – LA 111 Noise and Vibration – Available at: <https://www.standardsforhighways.co.uk/dmrB/search?q=noise&pageNumber=1> [Accessed 12/08/20]

11.5.19 Air Quality

Maintaining good local air quality is essential for the human health and overall quality of life for people living in the area. Road transport accounts for a significant proportion of emissions of a number of pollutants including carbon dioxide (CO₂), nitrogen dioxide (NO₂), and particulate matter (PM10). Nitrogen oxide emissions are also of concern for nearby vegetation and ecosystems.

The DMRB gives guidance on matters relating to air quality in Volume 11 Section 3 and advises that significant impacts to local air quality may be found in the following cases:

- Where the road alignment will change by 5 m or more; or
- Daily traffic flows will change by 1,000 AADT or more; or
- Heavy Duty Vehicle flows will increase by 200 AADT or more; or
- Daily average speed will change by 10 km/hr or more; or
- Peak hour speed will change by 20 km/hr or more.

Given the assessment of the expected volume of construction traffic, it is considered that none of the above criteria have been met or exceeded. It is therefore considered that the effect of the increase in traffic on local air quality would be negligible and **not significant** as per the EIA Regulations.

Due to the temporary nature of the increase in vehicles using the proposed access route, any effects on local air quality will be short term and reversible.

11.5.20 Decommissioning Effects

Traffic and transport effects associated with decommissioning of the Development are expected to comprise removal of the turbines and all associated above ground equipment. Turbine towers and blades are likely to be dismantled into smaller sections prior to their removal to ease transport requirements.

At this stage, it is not possible to forecast quantitatively or accurately the traffic effect during decommissioning of the Development as the baseline data would no longer be valid in 30 years. It is reasonable to assume that baseline traffic would continue to increase. The implication of applying further background traffic growth would be that the proportional impact of the decommissioning traffic would reduce in comparison to the construction traffic impact that has been assessed. It is expected that traffic flow on routes within the vicinity of the Site would continue to remain well below capacity.

The decommissioning effects would also be greatly reduced as the majority of the construction traffic is created by the import of concrete for turbine foundations, which is likely to be left in situ at depth of greater than 1 m below ground level as per current decommissioning best practice.

Prior to decommissioning of the Development, a traffic assessment would be undertaken and appropriate traffic management procedures agreed with the relevant authorities at the time.

11.6 MITIGATION AND RESIDUAL EFFECTS

11.6.1 Mitigation Measures

A significant effect was identified in Section 11.5.13 relating to pedestrian amenity at several sensitive receptors, including:

- Farr Primary School;
- Stratherrick Primary School; and
- The Trail of the Seven Lochs (between the B862 and Garthbeg Lodge).

Due to the nature of the sensitive receptors in this location, a number of mitigation measures are proposed which are recommended for adoption in the TMP (A Framework CTMP is included in Appendix 11.1) as follows:

- As far as reasonably possible, deliveries should be scheduled outside of school opening and closing times;
- Drivers of all delivery vehicles to be made aware during induction of the presence of schools within these settlements; and
- A temporary 30mph speed limit shall be implemented on the U112 between the B862 and Garthbeg Lodge for the duration of construction. Drivers to be made aware that this is a walking trail and that they should expect to encounter pedestrians.
- Prior to deliveries commencing the Applicant will consult with the Community Engagement Group with respect to timings of deliveries and any other issues raised by the Group.

The above measures are recommended; however, the TMP (A Framework CTMP is included in Appendix 11.1) will detail the exact measures to be implemented during construction of the Development.

11.6.2 Residual Effects

It is considered that if the above mitigation measures are implemented through the CTMP (A Framework CTMP is included in Appendix 11.1) for the duration of construction, the effect on increased traffic on pedestrian amenity at the sensitive receptors along the route will be reduced to minor and therefore considered as **not significant** in terms of the EIA Regulations.

11.7 CUMULATIVE EFFECTS

Significant cumulative effects may occur during construction of the Development where this overlaps with construction of another nearby wind energy developments. Proposed developments which have the potential to result in cumulative traffic and transport effects include:

- Cloiche Wind Farm (36 Turbines);
- Aberarder Wind Farm (12 Turbines);
- Glenshero Wind Farm (39 Turbines);
- Dell Wind Farm (14 turbines); and
- Red John Hydro Scheme.

For the purposes of estimating the likely cumulative effects on traffic generation it has been assumed that construction traffic for each identified wind farm developments will be in proportion to that generated by the Development (calculated pro-rata, per turbine). For the hydro scheme the peak period development traffic has been extracted from the EIA chapter.

Table 11.20 indicates the estimated traffic for each of the identified developments during their peak month(s) of construction.

Table 11.20: Extrapolated Cumulative Daily Traffic Movements from Identified Developments (Peak Month)

Development	No. Turbines	Total Traffic	HGV
The Development	16	68	42
Cloiche	36	152	95

Development	No. Turbines	Total Traffic	HGV
Aberarder	12	51	32
Glenshero	39	165	103
Dell	14	59	37
Red John	N/A	35	8
Total	117	531	317

The cumulative traffic associated with the identified developments will primarily result due to the import of materials and from staff movements. For the purposes of this assessment, it has been assumed that all traffic will use each road within the Study Area.

Table 11.21 indicates the anticipated total traffic and the percentage increase above baseline in the worst case cumulative scenario.

Table 11.21: Cumulative Daily Traffic Increase (Peak Month)

Location	Total Vehicles			HGV Only*		
	2021 Baseline	Peak Month	% Increase	2021 Baseline	Peak Month	% Increase
1	7353	7951	8.1%	650	1009	55.3%
2	802	1400	74.6%	267	901	237.5%
3	347	945	172.4%	135	674	399.3%
4	377	975	158.7%	126	633	402.7%

As indicated in Table 11.21 the addition of all construction traffic from the identified cumulative developments results in a worst-case increase of 172.4% at Location Reference 3, for overall flow, over baseline flow.

There is sufficient residual capacity on each of the roads within the Study Area to accommodate the predicted increase in traffic which may occur in the cumulative scenario. The likelihood of all of the identified developments receiving planning consent which coincides with construction of the Development is considered low. In the event that a number of the identified developments are scheduled to be constructed simultaneously, it is assumed that the respective TMPs would be agreed in consultation to minimise disruption, furthermore a number of the identified cumulative developments may route construction traffic via alternative routes. For these reasons the likely impact is expected to be significantly lower than stated in Table 11.21.

The impact on traffic and transport due to cumulative effects is therefore considered to be minor and **not significant** in terms of the EIA Regulations.

11.7.1 Residual Effects

It is considered that if the above mitigation measures are implemented through the CTMP for the duration of construction, the effect on increased traffic on pedestrian amenity at the sensitive receptors along the route will be reduced to minor and therefore considered as **not significant** in terms of the EIA Regulations.

11.8 SUMMARY OF EFFECTS

An assessment has been made of the potential for significant effects of the Development. This assessment identified potential significant traffic and transport effects (in terms of the EIA Regulations) on any receptors during the construction, operation and decommissioning of the Development.

By applying the mitigation measures outlined in Section 11.7.1, mainly through following best practice guidelines during construction and implementation of a CTMP, the magnitude of residual effects of the Development, both alone and in combination with other schemes, are assessed as being low magnitude, and thus non-significant in terms of the EIA Regulations.

11.9 STATEMENT OF SIGNIFICANCE

Effects are considered to be significant for the purposes of the EIA Regulations where the effect is classified as being of 'major' or 'moderate' significance. A moderate effect was identified for pedestrian amenity at the identified sensitive receptors of Farr and Stratherrick Primary Schools and on the Trail of the Seven Lochs. Mitigation measures were identified in Section 11.7.1 of this EIA Chapter and the residual effects following implementation of these mitigation measures are predicted to be low and thus **not-significant** in terms of the EIA regulations.

12 HYDROLOGY AND HYDROGEOLOGY

12.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) evaluates the effects of the Corriegarth 2 Wind Farm (the Development) on the hydrology and hydrogeology resources. This assessment was undertaken by Liam Nevins (BSc hons MCIWEM C.WEM), a Chartered Water and Environmental Manager at Arcus Consultancy Services Limited (Arcus). The Chapter has been reviewed by Heather Kwiatkowski, Senior EIA Project Manager at Arcus, and Stuart Davidson, Registered EIA Practitioner and Operational Director at Arcus.

This chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Assessment of Potential Effects;
- Mitigation and Residual Effects;
- Cumulative Effect Assessment;
- Summary of Effects; and
- Statement of Significance.

This Chapter of the EIA Report is supported by the following Technical Appendix documents provided in Volume 3 Technical Appendices:

- Appendix A12.1: Outline Water Construction Environmental Management Plan (WCEMP); and
- Appendix A12.2: Private Water Supplies Risk Assessment.

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a: Figures excluding LVIA:

- Figure 12.1: Hydrology Study Areas;
- Figure 12.2: Hydrological Catchments;
- Figure 12.3: Watercourse Crossings; and
- Figure 12.4: Private Water Supplies.

12.2 LEGISLATION, POLICY AND GUIDANCE

The following guidance, legislation and information sources have been considered in carrying out this assessment.

12.2.1 Legislative Background

The Water Framework Directive (WFD) (2000/60/EC)¹ establishes a framework for the protection, improvement and sustainable use of all water environments. It is transposed within Scotland by The Water Environment and Water Services (Scotland) Act 2003² and subsidiary Regulations.

Other relevant legislation includes:

¹European Commission (2006) The Water Framework Directive (2000/60/EC) Available at: http://ec.europa.eu/environment/water/water-framework/index_en.html Accessed on: 22/9/2020

² Water Environment and Water Services (Scotland) Act 2003. Available at: <http://www.legislation.gov.uk/asp/2003/3/contents> Accessed on: 22/9/2020

- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (the CAR Regulations)³;
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations)⁴;
- The Water Quality (Scotland) Regulations 2010⁵;
- The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003⁶;
- The Private Water Supplies (Scotland) Regulations 2006⁷;
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017⁸; and
- The Public and Private Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2017⁹.

12.2.2 Scottish Planning Policy and Guidance

The Scottish Planning Policy (SPP)¹⁰ is a non-statutory document which sets out the Scottish Government's policy on how nationally important land use planning matters should be addressed.

In paragraphs 255 to 268, the SPP sets out guidance for developments within areas of flood risk, including the responsibilities of planning authorities in regulating and controlling development in such areas, in order to prevent increased risk of flooding in the future. SPP emphasises the need to apply sustainability principles to the prevention of flooding and the control of future development.

12.2.3 Pollution Prevention Guidelines (PPGs)

Produced by the Scottish Environment Protection Agency (SEPA), Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs)¹¹ give advice on statutory responsibilities and good environmental practice. Each PPG and GPP addresses a specific industrial sector or activity. SEPA are in the process of replacing the PPGs with GPPs, however, this process is ongoing. The following are of relevance principally to surface water; however, as surface water has the potential to affect groundwater, they are also of relevance to the assessment of groundwater:

- PPG1: General guide to the prevention of water pollution;
- GPP2: Above ground oil storage tanks;
- GPP4: Treatment and disposal of wastewater where there is no connection to the public foul sewer;
- GPP5: Works and maintenance in or near water;

³ Scottish Government (2011) The Water Environment (Controlled Activities) (Scotland) Regulations 2011. Available at: <http://www.legislation.gov.uk/ssi/2011/209/made> Accessed on: 22/9/2020

⁴ Scottish Government. (2017) The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations). Available at <https://www.legislation.gov.uk/ssi/2017/101/made>. Accessed on: 22/9/2020

⁵ Scottish Government (2010) The Water Quality (Scotland) Regulations 2010. Available at: <http://www.legislation.gov.uk/ssi/2010/95/contents/made> Accessed on: 22/9/2020

⁶ Scottish Government (2003) Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003. Available at: http://www.opsi.gov.uk/legislation/scotland/acts2003/asp_20030015_en_1 Accessed on: 01 April 2020

⁷ Scottish Government (2006) the Private Water Supplies (Scotland) Regulations 2006. Available at: <http://www.legislation.gov.uk/ssi/2006/209/contents/made> Accessed on: 22/9/2020

⁸ Scottish Government (2017) the Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017. Available at: <https://www.legislation.gov.uk/ssi/2017/282/note/made> Accessed on: 22/9/2020

⁹ Scottish Government (2017) the Private and Public Water Supplies (Miscellaneous Amendments) (Scotland) Regulations 2017. Available at: <https://www.legislation.gov.uk/ssi/2015/346/contents> Accessed on: 22/9/2020

¹⁰ UK Government (2014) Scottish Planning Policy. Available at: <https://www.gov.scot/publications/scottish-planning-policy/> Accessed on: 22/9/2020

¹¹ SEPA (various) Pollution Prevention Guidelines. PPG 1 to 21 Available at: <https://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/> Accessed on: 22/9/2020

- PPG6: Working at construction and demolition sites;
- GPP8: Safe storage and disposal of used oils;
- PPG18: Managing fire water and major spillages;
- GPP21: Pollution incident response planning; and
- GPP22: Dealing with spills.

12.2.4 Other Guidance

Other relevant guidance comprises the following:

- The Scottish Government (2001), PAN 61: Planning and Sustainable Urban Drainage Systems¹²;
- SEPA (2015) 'Culverting of Watercourses': Position Statement and Supporting Guidance¹³;
- SEPA (2010), Engineering in the water environment: good practice guide: River crossings¹⁴;
- British Geological Society (BGS) (2018) Aquifer and Vulnerability Maps¹⁵;
- SEPA and Scotland and Northern Ireland Forum for Environmental Research (SNIFFER) (2004) Groundwater Vulnerability Maps;
- SEPA (2017), Land Use Planning System Guidance Note 31, Version 3, (LUPS-GN31)¹⁶;
- SEPA (2019) Climate change allowances for flood risk assessment in land use planning (LUPS-CC1)¹⁷;
- SEPA (2002), Managing River Habitats for Fisheries¹⁸;
- SEPA (2018), CAR - A Practical Guide, Version 8¹⁹;
- The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013²⁰;
- SEPA (2009), River Basin Management Plan²¹;
- Scottish Natural Heritage (SNH –NatureScot as of 24th August 2020) (2019), Good Practice During Wind Farm Construction²²;
- NatureScot (2020), General pre-application and scoping advice for onshore wind farms²³;

¹² The Scottish Government (2001) Planning Advice Note 61: Planning and Sustainable Urban Drainage Systems (PAN 61). Available at: <https://www2.gov.scot/Publications/2001/07/pan61> Accessed on: 22/9/2020

¹³ SEPA (2015) WAT-PS-06-02: Culverting of Watercourses – Position Statement and Supporting Guidance Available at: https://www.sepa.org.uk/media/150919/wat_ps_06_02.pdf Accessed on: 22/9/2020

¹⁴ SEPA (2010) Engineering in the water environment: good practice guide – River Crossings. Available from: <https://www.sepa.org.uk/media/151036/wat-sg-25.pdf> Accessed on: 22/9/2020

¹⁵ British Geological Survey (BGS) (2018) Groundwater Vulnerability (Scotland) GIS dataset Version 2. Available at: <https://www.bgs.ac.uk/data/publications/pubs.cfc?method=viewRecord&pubId=19868617> Accessed on: 22/9/2020

¹⁶ SEPA (2017) Land Use Planning System – SEPA Guidance Note 31 (LUPS-GU31) Version 3. Available at: <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf> Accessed on: 22/9/2020

¹⁷ SEPA (2019) Climate Change Allowances for Flood Risk Assessment in Land Use Planning (LUPS-CC1). Available at: https://www.sepa.org.uk/media/426913/lups_cc1.pdf Accessed on: 22/9/2020

¹⁸ The Scottish Government (2005) Managing River Habitats for Fisheries. Available at: <https://www2.gov.scot/Publications/2002/04/14606/3644> Accessed on: 22/9/2020

¹⁹ SEPA (2018) The CAR Practical Guide, Version 8. Available at: https://www.sepa.org.uk/media/34761/car_a_practical_guide.pdf Accessed on: 22/9/2020

²⁰ Scottish Government (2013) The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013. Available at: <http://www.legislation.gov.uk/ssi/2013/29/introduction/made> Accessed on: 22/9/2020

²¹ SEPA (2009) River Basin Management Plan. Available at: <https://www.sepa.org.uk/environment/water/river-basin-management-planning/the-current-plans> Accessed on: 22/9/2020

²² SNH (2019) Good Practice During Wind Farm Construction. Available at: <https://www.nature.scot/guidance-good-practice-during-wind-farm-construction> Accessed on: 22/9/2020

²³ NatureScot (2020), General pre-application and scoping advice for onshore wind farms. Available at <https://www.nature.scot/sites/default/files/2020-05/General%20pre->

- The Construction Industry Research and Information Association (CIRIA) (2015), Environmental Good Practice on Site (C741)²⁴;
- CIRIA (2001), Control of Water Pollution from Construction Sites (C532)²⁵; and
- CIRIA (2015), The SuDS Manual (C753).

12.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

This assessment has involved the following elements, further details of which are provided in the sections below:

- Consultation with relevant statutory and non-statutory bodies;
- Desk study, including review of available maps and published information;
- Site walkover;
- Input to design process to minimise effects;
- Identification and evaluation of potential effects;
- Evaluation of the significance of these effects;
- Identification of measures to avoid and mitigate potential effects;
- Assessment of residual effects;
- Evaluation of potential cumulative effects;
- Proposed monitoring; and
- Statement of significance.

12.3.1 Scoping Opinion and Consultations

Consultation for this EIA Report topic was undertaken with the organisations shown in Table 12.1. The response to each point raised by consultees is also presented within the table, demonstrating where the design of the Development has addressed the response to specific issues identified by consultees. Responses from SEPA and Scottish Water were received with respect to the hydrology and hydrogeology assessment.

[application%20and%20scoping%20advice%20for%20onshore%20wind%20farms%20-%20SNH%20guidance%20-%20May%202020.pdf](#) Accessed on: 22/9/2020

²⁴ CIRIA (2015) Environmental Good Practice on Site. Available at:

https://www.ciria.org/Training/Training_courses/Environmental_good_practice_on_site.aspx Accessed on: 22/9/2020

²⁵ CIRIA (2001) Control of Water Pollution from Construction Sites (C532). Available at:

<https://www.ciria.org/ItemDetail?iProductCode=C649&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91> Accessed on: 22/9/2020

Table 12.1: Scoping Opinion

Consultee	Summary of Scoping Opinion	Response to Consultee
SEPA Scoping Response, 19/03/2020	<i>"1.5 There are numerous watercourses on this site and connecting tracks will need to be carefully considered to demonstrate how they minimise watercourse crossings and potential impacts to the water environment, especially on steep ground to the south of the proposal. All watercourse crossings should be designed to accommodate the 1 in 200 year event plus climate change, and other infrastructure should be located well away from watercourses. All watercourse crossings must be designed as traditional style bridges or bottomless arched culverts."</i>	The Development has been designed to avoid impinging on the water environment and has utilised the existing infrastructure serving the Operational Corriegarth Wind Farm. All culverts will be designed to accommodate 1 in 200-year flood event plus the appropriate climate change allowance. The Principal Contractor will have the ultimate responsibility to ensure that the design of crossings adheres to good practice and SEPA guidance. Further information regarding watercourse crossing and track design is incorporated in Chapter 4: Project Description. Measures within the outline WCEMP (Appendix A12.1), will safeguard watercourses. Proposed infrastructure, including watercourse crossings, are shown on Figure 12.3.
	<i>"1.7 We will expect the layout to avoid Groundwater Dependent Terrestrial Ecosystems (GWDTEs) and sensitive wetlands which are identified through a National Vegetation Classification (NVC) survey. Therefore, a map demonstrating that all GWDTE are outwith a 100 m radius of all excavations shallower than 1 m and outwith 250 m of all excavations deeper than 1 m must be submitted."</i>	An Extended Phase 1 habitat and NVC survey has been undertaken and is detailed within Chapter 7: Ecology. An assessment of the potential hydrological and hydrogeological effects arising from the Development on GWDTEs is provided in 12.4.5 and 12.6 of this Chapter.
	<i>"1.9 The layout must ensure a separation distance of 50 m between turbines and water bodies. While not submitted with this consultation, we did note previously from material provided during the Major Pre-application meeting on 9 September 2019 that a buffer was provided on a site plan, however it was not presented at a scale which clearly demonstrated avoidance had been achieved. There are multiple locations of concern, and a more appropriate scaled site plan should be submitted."</i>	The Development has been designed to avoid effects on the water environment. A 50 m buffer of watercourses has been incorporated into the design of the Development. Proposed infrastructure, including wind turbines, are shown on Figure 12.2 in relation to hydrological catchments. Figure 12.3 shows infrastructure and a 50 m buffer of watercourses. Measures within the outline Appendix A12.1: WCEMP will safeguard watercourses and subsurface water.
	<i>"1.11 You may need a Construction Site Licenses under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR)."</i>	A Construction Site License(s) under the CAR Regulations will be applied for prior to the construction phase of the Development.

Consultee	Summary of Scoping Opinion	Response to Consultee
Scottish Water (SW) Scoping Response 10/03/2020	<i>"A review of our records indicates that the proposed activity falls within a drinking water catchment where a Scottish Water abstraction is located. Scottish Water abstractions are designated as Drinking Water Protected Areas (DWPA) under Article 7 of the Water Framework Directive. Loch Ness supplies Invermoriston Water Treatment Works (WTW) and it is essential that water quality and water quantity in the area are protected. In the event of an incident occurring that could affect Scottish Water we should be notified without delay using the Customer Helpline number 0800 0778 778.</i> <i>It is a relatively large catchment and the activity is sufficient distance from the intake that it is likely to be low risk."</i>	It is acknowledged that SW deem the construction of the Development to be of a sufficient distance from the intake to be 'low risk'. Public Water Supplies are discussed within Section 12.4.8 of this Chapter and a Private Water Supply Risk Assessment (PWSRA) is provided as Appendix 12.2. Potential effects on the hydrological environment from all aspects of the Development are assessed within this Chapter in paragraphs 12.6. Measures within Appendix A12.1: WCEMP, will safeguard watercourses and subsurface water. The location of watercourses within a drinking water catchment is considered in the determination of the sensitivity of receptors detailed in Table 12.9, and are considered as Very High sensitivity receptors. The potential effects of the Development on the drinking water catchment has been assessed in sections 12.6. SW will be consulted prior to the construction phase of the Development.
	<i>"For reasons of sustainability and to protect our customers from potential future sewer flooding, Scottish Water will not accept any surface water connections into our combined sewer system.</i> <i>Greenfield sites will not be considered and a connection to the combined network will be refused.</i> <i>In order to avoid costs and delays where a surface water discharge to our combined sewer system is proposed, the developer should contact Scottish Water at the earliest opportunity with strong evidence to support the intended drainage plan prior to making a connection request."</i>	Surface and foul water at the Development will not be discharged to SW assets and will be treated by SuDS and GPP4: <i>Treatment and disposal of wastewater where there is no connection to the public foul sewer.</i>
Marine Scotland Science (MSS) Scoping Response 16/03/2020	<i>"an outline of the proposed site specific mitigation measures and details regarding proposed monitoring programmes for water quality and fish populations before, during and after construction and decommission..."</i>	Site specific mitigation is provided within Appendix 12.1 WCEMP, including the proposals for water quality monitoring.

12.3.2 Scope of Assessment

The key issues for the assessment of potential hydrological and hydrogeological effects relating to the Development include:

- Potential chemical pollution effects on the hydrological environment;

- Potential erosion and sedimentation effects on the hydrological environment;
- Potential impediments to stream flow;
- Potential effects on the hydrological function of GWDTEs;
- Potential for an increase in surface water runoff and flood risk; and
- Potential effects on Public and Private Water Supplies.

Effects during construction, operation and decommissioning have been assessed, as well as potential cumulative effects.

Consultation with the Council and the Drinking Water Quality Regulator for Scotland has identified three PWS within the PWS Study Area (defined in Section 12.3.4). Consultation with SW has confirmed that the Site falls within the Loch Ness and Invermoriston Water drinking water treatment works catchment, which is a DWPA.

12.3.3 Elements Scoped Out of Assessment

Based on the baseline conditions and scoping consultation, the following elements of the hydrology and hydrogeology assessment are scoped out:

- Designated receptors not hydrologically connected to the Development, as detailed in Table 12.7 as there is no potential for Hydrological effects on these receptors; and
- Receptors at distances greater than 10 kilometres (km) from the site boundary (Wider Study Area), as pollution and sedimentation effects on the water environment beyond this distance is unlikely.

12.3.4 Study Area

As outlined in the Scoping Report for the Development, the following study areas are considered within this assessment and shown in Figure 12.1:

- The Core Study Area: defined by the site boundary of the Development for onsite hydrology and hydrogeology;
- The PWS Study Area: a 2 km Study Area from the site boundary is used to assess the PWS;
- The Wider Study Area: a 10 km Study Area from the site boundary has also been considered to assess potential effects on the downstream water environment.

12.3.5 Baseline Survey Methodology

A desk-based assessment, consultation and site walkover are conducted to inform the hydrology and hydrogeology assessment.

12.3.5.1 Desk-Based Assessment

The desk-based assessment includes:

- Identification of watercourses, surface water catchments and springs;
- Identification of underlying geology and hydrogeology and connectivity to the Development;
- Assessment of topography and slope to inform drainage patterns;
- Collation of data provided through consultation, including details on PWS and sources;
- Assessment of flood risk data and mapping; and
- Assessment of potential for the presence of GWDTEs.

The following sources of information were used to inform the desk-based assessment:

- The Ordnance Survey (OS) 1:50,000 (Digital);
- OS 1:25,000 Map (Digital);

- National River Flow Archive (NRFA)²⁶;
- SEPA Flood Map (2019 update)²⁷;
- Meteorological Office Rainfall Data²⁸; and
- The BGS GeoIndex onshore geology viewer (Digital)²⁹.

12.3.5.2 Consultation

In addition to Scoping consultation outlined in Section 12.3.1, the following consultees have been contacted to inform the hydrology assessment:

- The Council Environmental Health Office (EHO) via email to obtain information on registered PWS within the PWS Study Area; and
- Residents and owners of properties which are identified as being supplied by a PWS to obtain information on the source and supply of the PWS.

Further information on this consultation is provided as part of the PWSRA in Appendix 12.2.

12.3.5.3 Site Walkover

A site walkover was undertaken on 6th November 2019 to visually inspect surface water features and to obtain an understanding of the local topography and hydrological regime. The weather was dry and clear during the site visit with snow evident on higher slopes. There were intermittent periods of rain in the preceding days.

The site walkover covered the area within the Core Study Area, as shown in Figure 9.1. This includes surveying the streams Allt Bad Fionnaich, Allt a Ghille Chraich and the River E, and associated tributaries.

12.3.6 Methodology for the Assessment of Effects

In order to assess the potential effects arising from the Development, the significance of such effects will be determined relating to the sensitivity of the resource or receptor at risk and the magnitude of change as a result of the effect. The assessment of effects will combine professional judgement together with consideration of the following:

- The sensitivity of the resource or receptor under consideration; and
- The magnitude of change in relation to the potential effect which occurs as a result of the Development.

The methodology outlined in Sections 12.3.6.1 to 12.3.6.3 and has been developed by Arcus in consultation with SEPA, NatureScot, Marine Scotland, and the Scottish Government. The assessment is based on a source-pathway-receptor methodology, where the sensitivity of the receptors and the magnitude of potential change upon those receptors identified within the study areas.

12.3.6.1 Sensitivity of Receptors

The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Site or the sensitivity of potentially affected receptors, will be assessed in line with best practice guidance, legislation, statutory designations and / or professional judgement.

Table 12.2 details the framework for determining the sensitivity of receptors.

²⁶ Centre for Ecology and Hydrology (undated) National River Flow Archive. Available at: <http://nrfa.ceh.ac.uk/> Accessed on: 22/9/2020

²⁷ SEPA (2019) Flood Maps. Available at: <http://map.sepa.org.uk/floodmap/map.htm> Accessed on: 22/9/2020

²⁸ Met Office (2019) Climate Data. Available at: <http://www.metoffice.gov.uk/public/weather/climate> Accessed on: 22/9/2020

²⁹ BGS (2019) GeoIndex Onshore. Available at: <https://mapapps2.bgs.ac.uk/geoindex/home.html> Accessed on: 22/9/2020

Table 12.2: Framework for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
Very High	• A large, medium or small waterbody with a SEPA water quality classification of 'High'. • The hydrological receptor is used for recreational use (e.g. bathing waters). • The hydrological receptor and downstream environment have no capacity to attenuate natural fluctuations in hydrochemistry and cannot absorb further changes without fundamentally altering its baseline characteristics / natural processes. • Local groundwater constitutes a valuable resource because of its high quality and yield. Aquifer classified by the BGS as 'highly productive aquifer' and is of regional importance. Statutorily designated nature conservation sites dependent on groundwater. • Groundwater vulnerability class 5: vulnerable to most pollutants, with rapid impact in many scenarios. • The hydrological receptor will support abstractions for public water supply or private water abstractions for the production of mass-produced food and drinks. • The hydrological receptor will support abstractions for any public water supply, or private water abstractions which supply more than 25 people and / or 100 livestock (at any given point in the year) and/ or is used for the mass-production of food and drinks. • GWDTEs which are classified by SEPA as "highly groundwater dependent" and are have no (<1 %) functional impairment by man-made influence (such as drainage or forestry). • The hydrological receptor is of high environmental importance or is designated as European or international importance, such as a Special Area of Conservation (SAC), Special Protections Areas (SPA), or Wetland of International Importance (Ramsar). • The receptor acts as an active floodplain or other flood defence, in accordance with SPP.
High	• Land use is highly sensitive to hydrological change (e.g. peat and blanket bog). • A large, medium or small waterbody with a SEPA water quality classification of 'Good'. • The hydrological receptor and downstream environment have limited capacity to attenuate natural fluctuations in hydrochemistry and cannot absorb further changes without fundamentally altering its baseline characteristics / natural processes. • Aquifer of local importance. Groundwater body is classified by the BGS as a 'moderately productive aquifer', with moderate yield from secondary fractures and near-surface weathering. Exploitation of local groundwater is not far-reaching. Local areas of nature conservation known to be sensitive to groundwater effects. • Groundwater vulnerability class 4a – 4b: vulnerable to those pollutants not readily adsorbed or transformed. • The hydrological receptor supports abstractions for private water supply for up to 25 people and / or 100 livestock (at any given point in the year). • GWDTEs which are classified by SEPA as "highly groundwater dependent" have minor (1 - 25 %) functional impairment by man-made influence (such as drainage or forestry). • The hydrological receptor is designated as national environmental importance, such as a Site of Special Scientific Interest (SSSI) and National Nature Reserves (NNR). • The receptor is located within an active flood plain, in accordance with SPP.
Medium	• Land use is moderately sensitive to hydrological change (e.g. commercial forestry).

Sensitivity of Receptor	Definition
	• A large, medium or small waterbody with a SEPA water quality classification of 'Moderate'. • The hydrological receptor and downstream environment will have moderate capacity to attenuate natural fluctuations in hydrochemistry but cannot absorb certain changes without fundamentally altering its baseline characteristics / natural processes. • Aquifer of limited value (less than local) and is classified by the BGS as a 'low productivity aquifer' as water quality does not allow potable or other quality sensitive uses. Exploitation of local groundwater is not far-reaching. Local areas of nature conservation known to be sensitive to groundwater effects. • Groundwater vulnerability class 2-3: vulnerable to some pollutants. • GWDTEs/wetlands which are classified by SEPA as "highly groundwater dependent" but have moderate (25 % - 50 %) functional impairment by man-made influence (such as drainage or forestry). • GWDTEs which are classified by SEPA as "moderately groundwater dependent" have no functional impairment by man-made influence (such as drainage or forestry). • The hydrological receptor does not act as an active floodplain or other flood defence but is considered to provide some degree of natural flood management (e.g. peat soils). • The hydrological receptor is of local environmental importance (such as Local Nature Reserves (LNR)).
Low	• Land use not sensitive to change in hydrological regime (e.g. intensive grazing). • The hydrological receptor is not used for recreational use. • A large, medium or small waterbody with a SEPA water quality classification of 'Poor' or 'Bad'. • The hydrological receptor and downstream environment will have capacity to attenuate natural fluctuations in hydrochemistry but can absorb any changes without fundamentally altering its baseline characteristics / natural processes. • Poor groundwater quality and / or very low permeability make exploitation of groundwater unfeasible. Changes to groundwater not expected to affect local ecology. • Groundwater vulnerability class 1: vulnerable to conservative pollutants. • The hydrological receptor does not support abstractions for public water supply or private water abstractions. • GWDTEs which are classified by SEPA as "highly groundwater dependent" but have major (>50 %) functional impairment by man-made influence (such as drainage or forestry). • GWDTEs which are classified by SEPA as "moderately groundwater dependent" but have functional impairment by man-made influence (such as drainage or forestry). • GWDTEs which are classified by SEPA as "highly or moderately groundwater dependent" but are ombrotrophic. • The hydrological receptor does not act as an active floodplain or other flood defence. • The hydrological receptor is not of regional, national or international environmental importance. • The hydrological receptor is not designated for supporting freshwater ecological interest.
Negligible	The receptor is resistant to change and is of little environmental value.

123.6.2 Magnitude of Change

The magnitude of change will be identified through consideration of the Development, the degree of change to baseline conditions predicted as a result of the Development,

the duration and reversibility of an effect and professional judgement, best practice guidance and legislation.

The criteria for assessing the magnitude of change are presented in Table 12.3.

Table 12.3: Framework for Determining Magnitude of Change

Magnitude of Effects	Definition
High	• A short or long-term major shift in hydrochemistry or hydrological conditions sufficient to negatively change the ecology of the receptor. This change will equate to a downgrading of a SEPA water quality classification by two classes e.g. from 'High' to 'Moderate'. • A sufficient material increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water (in accordance with SPP). • A major (greater than 50 %) or total loss of a geological receptor or peat habitat site, or where there will be complete severance of a site such as to fundamentally affect the integrity of the site (e.g. blocking hydrological connectivity). • A major loss of (greater than 50 % of study area) or total loss of highly dependent and high value GWDTE, or where there will be complete hydrological severance which will fundamentally affect the integrity of the feature. • A major permanent or long-term negative change to groundwater quality or available yield. • The yield of existing supplies may be lost or major long-term or short-term reduction in quantity and/ or deterioration in quality. • A major permanent or long-term negative change to geological receptor, such as the alteration of pH or drying out of peat. • Changes to groundwater quality or water table level that will negatively alter local ecology or will lead to a groundwater flooding issue.
Medium	• A short or long term non-fundamental change to the hydrochemistry or hydrological environment, resulting in a change in ecological status. This change will equate to a downgrading of a SEPA water quality classification by one class e.g. from 'High' to 'Good.' • A moderate increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water (in accordance with SPP). • A loss of part (approximately 5 % - 50 %) of a geological receptor or peat habitat site, major severance, major effects to its integrity as a feature, or disturbance such that the value of the site will be affected, but could still function. • A loss of part (approximately 10 % - 50 % of study area) of a moderately dependent and moderate value GWDTE – significant hydrological severance affects the integrity of the feature, but it could still function. • Changes to the local groundwater regime that may slightly affect the use of the receptor. • The yield of existing supplies may be reduced or quality slightly deteriorated. • Fundamental negative changes to local habitats may occur, resulting in impaired functionality.
Low	• A detectable non-detrimental change to the baseline hydrochemistry or hydrological environment. This change will not result in a downgrading of the SEPA water quality classification. • A marginal increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood

Magnitude of Effects	Definition
	plain to attenuate the effects of flooding by storing flood water (in accordance with SPP). - A detectable but non-material effect on the receptor (up to 5 %) or a moderate effect on its integrity as a feature or where there will be a minor severance or disturbance such that the functionality of the receptor will not be affected. - A detectable effect on a GWDTE (loss of between 5 % - 10 % of Core Study Area) or a minor effect on a GWDTE's integrity as a feature or where there will be a minor severance or disturbance such that the functionality of the receptor will not be affected. - Changes to groundwater quality, levels or yields do not represent a risk to existing baseline conditions or ecology.
Negligible	- No perceptible changes to the baseline hydrochemistry or hydrological environment. - No change to the SEPA water quality classification. - No increase in the probability of flooding onsite and offsite. - A slight or negligible change from baseline condition of geological resources. - Change hardly discernible, approximating to a 'no change' in geological condition. - Minimal detectable effect on a GWDTE (between to 0.1 % - 5 % of Core Study Area) or no discernible effect on its integrity as a feature or its functionality.

12.3.6.3 Significance of Effect

The sensitivity of the asset and the magnitude of the predicted effects will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects. Table 12.4 summarises guideline criteria for assessing the significance of effects.

Table 12.4: Framework for Assessment of the Significance of Effects

Magnitude of Effect	Sensitivity of Resource or Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light grey in the above table.

12.3.7 Assessment Limitations

All data considered necessary to identify and assess the potential significant effects resulting from the Development was available and was used in the assessment reported in this Chapter.

This is with the exception of PWSRA. PWS site visits have not been conducted as part of the hydrology and hydrogeology assessment due to restrictions regarding travel associated with COVID-19. Given the distances of the PWS from Development infrastructure and that PWS questionnaires were provided by supply owners it is considered that the level of information is appropriate to inform this assessment.

12.3.8 Embedded Mitigation

The following mitigation measures relating to the hydrological environment are embedded into the design and construction of the Development:

- 50 m watercourse buffers for construction works with the exception of watercourse crossings; and
- Construction good practice methods and works for protection of hydrological receptors as outlined in the Appendix A12.1: Outline WCEMP.

Accordingly, the identification of likely significant effects from the Development is considered following implementation of the measures in Appendix A12.1.

The Outline WCEMP describes water management measures to control surface water run-off and drain hardstanding's and other structures during the construction and operation of the Development. This will form part of a Pollution Prevention Plan (PPP) to be implemented for the Development.

A 50 m watercourse buffer zone in conjunction with the measures set out in the WCEMP is implemented for the majority of infrastructure. It is sufficient to avoid potential effects on the hydrological and hydrogeological resource, as their effectiveness has been demonstrated on several wind farm construction sites for which Arcus has provided technical advice for.

12.4 BASELINE CONDITIONS

12.4.1 Topography and Land Use

The Development occupies an undulating upland location with steep sided gullies and topography to the south and gentler slopes and flatter heathland in the north. The western section of the Core Study Area encompasses the Carn na Saobhaide hill (603 m Above Ordnance Datum (AOD)), the western slope drops to approximately 560 m AOD. The topography rises to the east from 560 m AOD to 770 m AOD at the eastern most extent of the Core Study Area. The south of the Core Study Area comprises of steeper contours and rises to approximately 750 m AOD on the slopes of the Doire Meurach hill, Càrn na Làraiche Maoile hill and Carn a Choire Sheilich hill.

An existing access track serving the operational Corriegarth Wind Farm is located in the northwest of the Core Study Area, rising from approximately 270 m AOD at the Site entrance to 770 m AOD, and bisects several areas of forestry. The existing access track also crosses several watercourses and utilises culverts to convey flow.

The Core Study Area is overlain by blanket sphagnum bog with areas of wet heathland and modified bog in the west, on the lower topography. The River E flows east to west along the southern boundary of the Core Study Area, with smaller tributaries draining from the south over the steeper topography.

12.4.2 Climate

The National River Flow Archive (NRFA) reports Average Annual Rainfall (AAR 1961 - 1990) on the Tarff at Ardachy Bridge station, approximately 16 km to the south-west of the Development, as 1,616 millimetres (mm).

As monthly long-term climate data is not freely available from the NRFA, long-term average rainfall data (1981 to 2010) obtained by the Meteorological Office at the Fort Augustus gauging station, located approximately 15 km to the south-west of the Development, are presented in Table 12.5.

Table 12.5: Long-term Average Rainfall Met Office data (1981 – 2010), Fort Augustus

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall (mm)	187.3	129.8	127.9	64.1	63.5	62.6	66.6	83.0	112.3	144.6	137.8	156.9

12.4.3 Surface Hydrology

The Development lies within the overall surface water catchments of the River E and River Foyers (drained by the River Gourag / Allt an Lòin).

The River E flows east to west across the Core Study Area before discharging into Loch Mhor (also known as Loch Garth). It is a wide, meandering channel with steep-sided banks and ranging from approximately 3 - 4 m width. It is relatively shallow (50 cm deep) with a moderate flow rate observed during the site walkover. The channel is well-developed with a rock-based streambed and a slight brown colouration to the water, suggesting influence from peat-rich soils.

Plate 12.1 and Plate 12.2: River E at National Grid Reference (NGR) 256228 812533 looking west downstream (left) and east upstream (right) show the River E channel in the west of the Core Study Area.

Plate 12.1 and Plate 12.2: River E at National Grid Reference (NGR) 256228 812533 looking west downstream (left) and east upstream (right)



The headwaters of the River E emanate in the south-east of the Core Study Area in a dendritic drainage system, draining from a network of ephemeral small channels cut into deep peat soils. Rain-water and surface water run-off collects from the surrounding higher ground to form pools as shown in Plate 12.3 and Plate 12.4: River E headwaters at NGR 259059 812871 looking south-east towards higher topography and area of water collects (left) and north-west downstream towards main River E channel (right)

Plate 12.3 and Plate 12.4: River E headwaters at NGR 259059 812871 looking south-east towards higher topography and area of water collects (left) and north-west downstream towards main River E channel (right)



T7 is located within the ephemeral area of River E headwater collects but remains outside of the 50 m buffer, at approximately 350 m, from the main River E channel.

The River E has an overall SEPA status of “Moderate”.

A number of smaller tributaries of the River E drain south to north from higher topography to the south of the Core Study Area and form steep-sided gullies as shown in Plate 12.5 and Plate 12.6: Tributaries of the River E in the south of the . The tributaries are located between T1 - T7. Seven turbines and associated access tracks from the Operational Corriegarth Wind Farm are located in the upper River E catchment. All tributaries form in a dendritic drainage system of small channels.

Plate 12.5 and Plate 12.6: Tributaries of the River E in the south of the Core Study Area



In the north of the Core Study Area, the Allt Bad Fionnaich channel width is approximately 2 m, varying as it meanders. It is relatively shallow (30 cm) and has a rock-based streambed. The stream is likely to be 'flashy' (i.e. respond quickly to precipitation events) and shows evidence of wider channel and banks during periods of heavier rainfall.

The turbines T11 - T15 are located within the catchment of the Allt Bad Fionnaich, as shown in Figure 12.1. No infrastructure or wind turbine bases are located within the 50 m watercourse buffer.

The Allt a Ghille Charaich flows east to west through the centre of the Core Study Area, where the majority of the Operational Corriegarth Wind Farm is present. It is similar in nature to the Allt Bad Fionnaich being a 2 - 3 m wide meandering channel with rock-bed streambed and moderate flow rates with evidence of 'flashy' conditions and widening during periods of spate. Infrastructure associated with the Development is largely in excess of 700 m from the Allt a Ghille Charaich, with the exception of T8 - T10 and T16 which are both located within its catchment. No Development infrastructure or wind turbine bases are within the 50 m watercourse buffer.

The River Gourag (named Allt an Lòin immediately downstream of the existing access track crossing), exists to the west of the Core Study Area where the existing access track is located for the Operational Corriegarth Wind Farm. It issues from Loch Mohr and flows south into the River Foyers. The River Gourag has an overall SEPA status of "Good". The Allt an Lòin drains east to west before discharging into the River Foyers / River Fechlin, approximately 1.5 km northwest of the site entrance.

12.4.4 Hydrogeology

BGS 1:625,000 digital mapping identifies the underlying bedrock aquifer of the Core Study Area as psammities (hard metamorphosed sedimentary rocks) of the Grampian Group and unnamed igneous intrusions which are partially overlain by impermeable till (glacial) deposits and peat. These rocks are classified as low productivity aquifers with small

amounts of groundwater in near-surface weathered zone and secondary fractures, with the rare possibility of springs.

Data on hydrogeology was obtained from the BGS Groundwater Vulnerability Map. Vulnerability classes range from 1 to 5, with 5 being most vulnerable. The groundwater vulnerability map is designed to be used at a scale 1:100,000 and is not indicative of site-specific conditions. The groundwater vulnerability within the Core Study Area ranges from 4 to 5. Class 4 is defined as 'Vulnerable to those pollutants not readily adsorbed or transformed' and Class 5 as 'Vulnerable to most pollutants, with rapid impact in many scenarios'³⁰. The Core Study Area is covered in peat deposits which are considered to attenuate any potential pollutants and reduce vulnerability of groundwater units.

Thick peat deposits and superficial deposits are considered to attenuate any potential pollutants and reduce vulnerability of groundwater units. **Chapter 13: Geology and Peat** determine the peat depths to range from 1 to 2 m in areas where wind turbines and associated infrastructure are to be located, and as such the true groundwater vulnerability is considered to be reduced. The SEPA River Basin Management Plan (RBMP) map classes the groundwater body underlying the Core Study Area as the Northern Highlands groundwater body. These units have an overall SEPA classification of 'Good'.

12.4.5 Groundwater Dependent Terrestrial Ecosystems (GWDTEs)

In accordance with SEPA guidance³¹ a Phase 1 habitat survey was undertaken to identify wetland habitats occurring within the Core Study Area. Wetland habitats were identified in line with the criteria outlined in 'A Functional Wetland Typology for Scotland'³². Where wetland habitats were identified, further detailed habitat assessment was undertaken, with identification of National Vegetation Classification (NVC) communities. The survey methods employed for this assessment are outlined in **Chapter 7: Ecology** and the full assessment is provided as Appendix A7.1.

The potential groundwater dependency of NVC communities are defined by Appendix 4 of SEPA LUPS-GU31, and are classed as having the potential to be moderately or highly groundwater dependent. GWDTE habitats have the potential to be dependent on groundwater but not all are dependent on groundwater. As such, site-specific desk- and site-based assessment determines the true groundwater dependency for the identified NVC habitats. The identified GWDTE and assessment of groundwater dependency is outlined in Table 12.6 and shown on Figure 7.3.

³⁰ BGS (2011) User Guide: Groundwater Vulnerability (Scotland) GIS dataset Version 2. Available at: <http://nora.nerc.ac.uk/id/eprint/17084/1/OR11064.pdf> Accessed on: 22/9/2020

³¹ SEPA (2017) Land Use Planning System Guidance Note 31.

Guidance on Assessing the Impacts of Windfarm Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Version 3. Available at: <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf> Accessed on: 22/9/2020

³² SNIFFER (2009) WFD95 A Functional Wetland Typology for Scotland Field Report 2009. Available at: <https://www.sniffer.org.uk/wfd95-a-functional-wetland-typology-for-scotland> Accessed on: 22/9/2020

Table 12.6: Potential GWDTE Communities Identified

NVC Community	Potential groundwater dependency (LUPS-GU31)	Assessed site-specific groundwater dependency	Hydrogeological Assessment
M15 – wet shrub heath	Moderate	Ombrotrophic. Not groundwater dependent.	Combined coverage of 159.6 ha, 11.7 % of the total Core Study Area. Mainly within the west of the Core Study Area in areas of lower lying and flatter topography where the watercourses drain to.
M6 – acid flush and spring (sphagnum)	High	Ombrotrophic. Not groundwater dependent.	Located in areas of stream and river channels and largely reflect the surface water drainage patterns of the Core Study Area. Covers approximately 45 ha of the Core Study Area (3.2 % of the total Core Study Area). The type of species present (nutrient poor) indicate that groundwater dependency is minimal, with majority of water supporting the habitat sourced from rain and surface water run-off.
M32b – spring	High	Ombrotrophic and near-surface water in peat soils. Not groundwater dependent.	Located in topographic depression associated with surface water pooling and collects. The type of species present (nutrient poor) indicate that groundwater dependency is minimal, with majority of water supporting the habitat sourced from rain and surface water run-off.
M10a – flush and spring	High	Potential to be partially dependent on groundwater – likely near-surface water and shallow interflow in peat soils. Contribution from surface water run-off.	Spring feature identified in walkover likely to be as a result of boundary between bedrock unit and superficial deposits causing release of water to surface. Spring water source likely to be from near-surface water and interflow. Overlying peat soils and productivity of bedrock unit suggest unlikely to be sourced from groundwater aquifer.

The nature of the hydrogeology, outlined in Section 0, defines the groundwater unit (aquifer) as 'low productivity' with small amounts of groundwater in the near-surface. The location of GWDTEs largely follow surface water drainage patterns evident in the same locations of streams and in areas of lower lying topography where surface water and surface water run-off drain and pool. As such, the GWDTEs identified within the Core Study Area are considered to be fed by rain, surface run-off and near-surface through flow and thus ombrotrophic in nature and not fed by groundwater.

The M10a flush and spring habitat has the potential to be partially dependent on groundwater however it is unlikely fully supported by true groundwater, and is likely to be near-surface water and interflow in peat soils and superficial deposits.

12.4.6 Designated Hydrological Receptors

The statutory designated sites relating to water within the Wider Study Area (10 km), identified through the use of NatureScot³³ and SEPA³⁴ GIS datasets, and are listed in Table 12.57 and shown on Figure 7.1. No designated sites were identified as being hydrological connectivity with the Development, and all designated have been scoped out of further assessment with regards to hydrology and hydrogeology.

Table 12.7: Statutory Designated Sites within Wider Study Area

Designation	Distance from Site	Qualifying Interest	Hydrological connectivity to the Development
Loch Bran SSSI	1 km north	Dragonflies: dragonfly assemblage	No – hydrologically disconnected by the River Gourag
Ness Woods SAC / Easter Ness Forest SSSI	3.3 km west 5.5 km north	Otter; Western acidic oak woodland; mixed woodland on base-rich soils associated with rocky slopes	No – hydrologically disconnected by River Foyers to the west and by Loch Bran to the north
Loch Knockie and nearby Lochs SPA	5.2 km south-west	Slavonian grebe	No – hydrologically disconnected by the River Fechlin
Monadhliath SAC	8.5 km south-east	Blanket bog	No – upstream of the Site
Levishie Wood SSSI and River Moriston SAC	9.7 km west	Woodland / River with Salmon and Pearl Mussel	No – hydrologically disconnected by Loch Ness

12.4.7 Flooding

The Indicative River and Coastal Flood Map (Scotland) produced by SEPA shows the areas of Scotland with a 0.5 % (1:200) or greater chance of flooding. These areas are known as medium to high risk areas for flooding.

The SEPA Flood Map shows there is a 'High' annual probability of river flooding in any year in the River E and lower reaches of Allt Bad Fionnaich and Allt a' Ghille Charaic. There is a 'High' annual probability of surface water flooding in any year in a tributary of the River E at the southern boundary of the Core Study Area. The flood maps show flooding is restricted to the waterbodies and do not indicate widescale flooding across the Core Study Area.

The flood maps show an area to the north-east of the Site of 'Medium' annual probability of river flooding and 'High' annual probability of surface water flooding in any year, with maximum extents of approximately 0.3 km² and 0.1 km² (100 to 300 m² respectively). The flood maps show flooding is on a small flood plain to the south of Loch Mohr, where the existing access track for the Operational Corriegarth Wind Farm is located.

A 50 m buffer is placed around watercourses onsite and no wind turbine infrastructure is located within the mapped flood extents.

³³ SNH (2019) Natural Spaces. Available at: <http://gateway.snh.gov.uk/natural-spaces/index.jsp> Accessed on: 17 June 2020

³⁴ SEPA (2019) SEPA Water Classification Hub. Available at: <https://www.sepa.org.uk/data-visualisation/water-classification-hub/> Accessed on: 17 June 2020

12.4.8 Public and Private Water Supplies

124.8.1 Public Water Supplies

As summarised in Section 12.3.1, SW confirmed that the Development lies within a designated DWPA under the Water Framework Directive associated with the Loch Ness catchment and Invermoriston drinking water treatment works.

The Development is located approximately 9 km to the east of the Loch Ness DWPA catchment and to the immediate south of the surface water DWPA associated with the Aberchalder Burn, however is considered hydrologically disconnected by topography (i.e. no infrastructure is located within the catchment of Aberchalder Burn).

Where the Development is located within and / or in hydrological connectivity with a DWPA, appropriate good practice measures as outlined in Appendix A12.1, including monitoring as outlined in Section 3.7.

124.8.2 Private Water Supplies

Consultation with the Council identified three PWS within 2 km of the site boundary, while a PWS survey mailshot questionnaire identified two additional supplies. Properties with potential hydrological connectivity were contacted to ascertain the location of their PWS source. The identified PWS and assessed hydrological connectivity to the Development are outlined in Table 12.8.

Table 12.8: Private Water Supplies

Name	Type of PWS	Source of Supply	Distance from the Development	Comments
PWS Fairyburn Lodge	Domestic (1 property)	Surface water (stream)	1.5 km north-east of the Site Boundary	Hydrologically disconnected from the Development by River Gourag.
PWS Tir Nan Og	Domestic (1 property)	Groundwater (Well)	1.3 km north-east of the Site Boundary	Hydrologically disconnected from the Development by Loch Garth and River Gourag catchment boundaries. Disconnected by bedrock unit and north-east to south-west trending fault lines.
PWS Corriegarth Lodge & Keepers Cottage	Domestic (2 properties)	Groundwater - Borehole (c. 105 m deep)	75 m south of Site Boundary - c115 m south of upgraded access track	Disconnected from the Development infrastructure by bedrock unit and north-east to south-west trending fault lines. Hydrologically connected to existing access track.
Garthbeg Farm ('The Bothy')	Domestic	Groundwater - Borehole (c. 120 m deep)	85 m north of Site Boundary - c190 m north of	Hydrogeologically separated from the Development infrastructure by

Name	Type of PWS	Source of Supply	Distance from the Development	Comments
			upgraded access track	bedrock unit and north-east to south-west trending fault lines.
Garthbeg Bungalow	Domestic	Groundwater – Borehole (c. 12 m deep)	155 m north of Site Boundary - - c290 m north of upgraded access track	Hydrogeologically separated from access track by River E and superficial till deposits. Potential for connection to the Development through fracture flow and interaction with groundwater surface waters at River E and Loch Garth.

As a result, the following three PWS are scoped in to the assessment of effects, and the PWSRA:

- Corriegarth Lodge & Keepers Cottage;
- Garthbeg Farm; and
- Garthbeg Bungalow.

12.5 SENSITIVITY OF RECEPTORS

The sensitivities of the identified receptors, and their relationship to the potential effects from the construction of the Development, are outlined in Table 12.9.

Table 12.9: Sensitivity of Receptors

Receptor	Potential Effects	Sensitivity	Sensitivity Description
Watercourses	Increased run-off, erosion and sedimentation, stream flow impediments and pollution as a result of construction groundworks and chemical handling and storage.	High	A large, medium or small waterbody with a SEPA overall condition classification of 'Good'.
Groundwater	Pollution as a result of erosion and sedimentation from construction activities and uncontained spills from chemical handling and storage.	High	Groundwater vulnerability is classified as 4 to 5 but with thick peat deposits. SEPA overall condition classification of 'Good'.
Near-surface Water	Diversion of near-surface flow as a result of track construction and the installation of wind turbine foundations / hardstanding.	High	Supports carbon-rich and peaty soils.
GWDTE (moderately groundwater dependent)	Pollution as a result of track construction and uncontained spills from chemical handling / storage. Drying out or changes to groundwater interflow	Medium	GWDTEs which are classified by SEPA as "moderately groundwater dependent" and have no functional impairment by man-made

Receptor	Potential Effects	Sensitivity	Sensitivity Description
	patterns as a result of construction.		influence (such as drainage or forestry).
GWDTE (highly groundwater dependent)	Pollution as a result of track construction and uncontained spills from chemical handling / storage. Drying out or changes to groundwater interflow patterns as a result of construction.	Very High	GWDTEs which are classified by SEPA as "highly groundwater dependent" have no functional impairment by man-made influence (such as drainage or forestry).
Public Water Supplies	Increased run-off, erosion and sedimentation, stream flow impediments and pollution as a result of construction groundworks and chemical handling and storage.	Very High	The hydrological receptor will support abstractions for any public water supply.
Private Water Supplies	Pollution as a result of track upgrades and uncontained spills from vehicles, and chemical handling/ storage. Drying out or changes to quantity as a result of upgrades to access track.	High	The hydrological receptor supports abstractions for private water abstractions for up to 25 people and / or 100 livestock (at any given point in the year).
Soils	Compaction leading to increased surface water run-off.	Medium	Does not act as an active floodplain or other flood defence but is considered to provide some degree of natural flood management.

12.6 ASSESSMENT OF POTENTIAL EFFECTS

The effect of the Development on hydrological receptors has been considered for the construction, operation and decommissioning phases of the Development. Effects occurring during construction and decommissioning are considered to be short term effects, with those occurring as a result of the operational phase of the Development being considered to be long term effects.

12.6.1 Potential Construction Effects

The nature and magnitude of effects that could result from construction activities, as described in **Chapter 4: Project Description** are assessed in the following paragraphs, which includes construction of new access tracks, wind turbines and associated infrastructure, hardstanding, and temporary construction compounds and borrow pits for the Development.

12.6.1.1 Chemical Pollution

Potential risks include the spillage or leakage of pollutants or hazardous substances during use or storage onsite, including chemicals, fresh concrete, foul water, fuel or oil. These pollutants have the potential to adversely affect surface water quality, peat and soils, subsurface water quality and groundwater, and effect the biodiversity of receiving watercourses.

Surface Hydrology

Watercourses have the potential to be at risk from a chemical pollution incident during construction. Watercourses in hydrological connectivity with the Development are classed as having high sensitivity, as per Table 12.9.

As outlined in Section 12.3.8, embedded mitigation and design measures will reduce the potential for chemical pollutants transferring to the water environment if released. As the Core Study Area encompasses areas of steep topography and stream banks, 50 m buffers have been extended where deemed appropriate, to reduce the potential of chemical pollutants transferring to the water environment.

Measures such as absorbent spill kits and other mitigation measures highlighted within Section 3.3 of the WCEMP found in Appendix A12.1 will effectively limit the release of chemicals to fugitive releases. The occurrence of spills from onsite vehicles would be minimised through best practice construction methods such as vehicle speed limits and regular vehicle and machine maintenance.

Following mitigation measures, the magnitude of change is negligible on a high sensitivity receptor, and the residual effect is of minor significance, in accordance with Table 12.4. This is **not significant** in terms of the EIA regulations.

Hydrogeology

Pollutants coming into contact with bedrock also have the potential to indirectly alter the pH and chemistry of the groundwater resource. Chemical alterations to bedrock are difficult to rectify due to the attenuation period and dispersal mechanisms of chemicals in the bedrock.

The groundwater unit underlying the Site is low productivity; however, it has a vulnerability class of 4 to 5, deeming the groundwater unit as vulnerable to individual pollution events with rapid travel of pollutants in fracture conduits in the bedrock.

In areas where the bedrock is overlain by superficial deposits, the potential for pollutants to come into contact with groundwater is limited. In areas where superficial deposits are absent, the potential for pollutants to come into contact with groundwater is increased. As outlined in Section 0, thick (≥ 1 m) peat deposits are present at the locations of wind turbines and associated infrastructure and are considered to largely attenuate and impede vertical travel of pollutants to bedrock units.

Mitigation measures such as spill pads, impermeable geotextile membranes and measures described within Section 3.3 of the WCEMP will effectively limit the uncontained release of chemicals to minor releases.

Following such mitigation measures, the magnitude of change is negligible on a high sensitivity receptor, and the potential effect is of minor significance. This is **not significant** in terms of the EIA regulations.

126.1.2 Erosion and Sedimentation

Erosion and sedimentation can occur from excavations, ground disturbance, creation and upgrade of access tracks and overburden stockpiling. Sediment entering watercourses and shallow groundwater has the potential to affect water quality, ecology and flood storage capacity.

Surface Hydrology

The topography across the Core Study Area varies with areas of steep slopes increasing the potential for sediment transfer to watercourses under gravity. However, given the nature of wet modified bog and peat deposits across the Core Study Area, any silt or sediment released into surface water runoff, in the absence of intervening good practice measures, is likely to travel slowly and be entrained in vegetation before reaching watercourses. All watercourses within the Core Study Area are of high sensitivity.

Sustainable Drainage System (SuDS) measures, such as the use of settlement lagoons, silt traps, swales and interception bunds and additional measures such as check dams and buffer strips will minimise sedimentation and erosion; further details of these

measures are outlined in Section 3.2 of the WCEMP. As such, there will be limited potential for sediment or erosion effects on watercourses in the Core Study Area, including the hydrology and water quality of onsite watercourses.

The Development will utilise approximately 13 km of existing access track, reducing the requirement to excavate and disturb superficial deposits, with localised upgrades required where necessary.

Following mitigation measures, the magnitude of change is negligible on a high sensitivity receptor, and the potential effect is of minor significance. This is **not significant** in terms of the EIA regulations.

Hydrogeology

Sediment also has the potential to change near-surface water flow in outcrop bedrock deposits and superficial deposits by creating a physical barrier and altering the effective porosity and has the potential to alter water quality.

Measures described Section 3.2 of the WCEMP, such as impermeable ground membrane layers and bunded areas, will effectively prevent sediment entering sub-surface water.

Following mitigation measures, the magnitude of change is negligible on a high sensitivity receptor, and the potential effect is of minor significance. This is **not significant** in terms of the EIA regulations.

126.13 Impediments to Flow

Impediments to flow can occur from excavations and installation of linear infrastructure such as access tracks. Impediments to flow has the potential to alter drainage patterns onsite and reduce the flow of water to some receptors and increase to others, temporarily or permanently altering the hydrological environment.

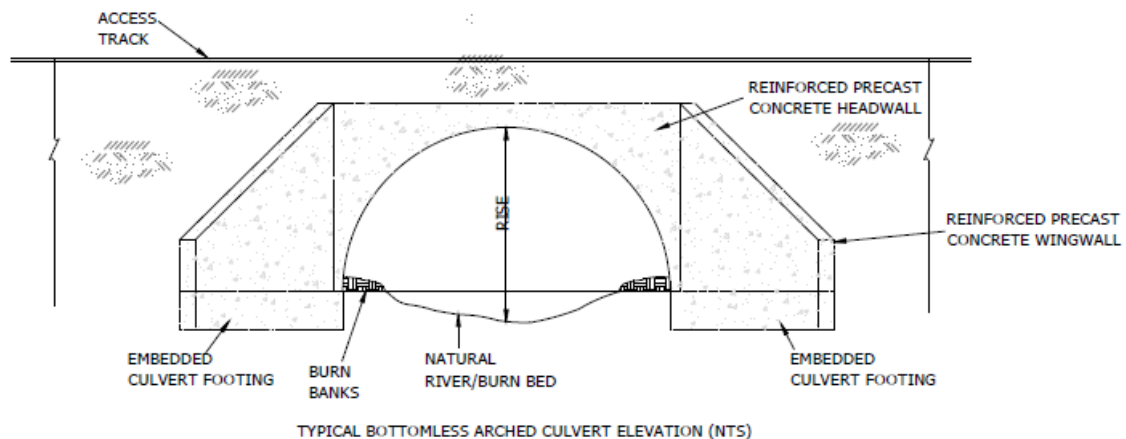
Surface Hydrology

The access tracks will only require the installation of eight new watercourse crossings across all sections of the Development, as shown on Figure 12.3. Additionally, the use of the existing access track which serves the Operational Corriegarth Wind Farm has eliminated the requirement to upgrade existing watercourse crossings, therefore minimising the potential for impediment to flow.

The minimisation of the number of proposed watercourse crossings and the re-use of the existing watercourse crossings reduces one of the main activities that could give rise to impediment of flows.

Additionally, measures described in Technical Appendix 12.1, such as the use of a wide bottomless-arched culverts, where appropriate, are likely to prevent impediments to flow being created. The indicative culvert design is shown in Plate 12.7 and detailed design will be carried out at the construction phase and will be agreed with SEPA.

Plate 12.7: Indicative culvert design



The new crossing of the River E in proximity to T1 may require a bridge structure and the detailed design will be carried out at the construction phase and will be agreed with SEPA.

Following measures outlined in the WCEMP, the magnitude of change is negligible on a high sensitivity receptor, and the potential effect is of minor significance. This is **not significant** in terms of the EIA regulations.

Hydrogeology

Some wind turbine base excavations may need temporary sub-surface water controls, such as physical cut-offs or de-watering. These temporarily divert flows away from the excavation, and temporarily lower the local water table and sub-surface water levels in peat. Localised temporary changes to soil and peat interflow patterns may therefore arise. Wind turbine foundations and crane hardstanding areas also have the potential to change subsurface water flow by creating physical barriers within naturally occurring drainage macropores in soil or peat.

The drying out of peaty soil can result from alterations to the natural drainage regime. Measures set out in Appendix A12.1, such as the rewetting of peat through controlled irrigation techniques, are considered sufficient, and sufficiently reliable, to avoid substantial alterations to the natural drainage regime. No substantial impediments to near-surface water flow will be created as the detailed site drainage design will consider any severance of saturated areas to ensure hydrological connectivity is maintained, in accordance with SEPA guidance.

Following measures outlined in the WCEMP, the magnitude of change is negligible on a high sensitivity receptor, and the potential effect is of minor significance. This is **not significant** in terms of the EIA regulations.

126.14 Increased Run-off and Flood Risk

The increase in hardstanding area associated with construction and operation of the Development could increase the volume and rate of localised surface run-off, although a large proportion of the infrastructure hardstanding, including access tracks and crane hardstanding, would be permeable to some extent.

The impermeable nature of the peat soils onsite and the underlying geology means that run-off will be relatively low, and hence, the addition of the Development would have minimal effect on the existing run-off scenario. The Development is within an area of steep topography, and as such, any addition to run-off has the potential to transfer downgradient rapidly.

The design of the Development layout has incorporated a buffer zone between watercourses and wind turbine bases of 50 m to watercourses. Measures, including SuDS, to attenuate run-off and intercept sediment prior to run-off entering watercourses are described in Appendix A12.1 and are embedded as part of the Development design.

Furthermore, the area of new hardstanding is small, in terms of the percentage of the relevant catchments that may be affected, as outlined in Table 12.10.

Table 12.10: New access tracks in catchments

Watercourse	Area of New tracks in catchment (m ²)	Total catchment (m ²)	% of catchment
Allt a' Ghille Charaich	8,661.12	3,895,910	0.22
Allt Bad Fionnaich	13,921.21	3,720,993	0.37
River E (lower)	481.8	20,647,983	0.002
River E (upper)	30,470.78	7,224,727	0.42
River Fechlin	858.48	131,096,179	0.0006

No wind turbines, construction compounds, substation and control building or meteorological masts are located within areas described as having a 0.5% or greater annual risk of flooding.

Upgrades to existing access tracks will cross areas identified as being at risk of the 0.5 or greater annual risk of flooding and the track will be design to be flush to the existing ground level. This will ensure that flood waters, during extreme flood events, are prevented from backing up and possibly extending into areas that previously would not have flooded.

The majority of the Core Study Area and watercourses does not act as a flood plain or other flood defence but is considered to provide some degree of natural flood management due to the presence of peat soils and is therefore of medium sensitivity, in accordance with Table 12.1.

The magnitude of change is considered to be negligible on a medium sensitivity receptor and therefore, in accordance with Table 12.3, the significance of effects is negligible. This is **not significant** in terms of the EIA Regulations.

126.15 Compaction of Soils

Construction of access tracks and movement of construction traffic, in the absence of construction good practice, can lead to compaction of the soil. This can reduce soil permeability, potentially leading to increased run-off and increased erosion. The superficial geology underlying the Development is generally of low permeability, so the effects of compaction would not result in a significant increase in runoff from existing conditions. Access tracks for the Development have been designed to avoid impinging on areas of heavily saturated ground. In order to maintain the current level or improve the drainage, it is necessary to ensure that construction methods do not seriously disrupt the established drainage and that no areas are surcharged, either by water discharge or spoil.

Maintenance of existing drainage is critical to avoid compaction of soils, therefore all existing drainage network channels, such as those draining the substation / compound of the Operational Scheme, will be maintained and where necessary, channelled below the proposed road construction, as described in Technical Appendix 12.1. Drainage ditches on the upslope of the road are likely to be required on side-long ground. If required, the ditches will be constructed with small dams and cross drains where necessary in order for water to drain below the road at regular intervals and that

concentrated discharges to soil / peat on the down slope side of the road are avoided, as outlined in Technical Appendix 12.1.

Existing access tracks have been used in the design where practicable, further reducing the potential for soil compaction. Furthermore, the percentage of the Core Study Area proposed for the construction of new infrastructure is small.

For these reasons, the magnitude of this change will be negligible. Given the medium sensitivity of soils and negligible magnitude of effect, the significance of effects associated with the compaction of soils is considered to be negligible. This is **not significant** in terms of the EIA Regulations.

12.6.1.6 Effects on Groundwater Dependent Terrestrial Ecosystem (GWDTE)

The effects of the Development on the habitats and ecology of GWDTE are assessed in **Chapter 7: Ecology** and Appendix A7.1. The effects of the Development on the hydrological function of GWDTEs are discussed in this section. The GWDTEs identified in Section 12.4.5 are assessed with regards to effects arising from construction of infrastructure associated with the Development.

GWDTE have the potential to be at risk from a chemical pollution incident, sedimentation and erosion and impediments and alteration to flow patterns which can indirectly alter the habitat and plant species supported.

SEPA LUPS-GU31 guidance outlines the requirement for qualitative and/ or quantitative assessment of effects of all infrastructure associated with the Development on GWDTE, if the GWDTE is located:

- Within 100 m radius of all excavations less than 1 m in depth; and
- Within 250 m radius of all excavations deeper than 1m.

Description of the Development infrastructure and proposed excavation depths is outlined in **Chapter 4: Development Description**.

An NVC survey has been conducted for the Core Study Area and all potential effects on the hydrological function of GWDTE as a result of the Development will be considered, with quantitative and qualitative assessment provided for infrastructure located within the 100 m and 250 m buffer zones.

There are several small mosaics of M10a and M32b that were found to be either high or moderate groundwater dependency across the Site. These are located out with the footprint of the proposed access track and turbines. Three communities are found within the 100 m and 250 m buffer zones from the SEPA guidance. A moderate dependency M10a habitat and high dependency M32b habitat are found 50 m from an existing access track and turbines, however no direct loss of habitats will occur.

The third community of moderate dependency M32b habitat is located 200 m from T15. Excavations for access tracks are likely to be less than 1 m in depth and restricted to the footprint of the access track, while the footprint of the proposed turbines where excavations may reach up to 3 m in depth. Indirect impacts of disturbance to surrounding wetland habitats may also occur.

Near-surface water through superficial deposits may be disrupted by the cut and fill access track to T15, as the installation of aggregate may cause a physical blockage to water flow in micro and macropores to the M32b community, where the access track runs perpendicular to natural flow. However, no area of GWDTE will be directly lost as a result of infrastructure. As such, hydrological effects will equate to a 'minimal detectable effect on a GWDTE (between to 0.1 % - 5 % of study area) or no discernible effect on its integrity as a feature or its functionality' in accordance with Table 12.3. Therefore, the magnitude of the loss will result in a negligible effect. Given the medium sensitivity (as

set out in Table 12.4) and negligible magnitude of effect, the significance of effects associated with infrastructure within the guidance buffers is negligible.

This is **not significant** in terms of the EIA Regulations.

Good practice design and construction and measures outlined in the WCEMP will minimise potential indirect effects of the Development on GWDTEs during construction phase.

Prior to access track construction, site operatives will identify flush areas, depressions or zones which may concentrate water flow. These sections will be spanned with plastic pipes or drainage matting to ensure hydraulic conductivity under the road, and reduce water flow over the road surface during heavy precipitation.

Additionally, the following design measures will ensure that effects on wetland habitats are minimised:

- A PPP is implemented to ensure good practice working methods are followed throughout construction works;
- Silt traps will be deployed to trap and filter sediment-laden run-off throughout the construction phase of the Development;
- Settlement lagoons will be constructed and actively managed to control water levels and ensure that any run-off is contained, especially during times of rainfall;
- Wind turbine foundations are constructed in holes in the ground that will be dewatered, and hence water flow is typically into the foundation area. This will prevent concrete leaching into groundwater or surface water in the event of shutter collapse; and
- All excavations will be sufficiently dewatered before concrete pours begin and that dewatering continues while the concrete cures. However, construction good practice will be followed to ensure that fresh concrete is isolated from the dewatering system.

If required, wind turbine foundations may be dewatered, temporarily lowering water levels in the superficial deposits and near-surface groundwater. The dewatering process would involve the treatment of any extracted water to remove any sediment and redistributing the water onto a vegetated surface in proximity to the excavation. This process would not involve any net loss of water from the hydrological system and would ensure that the water being treated is of the same (or similar) quality to what was extracted. Hence, there would not be an unacceptable effect on groundwater or near-surface water supplying GWDTEs.

126.1.7 Effects on Water Supplies

Public Water Supplies

SW identified that the Development is located within the Loch Ness catchment and catchment of Invermoriston drinking water treatment works.

Through consultation, SW has indicated that *'it is a relatively large catchment and the activity is sufficient distance from the intake that it is likely to be low risk'*³⁵.

Given the distance between the Development and the intake of Invermoriston Water Treatment Works (approximately 9 km west of site entrance) allowing for dispersion and attenuation of pollutants, combined with the negligible effects on surface and near surface water resources it is considered that effects on public water supplies, classed as very high sensitivity, will also be negligible.

This is **not significant** in terms of the EIA Regulations.

³⁵ Scottish Water (2020) Scoping Response Letter. Reference Number: 789618.

Private Water Supplies (PWS)

Three PWS are assessed in Technical Appendix A12.2 which concludes that the risk to the supplies is negligible, following good construction practice.

This is **not significant** in terms of the EIA Regulations.

12.7 POTENTIAL OPERATIONAL EFFECTS

Potential effects associated with the operation of the Development are:

- Increased run-off rates and volume;
- Continued erosion and sedimentation from runoff from areas of hardstanding;
- Alterations to natural flow pathways from runoff from areas of hardstanding; and
- A risk of a pollution event from minor spills from maintenance vehicles.

The nature of these effects has been discussed in relation to the construction phase. As there would be substantially less activity during operation, and as there is unlikely to be any significant ground disturbance during operation, the magnitude of these effects is similarly reduced.

There will be a minor reduction in the potential for increased surface water run-off during the operational phase due to the reduction in hardstanding areas used during the construction phase, such as the removal of the construction compounds.

Whilst alterations to natural flow pathways will not be introduced during the operational phase, any changes during construction will continue through operation, as the majority of infrastructure will remain in place. Alterations to natural flow pathways will be reduced through adopting good practice design and construction, as set out in the WCEMP, such as cross drainage, use of shallow drainage ditches, prevention of blockages and adherence to the wider PPP.

As a result, the magnitude of change and significance of all effects associated with operation of the Development are assessed as being negligible, and **not significant** in terms of the EIA Regulations.

12.8 POTENTIAL DECOMMISSIONING EFFECTS

Potential effects of decommissioning the Development are similar in nature to those during construction, as some ground-work would be required to remove turbine foundations and hardstandings to 1 m below ground level. These effects would be substantially lesser in magnitude than during construction, and would be controlled by a PPP, as discussed previously. Where infrastructure would be left in place, drainage features would also be left in place, where this is compatible with the PPP.

As a result, the magnitude and significance of all effects associated with decommissioning are assessed as being negligible, and **not significant** in terms of the EIA Regulations.

12.9 MITIGATION AND RESIDUAL EFFECTS

Embedded mitigation measures and construction good practice measures are included in the WCEMP, provided as Technical Appendix A12.1. The embedded mitigation and construction good practice measures are based on experience of providing detailed site design for several wind farm developments across Scotland, in consultation with SEPA.

With the embedded mitigation measures described in Technical Appendix A12.1, all identified potential effects have been assessed as being of negligible significance. The embedded mitigation measures proposed are established measures that are widely used in construction projects and which Corriegarth 2 Windfarm Ltd and its contractors are well used to undertaking. Given the levels of certainty in the success of application of the mitigation measures and their effectiveness it is appropriate that the mitigation measures

are taken into account and assumed to be fully effective in the determination of this application.

No residual effects are predicted for all phases of the Development, and are therefore **not significant** in terms of the EIA Regulations.

12.10 CUMULATIVE EFFECT ASSESSMENT

A cumulative effect is considered to be an additional effect on hydrological resources arising from the Development in combination with other proposed developments (either under construction, consented but not built (operational) or at application stage) likely to affect the hydrological environment. At distances greater than 10 km, it is considered that schemes are unlikely to contribute to a cumulative hydrological effect due to attenuation and dilution over distance of potentially polluting chemicals. Therefore, for the purposes of the assessment of potential cumulative effects on the immediate catchment and hydrological regime, only consented and developments in planning within approximately 10 km of the Development have been considered. These developments have been identified through consultation with the relevant local authorities and statutory consultees, as outlined in Section 6.7 and Table 6.8 of **Chapter 6: Landscape and Visual Amenity**. The methodology followed to assess the cumulative effects is the same as that used for the Development in isolation.

12.10.1 Cumulative Developments within 10 km (consented or under construction)

Only one cumulative development has been identified within 10 km of the Development, which is consented and not yet operational: Aberarder, approximately 9 km north of the Development.

12.10.2 Predicted Cumulative Effects

The greatest potential for cumulative effects arises when the construction phase of another development overlaps with the construction phase of the Development. Cumulative effects are considered to have the potential to be significant only where such an overlap may exist, as activities that could be potentially detrimental to the hydrological environment are greatly reduced during the operational phase of developments (e.g. excavation works, concrete pouring *etc.*).

Assuming commencement of the construction of the Development in 20031, lasting for approximately 18 months, this is unlikely to coincide with the construction phase of Aberarder Wind Farm; and therefore, there is unlikely to be potential for cumulative effects between the developments.

Given their respective locations, the primary cumulative impact is likely to be an increase in flow rates associated with increased run-off from new hardstanding areas of the two wind farm developments.

12.10.2.1 Construction Phase

The increase in flow rates is considered to be of negligible magnitude for the Development. It is assumed that water management measures will be implemented at Aberarder Wind Farm, similar to those described in the WCEMP for the Development, as these are in line with standard practice as required by SEPA. Given this, the magnitude of cumulative impacts during the construction phase will be negligible and, therefore, of negligible significance.

This is **not significant** in terms of the EIA Regulations.

12.10.2.2 Operational Phase

It is anticipated that there will be a minor reduction in the potential for increase in flow rates during the operational phase of both wind farm developments, when compared to the construction phase, due to the reduction in overall hardstanding areas post-construction. Therefore, the magnitude of cumulative effects during the operational phase will be negligible, and the significance of these effects will also be negligible, being **not significant** in terms of the EIA Regulations.

12.10.3 Residual Cumulative Effects

No significant residual cumulative effects are predicted.

12.11 SUMMARY OF EFFECTS

Table 12.11 provides a summary of the effects detailed within this chapter.

Table 12.11: Summary of Effects

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
Surface hydrology (watercourses)	Chemical Pollution	Negligible	None	Negligible
	Erosion and Sedimentation	Negligible	None	Negligible
	Impediments to flow	Negligible	None	Negligible
	Increased run-off from increase in hardstanding	Negligible	None	Negligible
Hydrogeology (groundwater and near-surface water)	Chemical Pollution	Negligible	None	Negligible
	Erosion and Sedimentation	Negligible	None	Negligible
	Impediments to flow	Negligible	None	Negligible
Hydrogeology (groundwater and near-surface water)	Chemical Pollution	Negligible	None	Negligible
GWDTE (moderate)	Chemical pollution, sedimentation and reduction in ecological habitat.	Negligible	None	Negligible
GWDTE (high)	Chemical pollution, sedimentation and reduction in ecological habitat.	Negligible	None	Negligible
Public water supplies	Chemical Pollution, sedimentation and reduction in quantity (yield),	Negligible	None	Negligible

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
	quality and/ or continuity of supply.			
Private water supplies	Chemical Pollution, sedimentation and reduction in quantity (yield), quality and/ or continuity of supply.	Negligible	None	Negligible
Operational Phase				
Surface hydrology (watercourses)	Chemical Pollution	Negligible	None	Negligible
	Erosion and Sedimentation	Negligible	None	Negligible
	Increased run-off from increase in hardstanding	Negligible	None	Negligible
Hydrogeology (groundwater and near-surface water)	Alterations to natural flow pathways	Negligible	None	Negligible

12.12 STATEMENT OF SIGNIFICANCE

This Chapter has assessed the likely significance of effects of the Development on hydrology and hydrogeology. The Development has been assessed as having the potential to result in effects of negligible significance.

Given that only effects of moderate significance or greater are considered significant in terms of the EIA Regulations, the potential effects on hydrology and hydrogeology are considered to be not significant.

13 GEOLOGY & PEAT

13.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIA Report) provides an appraisal of the effect of Corriegarth 2 Wind Farm (the Development) on Geology & Peat and provides a preliminary geological assessment on the existing ground conditions while considering peat instability and peat management. This assessment was undertaken by David Ballentyne at Arcus Consultancy Services Limited (Arcus) who is an Environmental Civil Engineer with for over 15 years of experience in ground condition assessment. This chapter has been technically reviewed by Tomos ap Tomos, Technical Director of Engineering at Arcus.

This geological assessment identifies areas of geological interest and features of note. The information and data collated from the peat and geological assessments have informed the site layout to minimise the potential impacts on peat and geology as a result of the Development.

This Chapter of the EIA Report is supported by the following Technical Appendix documents provided in Volume 3 Technical appendices:

- Appendix 13.1: Peat Slide Risk Assessment (PSRA); and
- Appendix 13.2: Outline Peat Management Plan.

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a: Figures excluding LVIA:

- Figure 13.1: Superficial Soils;
- Figure 13.2: Bedrock Geology;
- Figure 13.3: National Soils of Scotland;
- Figure 13.4: Extract from Carbon and Peatland 2016; and
- Figure 13.5: Interpolated Peat Depths.

This Chapter is structured as follows:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Scoping Responses and Consultations;
- Baseline Conditions;
- Assessment of Potential Effects;
- Residual Effects; and
- Summary.

13.2 Legislation, Policy and Guidance

The Scottish Planning Policy (SPP)¹ was published in 2014 and is a non-statutory document which sets out the Scottish Government's policy on how nationally important land use planning matters should be addressed.

In relation to peat and organic soils, paragraph 205 from SPP states that where peat and other carbon rich soils are present, applicants should assess the likely effects of development on carbon dioxide (CO₂) emissions. Where peatland is drained or otherwise disturbed, there is likely to be a release of CO₂ to the atmosphere, which should be minimised

In relation to minerals, Section 8 of SPP4 'Planning for Minerals' states that a sustainable approach to mineral extraction should reconcile the need for minerals with concern for

¹ The Scottish Government (2014) Scottish Planning Policy [Online] Available at: <http://www.gov.scot/Publications/2014/06/5823> (Accessed 21/08/2020)

the natural and built environment and communities in a manner that encourages sensitive working practices during mineral extraction that minimise the environmental and transport impacts and once extraction has ceased, ensure sites are reclaimed to a high standard or enhance the value of the wider environment.

In addition to the SPP, guidance includes:

- NatureScot (formerly Scottish Natural Heritage, SNH) (2015), Good Practice During Wind Farm Construction²;
- The Scottish Government (2017), Peat Landslide Hazard and Risk Assessments – Best Practice Guide for Proposed Electricity Generation Developments³;
- Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland. Guidance on Development on Peatland, on-line-version-only⁴;
- The Scottish Government (2009), The Scottish Soil Framework⁵;
- The Construction Industry Research and Information Association (CIRIA) (2015), Environmental Good Practice on Site (C741)⁶; and
- Planning Advice Note PAN 50 Controlling the Environmental Effects of Surface Mineral Workings⁷.

13.3 Assessment Methodology and Significance Criteria

13.3.1 Scoping Responses and Consultation

Throughout the scoping phase, and subsequently during the ongoing EIA process, relevant organisations were contacted with regards to the Developments. Table 13.1 outlines the consultation responses received in relation to Peat and Geology.

Table 13.1: Consultation

Consultee	SEPA	
Type and Date	Scoping Response, 19 March 2020	
Topic	Comment	Response
Site Layout and Peat Disturbance	1.1 "We welcome reference in Section 2.2 of the Scoping Report which states that "the development will make use of the Operational Corriegarth Wind Farm infrastructure where possible, including the existing access tracks leading from the B862". We would also expect existing infrastructure such as laydown areas or borrow pits to be re-used in order to minimise further impacts to the environment. Our preference is to have already disturbed areas utilised and to safeguard undisturbed habitat."	The design of the proposed site layout has utilised as much of the existing tracks as practical and the main borrow pit is in the vicinity of previous borrow pit workings utilised for the operational wind farm. See Figure 4.1

² SNH (2015b) Good practice during wind farm construction, 3rd Edition [Online] Available at: <http://www.snh.gov.uk/docs/A1168678.pdf> (Accessed 21/08/2020)

³ The Scottish Government (2017) Peat Landslide Hazard and Risk Assessments - Best Practice Guide for Proposed Electricity Generation Developments Guidance [Online] Available at: <http://www.gov.scot/Resource/0051/00517176.pdf> (Accessed 21/08/2020)

⁴ Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland, on-line version only Available at: <https://www.gov.scot/Resource/0051/00517174.pdf> (Accessed 21/08/2020)

⁵ The Scottish Government (2009) The Scottish Soil Framework [Online] Available at: <http://www.gov.scot/Publications/2009/05/20145602/0> (Accessed 21/08/2020)

⁶ The Construction Industry Research and Information Association (CIRIA) (2015) Environmental Good Practice on Site Guide (C741), CIRIA: London. (Accessed 21/08/2020)

⁷ Scottish Government (2017) Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments. Available at: <http://www.gov.scot/Publications/2017/04/8868/0> (Accessed 21/08/2020)

Consultee	SEPA	
Type and Date	Scoping Response, 19 March 2020	
Topic	Comment	Response
Peat Management Plan	1.2 "The layout should be designed to minimise the disturbance of peat and be supported by a full site-specific Peat Management Plan. Depending on the results of the peat depth survey, piling turbine bases and floating all infrastructure on site should be considered. Please refer to the Scottish Government's Guidance on Developments on Peatland - Peatland Survey (2017) and refer to Paragraph 3 in the appendix below for further submission requirements relating to peat."	The design evolution is driven by the site layout avoiding environmental constraints including deep peat. Pre-app consultation has taken place to illustrate how site design has changed to avoid the deepest peat areas where possible. The water CEMP, Technical Appendix 13.1, the outline Peat Management Plan, Technical Appendix 13.2 and mitigation in section 13.8 of this chapter outlines the preventative measures and mitigation for avoiding the drying out or oxidisation of peat during construction, and the potential peat storage areas.
Peat and Habitat Management	1.3 "We would be fully supportive of any investigations which would seek to compensate for any historic or proposed impacts to the site, and add environmental improvements where appropriate. The application should include any opportunities for peatland restoration proposals to help compensate for the peat disturbance caused by the development. This could form part of the proposed Habitat Management Plan, a draft of which should be included in the submission."	An outline Peat Management Plan is provided in Technical Appendix 13.2 which details peat depth mapping, peat excavation and re-use volumes (including the acrotelmic and catotelmic split), and details measures of reuse which include proposal to re-use peat in habitat management.
Site Layout and Peat Managements Plan	1.4 "The interlinking tracks to the proposed turbines should be demonstrated to be as short as possible and we are unlikely to support paralleling tracks or excessive use of spurs for example. We would also encourage the restoration of any redundant tracks on site to compensate for the impacts of the proposal.	The outline Peat Management Plan is in line with SEPA Guidance
Floating Tracks and Peat Management Plan	1.6 "We would expect floating tracks for any areas of peat exceeding a depth of 1m. Floating tracks would mitigate against impacts on peat as well as the hydrological impacts of any Ground Water Dependent Terrestrial Ecosystems (GWDTE) and we would therefore like to see floated tracks throughout the whole development unless proven technically infeasible. All tracks should be kept a minimum 10m away from any waterbody, with the exception of watercourse crossings. We	The design evolution is driven by the site layout avoiding environmental constraints including deep peat. The use of floating tracks has been considered in the design and is included in the outline Peat Management Plan calculations

Consultee	SEPA	
Type and Date	Scoping Response, 19 March 2020	
Topic	Comment	Response
	would expect the 10m buffer to be shown on a site plan to confirm that this buffer is maintained and that no construction works occur within this buffer."	
GWDTE's	1.7 "We will expect the layout to avoid GWDTE and sensitive wetlands which are identified through a National Vegetation Classification (NVC) survey. Therefore, 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 must be submitted."	The GWDTE information is included in the Ecology chapter and associated TA's and was considered as part of the Peat Slide Risk Assessment modelling.
Site Layout, Peat Depth and GWDTE's	1.8 "Both the peat and NVC surveys should have all proposed infrastructure overlaid and clearly demonstrate how the proposals have located infrastructure away from deep peat (>1m) and avoided GWDTE and sensitive wetland habitats. We would encourage drafts of these surveys to be submitted for early consideration and discussion prior to formal submission to the Planning Authority."	The outline Peat Management Plan is provided in Technical Appendix 13.2 which details peat depth mapping and GWDTE's are included as part of the Ecology work.
Battery Storage	1.10 "If battery storage is pursued, please include an indicative layout plan showing the location, design and scale of the facility. Information should be provided on the environmental risks associated with the facility (i.e. risk of battery acid leaks) and mitigation provided, such as bunding and appropriate drainage."	No battery storage facilities are proposed and is not considered further in this chapter.

Consultee	NatureScot (formerly Scottish Natural Heritage, SNH)	
Type and Date	Scoping Response, 18 March 2020	
Topic	Comment	Response
Peatlands	Carbon Rich Soils, Deep Peat and Priority Peatland Habitat The proposed development boundary includes areas of carbon rich soils, deep peat and priority peatland habitat including areas identified as class 1 and 2 on the Carbon and Peatland 2016 map available from http://map.environment.gov.scot/Soil_maps Class 1 and 2 areas are considered to be nationally important carbon-rich soils, deep peat and priority peatland habitat, areas likely to be of high conservation value or areas of potentially high conservation value and restoration potential. These areas are afforded significant protection under Scottish Planning Policy. We consider that it may be possible to build a wind farm of the scale proposed without significant effects on deep peat and priority peatland habitat. The EIA report will need to address, in detail, how a wind farm can be constructed without compromising this national interest. Opportunities to mitigate impacts through siting, design and other measures should be fully considered. This may include options for significant habitat restoration to mitigate any loss and damage to this peatland interest. We may object to this proposal if it does not demonstrate that any significant effects on the qualities of these peatland areas overcome for siting, design and mitigation.	The Carbon & Peatland Classification regarding the Site is addressed in Section 13.5.5 of this EIA
Peat Management Plan, Construction Environmental Management Plan and Habitat Management Plan	We welcome the commitment to a Peat Management Plan and Construction Environmental Management Plan. We note there are no proposals for a Habitat Management Plan (HMP) and we advise that a HMP will be required, particularly to ensure that there is no overall loss of peatland habitat or the services that delivers, but also to take account of other habitats subject to loss and damage. The plan should clearly demonstrate that any impacts on peatland habitats can be substantially overcome and that there will be no overall loss of peatland habitat or the services that peatland delivers. The plan should also take into account other habitats subject to loss and damage from the proposal.	Pre-app consultation and post site layout design consultation illustrated the avoidance of deep peat and sensitive habitat where possible. Further details on mitigation and best practices during construction are outlined in the water CEMP, Technical Appendix 12.1, and the outline Peat Management Plan, Technical Appendix 13.2.

Consultee	The Highland Council	
Type and Date	Scoping, 6 th April 2020	
Topic	Comment	Response
The Highland Council	3.45 - The EIAR must consider the risks of engineering instability relating to presence to peat on the site. A comprehensive peat slide risk assessment in accordance with the Scottish Government Best Practice Guide for Developers will be expected. Assessment should also address pollution risk and environmental sensitivities of the water environment. It should include a detailed map of peat depth and evidence that the scheme minimises impact on areas of deep peat. The EIAR should include site-specific principles on which construction method statements would be developed for engineering works in peat land areas, including access roads, turbine bases and hard standing areas, and these should include particular reference to drainage impacts, dewatering and disposal of excavated peat.	A Peat Slide Risk Assessment and an Outline Peat Management Plan are included as Technical Appendices 13.1 and 13.2. All technical appendices shall be carried out in accordance with guidance and best practice as listed in Section 13.2.4 of this chapter.
The Highland Council	3.46 - The EIAR should include a full assessment on the impact of the development on peat. SEPA have noted that the information collected so far shows that most of the site is on deep peat, with large areas of very deep 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.	Peat probing has been comprehensive and meets the specifications suggested by the Council. A detailed description of Site Survey's is included in section 13.5.7.
The Highland Council	3.48 - 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. A separate assessment of the carbon emissions as a result of construction of the wind farm should be submitted and a scheme for offsetting this, either through biodiversity net gain or compensatory planting should be submitted.	Carbon Calculator, which takes into account loss of carbon through peat excavation is included in Chapter 15 Climate Change.

Consultee	SEPA	
Type and Date	Gate Check, 18 March 2020	
Topic	Comment	Response
Site Layout and Peat Disturbance	The content of the Stage 1 Gate-check report is noted and the responses the developer provides in Appendix A generally seem reasonable. However, as you know we now encourage developers to fully engage with us at the pre-application stage to try and ensure that our issues are taken on board early on in the process when they are easiest to address and to try, where possible, to avoid formal objections from us at a later stage. I can see from our records that we provided some generic advice at the scoping stage and that the Chilled Layout now submitted is very similar to that which we saw previously with the addition of the proposed track layout. We note from the Gate-check report that Phase 1 surveys have been conducted however, we haven't had the opportunity to review these. Prior to the formal submission of the application we would therefore strongly encourage the developer to consult us further on the project with, as a minimum, the following three layout plans showing all permanent and temporary works (1) 50 m buffers to watercourses, (2) NVC survey results, and (3) all peat probing results (showing the location of individual peat probes, colour coded for depth). We would also be very happy to provide advice on any GWDTE assessment or other work on peat such as the Peat Management Plan if this would be helpful.	Further consultation with SEPA took place once a final design layout was fixed as detailed in the table below. This included Phase 1 peat probing and detailed Phase 2 peat surveys.

Consultee	SEPA	
Type and Date	Consultation, August 2020	
Topic	Comment	Response
Site Layout and Peat Avoidance	We really appreciate the early engagement and it's good to see that the layout has been amended based on the findings of the peat probing. The explanatory notes are really useful and we welcome that steps are being taken to minimise development on deep peat where possible. We are generally supportive of the layout in that good use is being made of the existing tracks and that efforts have been made to locate the turbines on shallower areas of peat and along the main track rather than on spurs. The layout appears to avoid development within the 50m watercourse buffer and crossings are aligned perpendicular to the channel, which will minimise works in the riparian zone. We appreciate that the layout options are constrained by localised steep topography and as there are quite a few areas on deep peat within the site boundary. We can see that you have tried to find the best environmental solution however, there are a couple of areas where we think there <i>is</i> potential for the environmental impacts to be minimised even further.	The site layout endeavours to avoid the deepest peat where practical. The site layout design has been restricted has also considered the steep slopes and has unavoidably passed through deep peat towards the eastern site area. When considering the environmental impacts, the constructability led to unavoidable deep peat or in instances lengthened track options. Other considerations for the site layout and general infrastructure location was landscape and visual constraints and wind resource.
	Track layout The overall track length should be shortened by losing some of the links between turbines, this could also reduce the number of watercourse crossings and further reduce peat disturbance. The section of track between T11 and T12 appears to have been moved northwards onto deeper peat. The track should be re-routed south onto shallower peat. It should be considered whether the track layout to T8 can be refined, or possibly if T8 should be removed from layout due to environmental constraints. The current layout links T8 to both T7 and T9 which results in excessive track length, development on deep peat and the need for a watercourse crossing.	

Consultee	SEPA	
Type and Date	Consultation, August 2020	
Topic	Comment	Response
	If T8 is to remain as part of the layout, the following options should be explored. (1) Remove the section of track from T8 to T9 thereby reducing overall track length and removing the need for a watercourse crossing. (2) Re-route the section of track to directly link T7 to T8 thereby avoiding the area of deep peat the track crosses in the current layout design.	
	Turbines and infrastructure With regards to the revised turbine and infrastructure locations, it looks like there could be some further opportunities to minimise the environmental impacts by making some slight modifications. (1) Move T1 slightly to the NW to remove it from the watercourse buffer. (2) Align infrastructure at T4 from NW to SE along the shallower peat (3) Move T5 slightly east onto shallower peat. (4) Flip T6, T9 and T12 onto the opposite side of the track where the peat appears to be shallower (5) Maintain original positioning for T14 as the modifications result in a longer track and more peat disturbance. It maybe that these are not feasible options, in which case some additional justification can be provided to support the proposed layout. GWDTE We note that there are numerous GWDTE on the site and we would be very happy to provide more detailed pre-application advice on these if you are able to provide a version of the habitat map with the layout on top.	

13.3.2 Assessment Methodology

The assessment of peat and geology has included the review of publicly available information in relation to the current condition of the soils at the Development. The information is detailed in the baseline description. The information has been reviewed in the context of the Development to evaluate both short and long-term impacts.

The assessment has involved a review of the following data sources detailed below:

- National Soil Map of Scotland;
- Carbon and Peatland 2016 Map;
- British Geological Survey (BGS) Geoindex – Superficial Soils; and
- BGS Geoindex – Solid Geology.

Soil types are considered to be of high sensitivity where they are categorised as peat soils of high moisture content, such as those found in blanket bog.

The methodology employed for the Peat Slide Hazard and Risk Assessment (PSHRA) is in accordance with Energy Consents Unit (ECU) Scottish Government guidance. Using experience from other wind farm projects, the assessment endeavours to assess the effects on geology and soils either affected directly or indirectly by construction or operation of the Development.

Desk studies have not identified any areas of contaminated land within the Core Study Area. Should potentially contaminated land be encountered during excavations, appropriate action would be taken in accordance with The Environmental Protection Act 1990. As a result, potential effects arising from contaminated land have been scoped out of this assessment.

Stage One Peat Probing

Initial phase one peat probing was carried out in 2019 and in accordance with Scottish government Guidance. A 100 m grid was captured across the entire Site and the information gathered informed the outline civil design and supported the PSRA.

Stage Two Peat Probing

Following the design freeze, targeted peat probing was carried out across proposed infrastructure. This probing was generally at 50 m intervals along the centre line of the tracks with probes at 25 m on either side of the tracks to provide a corridor for micro-siting. In addition, probing at turbine locations was recorded at 10 m intervals where possible, particularly in areas previously recording peat.

It should be noted that the PSRA was undertaken on the findings of all phases of probing with focus upon the Phase two peat probe data, as this was within the proposed infrastructure envelope. Details of the assessment are included in **Appendix 13.1**.

13.3.3 Significance Criteria

Sensitivity

The sensitivity of the receiving environment is defined as its ability to absorb an effect without perceptible change and can be classified as high, medium or low. These classifications are dependent on factors such as the nature and extent of peat, associated habitats, and soil characteristics as well as the Site geology and their purpose and existing influences, such as land-use.

Table 13.2 provides an overview of the different categories of sensitivity that are used within this chapter to inform the assessment of effects on existing geology and peat and identify whether the effects would be significant under EIA Regulations.

Table 13.2: Receptor Sensitivity Criteria

Receptor Sensitivity	Sensitivity Description
High	• Soil type and associated land use are highly sensitive (e.g. peat/blanket bog) • Class 1 or 2 priority peatland, carbon-rich and peaty soils cover >20% of the Development Area • Receptor contains areas of regionally important economic mineral deposits
Medium	• Soil type and associated land use are moderately sensitive (e.g. commercial forestry) • Class 1 or 2 priority peatland, carbon-rich and peaty soils cover <20% of the Development Area, or Class 3 and 5 peatland areas, carbon rich and peaty soils • Receptor contains areas of locally important economic mineral deposits
Low	• Soil type and associated land use not sensitive to change in hydrological regime (e.g. intensive grazing) • Receptor contains Class -2, -1, 0, and 4 non-peatland areas, with no carbon-rich and/or peaty soils

Magnitude

The magnitude is determined by the timing, scale, size and duration of the potential effect resulting from the Development. The magnitude of potential effects can be classified as major, moderate, minor or negligible as outlined in Table 13.3.

Table 13.3: Impact Magnitude Criteria

Impact Magnitude	Description
Major	• Major or total loss of or alteration to peatland resource such that post development characteristics or quality will be fundamentally or irreversibly changed • Long term /permanent change to baseline resource • Major or total loss of a geological site or mineral deposit, where the value of the site would be severely affected
Moderate	• Loss of, or alteration to the baseline resource such that post development characteristics or quality will be partially changed • Mid-term /permanent change to baseline resource • Partial loss of a geological site or mineral deposit, with major effects to the settings, or where the value of the site would be affected
Minor	• Small loss of soils or peatland, or where soils will be disturbed but the value not impacted • Short-term change to baseline resource • Small effect on a geological site or mineral deposit, such that the value of the site would not be affected
Negligible	• Minimal or no change to soils or peatland deposits • A very slight change from the baseline conditions. The change is barely distinguishable, and approximates to the 'no-change' situation • Minimal or no change to a geological site or mineral deposit

The categorisation of significance criteria being major, moderate, minor or negligible as detailed in Table 13.4 relies also on professional judgement to ensure that the effects are appropriately assessed.

Table 133.4: Matrix for Defining Significant Effects

Magnitude of Effect	Sensitivity of Resource or Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light grey in the above table.

13.3.4 Embedded Mitigation

Embedded mitigation measures are set out within the wCEMP (provided as Technical Appendix 12.1) which sets out specific mitigation which relates to this Development. They comprise good practice methods and works that are established and effective measures to which the Applicant will be committed through the planning consent.

Mitigation also takes place through embedded design of the site layout avoiding key environmental constraints including avoidance of deepest peat (i.e. no turbines sited in peat > 1.5 m) or limiting the impacts on deep peat where possible, as well as taking cognisance of hydrological and ecological features and associated buffers.

The site layout design was presented through pre-application consultation to SEPA to illustrate how the site layout had considered the avoidance of deep peat where possible and how turbines sited in peat greater than 1.0 m where generally located within the shallowest peat possible. This consultation also illustrated the key constraints, such as watercourse buffers and GWDTE's.

13.4 Baseline Conditions

13.4.1 Study Area

The Development is located south-east of Loch Ness and approximately 15 km north-east of Fort Augustus and the site boundary is approximately 1,450 hectares (ha), as shown on Figure 1.1. The Site incorporates the boundaries of the Operational Corriegarth Wind Farm in its entirety. The Site is centred on NGR 256250, 814340.

The topography of the Site and immediate vicinity is complex and largely consist of rural upland moorland used for grazing and grouse shooting. The Site itself varies significantly in elevation ranging from approximately 550 - 720 m Above Ordnance Datum (AOD) in the central part of the Site, which is within the Operational Corriegarth Wind Farm, before sloping west along the access track towards the B862, with elevations reducing to approximately 200 m AOD. The summit of Carn na Saobhaidhe is located in the west (603 m AOD) of the site while a number of other hills border the Site boundary

13.4.2 Superficial Soils

Published BGS mapping of superficial soils indicates the majority of the Site to be dominated by peat, particularly within the regions of the existing wind farm (Figure 13.1). Localised pockets of glacial till exist in the western and far eastern areas of the study area. Some central parts of the lie within an area of unmapped soils, however, given the sites rural upland location, it can be assumed that peat is likely to exist in flatter topographically low-lying areas, thinning on sloped ground.

13.4.3 Bedrock Geology

Published bedrock geology mapping (Figure 13.2) indicates the Site to be underlain by a variety of bedrock geology. The Gairbeinn Pebbly Psammite Member in the form of Pebbly Psammite dominates the northern sector of the Site while the Monadhliath Semipelite Formation (Semipelite) underlies the southern sector.

The Loch Laggan Psammite Formation, which is predominantly micaceous and feldspathic psammite with thin semipelite beds, covers the central sector of the Site other than a thin band of the Ruthven Semipelite Formation, in the form of Semipelite and Gneissose, which runs across the central western area.

Small pockets of the North Britain Siluro-Devonian Calc-Alkaline Dyke Suite (Felsite) are scattered sporadically across the Site and a small area of the Foyers Igneous Complex (Quartz-Diorite) is present at the north-western extent, near the site entrance.

Figure 13.2 illustrates the bedrock geology across the site area.

13.4.4 National Soils of Scotland

This section is derived from Scotland's Environment, Scotland's Soils⁸ (Figure 13.3).

A brief description of the characteristics and formation of component soil groupings is detailed below as described by Scotland's Soils Map, although these do not include information on depths or engineering properties:

- Blanket Peat: Poorly drained upland soil with an organic surface layer generally greater than 50 cm thick, unconfined 'blankets' the landscape;
- Podzols: Podzols are acid soils with a grey leached layer just below the surface and bright orangey-brown coloured subsoils and/or dark brown to black, organic rich subsoils;
- Gleys: Gleys are soils that are periodically or permanently waterlogged; and
- Brown Soils: Brown Soils are moderately acid soils with brown mineral topsoils and brown or yellowish subsoils.

Available data on Scotland's Environment – Scotland's soils indicates much of the Site to be underlain by Eroded Blanket Peat, encompassing the majority of the eastern and northern Site areas and some in the south, in which almost all of the Development lies. Some the eastern Site area is underlain by Subalpine Soils, some peat, some rankers and alpine soils.

13.4.5 Carbon-rich Soils, Deep Peat and Priority Peatland Habitat

The Carbon and Peatland Map⁹ (Figure 13.4) indicates the Carbon-rich soils and peatland importance categories to be:

- Class 1 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value.
- Class 2 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential.
- 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.
- Class 4 - Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils.

⁸ Scotland's Environmental Website: <http://soils.environment.gov.scot/> (Accessed 21/08/2020)

⁹ SNH (2016) Carbon and Peatland Map. Available at <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map> (Accessed 21/08/2020)

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

The Peatland and Carbon Map (2016, SNH) indicated the majority of the Site to be classified as Class 1, this covers the majority of the Development. There are pockets of both Class 2 and Class 4 near the Site entrance and where the most westerly borrow pit and proposed construction compound is situated. There are also pockets of Class 3 south of proposed Turbines 3, 4 and 5.

A summary of the peat survey is summarised below and the details are included in **Appendix 13.2**. The appendix provides site-specific peat depth information which informed the design of the layout of the Development and the subsequent assessment of effects.

13.4.6 Peat

Peat is a sedimentary material, which is dark brown or black in colour and comprises partially decomposed remains of plants and organic materials preserved in anaerobic conditions, essentially within a waterlogged environment. There are two principal types of peat:

- Acrotelm is the upper layer, quite fibrous and contains plant roots.
- Acrotelmic peat is relatively dry, generally lying above the groundwater table and has some tensile strength; and
- Catotelm is the lower layer of peat, highly amorphous and has a very high-water content, generally lying below the ground water table and has a very low tensile strength.

Interpolation of these principle types are discussed further in **Technical Appendix 13.2 Outline Peat Management Plan** and are shown on Figure 13.5.

13.4.7 Field Surveys

The desk-based assessment recorded the presence of peat and peaty soils in line with NatureScot data described above. The results of the peat probing indicated that peat was generally deep across the Site, with depth varying generally according to local topographical conditions and also heavily influenced by eroded blanket peat as alluded to by the Carbon and Peatlands data provided by NatureScot.

A total of 3,380 probes were sunk during all phases of probing within the study area. The peat probe locations and peat depth interpolation are shown in Figure 13.5 and further details on the peat probing included in **Appendix 13.2**.

Table 13.5 summarises the peat depth findings.

Table 13.1: Peat Depth Summary

Peat Depth Range (m)	Number of peat probes	Percentage of Total (%)
<0.50	453	13.4
0.51 - 1.00	1072	31.7
1.01 - 1.50	799	23.6
1.51 - 2.00	764	22.6
2.01 - 2.50	195	5.8
2.51 - 3.00	79	2.3

Peat Depth Range (m)	Number of peat probes	Percentage of Total (%)
3.01 – 3.50	6	0.2
3.51 – 4.00	10	0.3
4.01 – 4.50	1	<0.1
4.51 – 5.00	0	<0.1
5.01 – 5.50	1	<0.1

The average recorded peat depth was found to be just greater than 1.2m, with 13.4% less than 0.5 m and 45% less than 1.0 m. Peat depths extending further than 1.0 m were generally recorded at areas that showed extensive blanket peat erosion and topographically flatter area.

There is evidence of intensive peat haggging within the northern, eastern and south-eastern areas of the site along with sparse areas of peat hags in southern, central and north-western areas

Across the Site as a whole, there is little evidence of past peat failure, however four possible historic peat slide/fissure locations are recorded within the southern sector of the Site, two of which are in an area of intensive peat hags and two are in an area of sparse peat hags. Notably all are located on the northern slope of Càrn na Làraiche Maoile in areas recorded as having peat at depths of between 1.0 m and 1.5 m.

The possible historic peat slide/fissure are located approximately 200 m to 300 m south of T3, T4 and T5 where the existing topography is steeper, however, the turbines are located at a lower altitude where the slope is at a shallower gradient which would reduce the slide risk at these locations.

Due to the presence of peat within the Site a more detailed assessment is undertaken in, **Technical Appendices 13.1 'Peat Slide Risk Assessment' (PSRA) and 13.2 'Outline Peat Management Plan'.**

13.4.8 Peat Stability and Peat Management

The PSRA utilises the peat depths and existing slope and subsoils information to identify hazard areas in relation to peat slide risk.

The outline Peat Management Plan utilises peat depth data to calculate estimated volumes based on proposed civil design infrastructure, identifies rational options for reuse of excavated material and provides guidance on good practice storage and management of excavated material, including peat.

13.5 Assessment of Potential Effects

13.5.1 Potential Construction Effects

The effect of the Development on soils and geological receptors has been considered for the consideration of the construction and operation phases. Effects occurring during construction are considered to be short term effects, with those occurring as a result of the operational development being considered as long-term.

Disturbance of Deep Peat

In its regulatory position statement, SEPA states that "Developments on peat should seek to minimise peat excavation and disturbance to prevent unnecessary production of waste soils and peat".

Construction activities including excavation of tracks, turbine foundations and crane hardstanding and other infrastructure can lead to disturbance of peat. Beyond the main construction activities, other considerations include the formation of borrow pits and temporary storage of soils and peat on Site.

Peatland habitat is extensive across the study area including the presence of blanket bog, although this has been classified as 'highly eroded', particularly around the steep slopes on the periphery of the existing Corriegarth Wind farm, as assessed in detail in **Chapter 9: Ecology** and associated Technical Appendices. These are the areas that are proposed for the infrastructure as part of Corriegarth 2 Wind Farm.

Deep peat is classified as peat exceeding 1.0 m in depth. The average peat depth across the Site has been found to be 1.20 m with pockets of deep peat, up to 5.50 m recorded across the Development footprint. As such, the design sought to avoid siting turbines in peat depths greater than 1.5 m. Whilst the design has sought to avoid the deep peat areas as much as practicable, ten turbines are located in between 1 – 1.5 m of peat so that there inevitably will be an effect as total avoidance was not possible.

Careful detailed design, construction methods and reinstatement will be important in minimising and avoiding peat disturbance. As the majority of the Site is situated on well documented eroding blanket peat, the potential for improvement of local peatland habitats could be achieved in line with NatureScot Peatland Action Guidance¹⁰. The Habitat Management Plan (HMP) will be an important factor in balancing the carbon losses due to peat excavations through restoration of eroded blanket bog areas and possibly outweigh the losses towards a carbon gain scenario.

The assessment of peat disturbance has highlighted areas of peat at risk from the Development, in particular at turbines and associated crane hardstand areas T2, T4, T6, T7, T8, T9, T12, T13, T14 and T16 and track sections.

On this basis, in the absence of mitigation, the Development is considered to result in a potential effect of Moderate and therefore **significant** effect in accordance with the EIA regulations.

Mitigation is proposed in Section 13.7.

Peat Stability

Peat instability is generally the result of a combination of causative factors. Several construction activities have the potential to increase the likelihood of peat slides in areas where peat is present at a sufficient depth and where gradients are sufficiently steep to result in a peat slide event.

Construction activities that have the potential to increase the likelihood of peat slides include locating proposed infrastructure including track networks on sloping ground which often involves the removal of surface vegetation and excavation of peat and other soils.

Peat slides can affect soils and local sensitive habitats and have the potential to affect surface water systems from soil inundation, leading to sedimentation. This can have an effect by reducing water quality and/or modify drainage patterns. Receptors identified across the Development area are:

- Major and Minor Watercourses;
- Operational Corriegarth Wind Farm Infrastructure;
- Proposed wind farm infrastructure;
- Tracks and Paths; and

¹⁰ SNH Peatland Action Guidance on Dam Installation Techniques – Peat and Plastic Dams [online] Available at: <https://www.nature.scot/sites/default/files/2019-03/Guidance-Peatland-Action-installing-peat-dams.pdf> (Accessed on (21/08/2020))

- Localised Important Habitats.

Peat depths are typically more than 1.0 m across the wider site area, and localised potential peat stability issues are limited to infrastructure areas located on fairly steep slopes with deep peat (greater than 1.0 m). The analysis of the Development and subsequent peat slide risk assessment highlighted that the majority of the site presented a low risk, although there were several large pockets classified as Moderate risk, particularly in the vicinity of T1, T4, T5, T6 and the spur tracks to T7.

On this basis, in the absence of mitigation, the Development is considered to result in a potential effect of moderate which is **significant**, in accordance with the EIA regulations.

Good practice measures are embedded in the design principles and adoption of further best practices, as detailed in **Appendix 12.1 'Water Construction Environmental Management Plan'** (wCEMP). These will reduce the effect of peat instability. Steep slopes and deep peat have generally been avoided and there would be further avoidance of the loading materials on or at top of slopes and the removal of slope support during construction.

Loss and Compaction of Peat and Soils

Construction of access tracks and movement of construction traffic, in the absence of construction good practice, can lead to compaction of the soil. This can reduce soil permeability, potentially leading to increased run-off and increased erosion. The superficial geology underlying the Development is generally of low permeability, so the effects of compaction would not result in a significant increase in runoff from existing conditions.

While the layout design process has sought to avoid areas where deep peat is recorded, ten turbines and associated crane hardstands as well as localised sections of track are located in deep peat between 1 – 1.5 m, albeit it should be noted that these have been located in the shallowest peat pockets within the selected areas. Access tracks for the Development should be microsituated to avoid impinging on areas of heavily saturated ground.

In order to maintain the current level or improve the drainage, it is necessary to ensure that construction methods do not seriously disrupt the established drainage and that no areas are saturated, either by water discharge or spoil blocking pathways.

Maintenance of existing drainage is critical to avoid compaction of soils. All existing drainage network channels, such as those draining the existing wind farms adjacent to the Development, will be maintained and where necessary, channelled below the proposed road construction, as described in **Chapter 12: Hydrology and Hydrogeology** and associated Technical Appendices.

Although the majority of soils affected by the site are peat deposits greater than 1.0 m, peat and other soils would be reinstated fully within the areas of origination, so that the significance of effects associated with the loss of soils is considered to be minor and **not significant**, in accordance with the EIA regulations.

In relation to compaction of soils, investigations at the Site have recorded areas of deep peat, and construction of access tracks and movement of construction traffic, in the absence of construction good practice, could lead to the compaction of soil. This can reduce soil permeability, potentially leading to increased run-off and increased erosion. The superficial soils underlying the Development are of a varying permeability, so the effects of compaction could result in an increase in a runoff from existing conditions.

Therefore, in the absence of mitigation, the significance of effects associated with the compaction of soils is considered to be minor and **not significant**, in accordance with the EIA Regulations.

13.5.2 Operational Phase

There would be minimal or no impacts upon peat and soils during the operational phase, and significant effects are not anticipated.

13.5.3 Decommissioning Phase

During decommissioning, the bases would be broken out to below ground level. All cables would be cut off below ground level, de-energised, and left in the ground. Access tracks would be left for use by the landowner. No stone would be removed from the Site. The decommissioning works are estimated to take eight months. This approach is considered to be less environmentally damaging than seeking to remove foundations, cables and roads entirely.

Therefore, it is considered that decommissioning, activities would be less intrusive and would not disturb peat, therefore **no significant** effects are anticipated.

13.6 Assessment of Cumulative Effects

Geology and peat are deemed as a site-specific matter and it is not considered that there will be cumulative effects.

13.7 Mitigation Measures

The peat disturbance mitigation measures are location-specific and relate to turbine locations and associated infrastructure being within areas of moderate risk. Generally, peat depths are greater than 1 m across the site with an average peat depth of 1.2 m with deeper pockets; however, micro-siting within 50 m of the original location, should be considered if it is feasible to reduce the impact on deep peat and peaty soils. Peat re-use will be contained to on site uses, along infrastructure, borrow pits and in compensatory Habitat Management and degraded bog improvements, offering benefit. The embedded design and mitigation measures as well as the peat re-use proposals would reduce the overall effect to **not significant**.

In relation to peat stability risks, T1, T4, T5, T6 and some track sections between T6 and T7 are indicated as being within the areas of moderate peat stability risk. Micro-siting of turbines in line with the approach detailed in Section 13.9 to minimise disturbance, will mitigate peat stability risk in parallel. Peat slide in the absence of mitigation is assessed as a significant effect, based on the worst-case scenario. However, with implementation of best practice, good drainage and regular slide risk monitoring, the overall effect could be reduced to **not significant**. Best practice construction methods, drainage and specific mitigation in relation to peat slide will be incorporated into the CEMP prior to construction.

Should turbines be micro-sited out with the deeper peat areas, this will reduce the overall effect on peat and loss of soils. Maintenance of existing drainage is critical to avoid compaction of soils; therefore, all existing drainage network channels would be maintained and, where necessary, channelled below the access track construction drainage ditches on the upslope of the track.

Slope stability monitoring will occur during pre-construction and construction phases of work, including for both peat stability and non-peat related stability. These would focus on locations highlighted as being of risk as highlighted in the Hazard Risk Zonation Plan.

Best practice measures for managing excavated peat and peaty soils are detailed in the **Outline Peat Management Plan, Technical Appendix 13.2**.

13.7.1 Enhancement – Outline Habitat Management Plan – Peat Restoration

Peat Soils excavated as part of the construction will be utilised in Habitat Management through peatland restoration. The exact areas are to confirmed but the outline Habitat

Management Plan, Section 7.9.1 in **Chapter 7: Ecology** summarises the habitat management techniques and the enhancements that will be proposed in the detailed post-consent Habitat Management Plan. Blanket bog restoration will form a large part of the habitat management plan to restore and enhance areas of damaged and degraded blanket bog within the estate.

The Habitat Management Plan (HMP) is likely to include restorable peatland habitats out with close proximity to turbines (of both the Development and the Operational Corriegarth Wind Farm), to the north or north-west of the Site as shown on Figure 7.4.

The HMP is likely to include reparation of peat hags and bare and exposed peat using the excavated peat to carry out the required ditch blocking and damming works. The details of these techniques are included in **Technical Appendix 13.2 Outline Peat Management Plan**.

13.8 Residual Effects

Following the incorporation of mitigation measures as detailed on Table 13.6, there will only be one minor residual effect associated with peat disturbance while soil compaction, soil losses and operational and de-commissioning phases will all be negligible.

With the mitigation proposed, the magnitude of effects on peat disturbance can be reduced from moderate to minor, and are therefore **not significant** in accordance with the EIA Regulations.

13.9 Summary of Effects

This Chapter identified no likely residual significant effects, through inclusion of the measures as outlined in Table 13.6

Table 13.6: Summary of Effects

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Significance
Construction				
Peat and Peaty Soils	Disturbance of peat and peaty soils – Effects on carbon-rich and peaty soils; Disturbance to an area <20% of the Development Area, the presence of class 1 peatland areas;	Moderate	Micro-siting may be possible within 50m (T2, T4, T6, T7, T8, T9, T12, T13, T14 and T16) within areas of deep peat. Adoption of best practice measures for dealing with peat excavations, storage and subsequent backfilling. Restoration of eroded peatland in the surrounding lands to balance carbon losses or present carbon gains.	Minor
Peat and Peaty Soils	Peat Stability - Small loss of soils or peatland, or where soils will be disturbed	Moderate	Adoption of best practice measures for dealing with peat excavations, storage and subsequent backfilling.	Minor

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Significance
Construction				
	but the value not impacted		Additional ground investigations and detailed design will provide further information in the Slope stability monitoring will occur during pre-construction and construction phases of work.	
Peat and Peaty Soils	Loss or Compaction of Soils	Minor	Adoption of best practice measures for dealing with peat excavations, storage and subsequent backfilling.	Negligible

13.10 Statement of Significance

This chapter has assessed the likely significance of effects relating to the Development on Geology, Soils and Peat. In the absence of mitigation, effects of moderate significance in terms of the EIA Regulations were identified for peat disturbance and peat slide. With the implementation of good practice construction methods and mitigations as discussed in Section 13.7, as well as compensatory peat re-use in a wider Habitat Management Plan, the residual effect from peat disturbance and peat stability would be **not significant**.

14 SOCIO-ECONOMICS, RECREATION AND TOURISM

14.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) evaluates the effects of the Corriegarth 2 Wind Farm (the Development) on the Socio-Economic, Recreation and Tourism resource. This assessment was undertaken by Fraser Clarke, Environmental Consultant at Arcus Consultancy Services Limited (Arcus) and Heather Kwiatkowski, Principal EIA Consultant. The assessment has been technically reviewed by Stuart Davidson, Registered EIA Practitioner and Operational Director at Arcus.

This Chapter of the EIA Report is supported by the following figures provided in Volume 2a: Figures excluding LVIA:

- Figure 14.1: Core Paths and Recreational Routes within Secondary Study Area.

This Chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Assessment of Potential Effects;
- Mitigation and Residual Effects;
- Cumulative Effect Assessment;
- Summary of Effects; and
- Statement of Significance.

The following terms are used within this Chapter to describe the Development and various associated study areas:

- The Development: the whole physical process involved in the development of Corriegarth 2 Wind Farm, including wind farm construction, operation and decommissioning (*i.e.* not a piece of land or an area);
- The Site Boundary: the red line or application boundary as shown in Figure 1.2;
- The Site: the land within the Site Boundary available for turbine development and associated wind farm infrastructure;
- Operational Corriegarth Wind Farm: the existing, Operational Corriegarth Wind Farm within the Site Boundary;
- Primary Study Area: the Primary Study Area for tourism and recreation comprises land within the application boundary (the Site) in considering direct effects, and within 15 km of the Site Boundary in considering indirect effects; and
- Secondary Study Area: (used for assessing direct and indirect effects on Core Paths and Rights of Way) comprises of land within 10 km of the centre point of the Site (NGR 257438, 813258), as shown on Figure 14.1.

This Chapter has been written by Fraser Clarke, Graduate Environmental Consultant and Stuart Davidson, Registered EIA Practitioner and Operational Director at Arcus. The Chapter has been technically reviewed by Heather Kwiatkowski, Senior EIA Project Manager.

14.2 LEGISLATION, POLICY AND GUIDANCE

The following guidance, legislation and information sources have been considered in carrying out this assessment:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017¹;
- Economic Action Plan 2019 – 2020²;
- Scotland’s Economic Strategy³;
- Protecting Scotland, Renewing Scotland: Scotland’s Programme for Government 2020 – 2021⁴
- National Performance Framework⁵;
- Scottish Planning Policy⁶;
- National Planning Framework 3⁷;
- Highland-wide Local Development Plan⁸;
- Inner Moray Firth Local Development Plan⁹;
- Building a resilient recovery from the COVID-19 crisis¹⁰;
- Towards a Robust, Resilient Wellbeing Economy for Scotland: Report of the Advisory Group on Economic Recovery¹¹;
- Eight policy packages for Scotland’s Green Recovery¹²;
- Institute of Environmental Management and Assessment (IEMA) (2011) The State of Environmental Impact Assessment in the UK¹³;
- NatureScot (2018) Environmental Impact Assessment Handbook¹⁴; and
- Wind Farms and Tourism Trends in Scotland: BiGGAR Economics (2017)¹⁵.

¹ Scottish Government (2017) The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 [Online] Available at: <https://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 18/08/2020)

² Scottish Government (2018) Economic Action Plan 2019 – 2020 [Online] Available at: <https://economicactionplan.mygov.scot/> (Accessed 18/08/2020)

³ Scottish Government (2015) Scotland’s Economic Strategy [Online] Available at: <https://www.gov.scot/publications/scotlands-economic-strategy/pages/0/> (Accessed 18/08/2020)

⁴ Scottish Government (2020) Protecting Scotland, Renewing Scotland: Scotland’s Programme for Government 2020 – 2021 [Online] Available at: <https://www.gov.scot/programme-for-government/> (Accessed 08/09/2020)

⁵ Scottish Government (2019) National Performance Framework [Online] Available at: <https://nationalperformance.gov.scot/national-outcomes> (Accessed 18/08/2020)

⁶ Scottish Government (2014) Scottish Planning Policy [Online] Available at: <https://www.gov.scot/publications/scottish-planning-policy/pages/2/> (Accessed 18/08/2020)

⁷ Scottish Government (2014) National Planning Framework 3 [Online] Available at: <https://www.gov.scot/publications/national-planning-framework-3/> (Accessed 18/08/2020)

⁸ Highland Council (2012) Highland-wide Local Development Plan [Online] Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan (Accessed 18/08/2020)

⁹ Highland Council (2018) Inner Moray Firth Local Development Plan [Online] Available at: https://www.highland.gov.uk/downloads/file/15008/adopted_inner_moray_firth_local_development_plan (Accessed 18/08/2020)

¹⁰ Committee on Climate Change (2020) Building a Resilient recovery from the COVID-19 crisis [Online] Available at: <https://www.theccc.org.uk/publication/letter-building-a-resilient-recovery-from-the-covid-19-crisis-to-roseanna-cunningham-msp/> (Accessed 18/08/2020)

¹¹ Scottish Government (2020) Towards a Robust, Resilient Wellbeing Economy for Scotland: Report of the Advisory Group on Economic Recovery [Online] Available at: <https://www.gov.scot/publications/towards-robust-resilient-wellbeing-economy-scotland-report-advisory-group-economic-recovery/> (Accessed 18/08/2020)

¹² Climate Emergency Response Group (2020) Eight policy packages for Scotland’s Green Recovery (2020) Available at: https://www.changeworks.org.uk/sites/default/files/CERG_Green%20Recovery_Final%20report_July2020_0.pdf (Accessed 18/08/2020)

¹³ IEMA (2011) The State of Environmental Impact Assessment Practice in the UK [Online] Available at: <https://transform.iema.net/article/state-eia-practice-uk> (Accessed 18/08/2020)

¹⁴ SNH (2018) Environmental Impact Assessment Handbook [Online] Available at: <https://www.nature.scot/handbook-environmental-impact-assessment-guidance-competent-authorities-consultees-and-others> (Accessed 18/08/2020)

¹⁵ BiGGAR Economics (2017) Wind Farm and Tourism Trends in Scotland [Online] Available at: <https://biggareconomics.co.uk/wp-content/uploads/2020/01/Wind-farms-and-tourism-trends-in-Scotland.pdf> (Accessed 18/08/2020)

14.2.1 Legislation

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations) establish in broad terms what is to be considered when determining the effects of development proposals on, socio-economics, recreation and tourism.

14.2.2 National Policy

Scotland's Economic Strategy sets out how the Scottish Government will provide support for businesses and individuals to grow in an economically sustainable way with the dual objectives of boosting competitiveness and tackling inequality. As part of these objectives, the document aims to direct investment in order to maximise opportunities for employment, business, leisure and tourism and also to join up planning policy to facilitate this.

The document identifies four strategic priorities which are critical to economic growth:

- Investing in our people, infrastructure and assets in a sustainable way;
- Fostering a culture of innovation;
- Promoting inclusive growth; and
- Internationalisation.

The National Performance Framework tracks progress towards national outcomes. It shows how well Scotland is performing overall on the 81 national indicators including topics such as economy and the environment. In terms of economy, the Scottish Government recognises that a strong, competitive economy is essential to supporting jobs, incomes and our quality of life. The Scottish economy must be environmentally sustainable, inclusive and benefit all Scotland's people and communities.

On the 23rd June 2014, the Scottish Government published the new Scottish Planning Policy (SPP). It is clear from SPP that the Scottish Government is committed to developing further renewable energy projects and paragraph 153 of SPP advises that:

"Efficient supply of low carbon and low cost heat and generation of heat and electricity from renewable energy sources are vital to reducing greenhouse gas emissions and can create significant opportunities for communities. Renewable energy also presents a significant opportunity for associated development, investment and growth of the supply chain" (page 36).

Paragraph 80 states that:

"Where it is necessary to use good quality land for development, the layout and design should minimise the amount of such land that is required. Development on prime agricultural land, or land of lesser quality that is locally important should not be permitted except where it is essential:

.....to meet an established need, for example for essential infrastructure, where no other suitable site is available; or.....

for the generation of energy from a renewable source or the extraction of minerals where this accords with other policy objectives and there is secure provision for restoration to return the land to its former status."

Paragraphs 29 and 169 discuss that decisions for proposals for energy infrastructure should be guided by giving due weight to net economic benefit (paragraph 29) and that key considerations are likely to include:

"net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities (paragraph 169)".

The National Planning Framework (NPF3) sets out a long-term strategy for Scotland's important development and investment opportunities in infrastructure. Combined with

the SPP, NPF3 aims to help deliver a sustainable, economic future for Scotland's communities. NPF3 states that in order to help make Scotland a low carbon place, the spatial strategy suggests:

"...to retain the benefits of renewable energy development in Scotland by supporting investment at key sites across the country."

NPF3 also indicates that the future of the renewables sector in Scotland will be key to bringing new employment to Scotland's remote areas and that rural communities will benefit from well-planned renewable energy development.

14.2.3 Local Planning Policy

The Highland-wide Local Development Plan (the HwLDP) was adopted by the Highland Council (the Council) in April 2012; the LDP is supplemented by Area Local Development Plans. The Council adopted the Inner Moray Firth Local Development Plan¹⁶ (the IMFLDP) in August 2018. The HwLDP and IMFLDP provide a planning framework for the future use and development of land within the Inner Moray Firth region, creating a context to guide the location of development over the next five years, from the adopted date, along with setting out development opportunities and ways to enhance the rural and urban environment.

Supplementary Guidance (SG)¹⁷ to the HwLDP, in regards to the wind energy, sets out criteria *"that the Council will use as a framework and focus for assessing proposals"*. The criteria relative to Socio-economic, Recreation and Tourism is Criterion 4: The amenity of key recreational routes and ways is respected, which states:

Development should seek to achieve a threshold where: Wind Turbines or other infrastructure do not overwhelm or otherwise significantly detract from the visual appeal of key routes and ways.

Energy and Planning policy is set out in **Chapter 2: Energy and Planning Policy** of the EIA Report and addressed in full in the Planning Statement which accompanies the EIA Report.

14.2.4 Guidance

The following documents have been considered for the assessment of potential effects of the Development on, socio-economics, recreation and tourism:

- Institute of Environmental Management and Assessment (IEMA) (2011) The State of Environmental Impact Assessment in the UK;
- Scottish Natural Heritage (2018) Environmental Impact Assessment Handbook; and
- Wind Farms and Tourism Trends in Scotland: BiGGAR Economics (2017).

¹⁶ Highland Council (2018) Inner Moray Firth Local Development Plan [Online] Available at: https://www.highland.gov.uk/downloads/file/15008/adopted_inner_moray_firth_local_development_plan (Accessed 18/08/2020)

¹⁷ The Highland Council (2016) Onshore Wind Energy: Supplementary Guidance [Online] Available at: https://www.highland.gov.uk/downloads/file/18793/onshore_wind_energy_supplementary_guidance_november_2016 (Accessed 07/08/20).

14.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

14.3.1 Scoping Responses and Consultations

Consultation for this EIA Report topic was undertaken with the organisations shown in Table 14.1.

Table 14.1: Consultation Responses

Consultee	Summary of Consultation Response	Response to Consultee
Highland Council Scoping Response 6 th April 2020	The EIA Report should estimate who might be affected by the Development. Using previous wind farm experience in the area as a basis of likely impact, all relevant economic information connected with the project should be included in the EIA Report, including the potential number of jobs and all economic activity associated with Development procurement, construction, operation, and decommissioning. EIA Report should outline the Development's impact on the local, regional and national economies. EIA Report should include a plan detailing existing on-site public rights of way and any proposed access route from public road infrastructure. As well as, proposed public access provision during construction and after the completion of the Development, and impacts on core paths, outlining subsequent mitigation required. The application should be accompanied by an Access Management Plan (AMP) and consider the requirement for any stopping up orders.	Information on all relevant economic information is addressed in Section 14.5.1 of this Chapter. Information on public rights of way is addressed in Section 14.4.2 and 14.5.2 of this Chapter. An Access Management Plan is not proposed as the Development does not result in closure of any Core Paths.
British Horse Society 15 th April 2020	Off road access should be preserved and extended as part of the Development, if possible.	Noted.

14.3.2 Scope of Assessment

This Chapter considers:

- The effect of the Development on the socio-economic resource, including employment, within the local, regional and national contexts; and
- The effects on tourist attractions and recreation facilities within and near to the Development.

The key issues for the assessment of potential effects relating to the Development are:

- Short-term direct and indirect effects arising from the construction phase;
- Long-term direct and indirect effects that occur during the operational phase, but are mitigated at decommissioning; and
- Permanent direct and indirect effects that continue after decommissioning.

14.3.2.1 Socio-Economics

The principal socio-economic assessment criteria relate to the employment effects that the Development may have within the Study Area, as defined in Section 14.3.4.1. These effects are defined in terms of Full-Time Equivalent (FTE) jobs and the Gross Value Added (GVA) generated by any jobs created by the Development.

14.3.2.2 Tourism and Recreation

Recreational behaviour will be affected where a development potentially leads to a change in recreational habits or activities. Factors which might lead to change in recreational behaviour include loss, closure, or diversion of routes; obstructing access routes; enhancing access; reduction in amenity or intrusion; enhancement in amenity; and changes in setting and context of the recreational resource.

Where other technical assessments presented within this EIA Report, have considered the effects on recreational resources *e.g.* **Chapter 6: Landscape and Visual Amenity**, these findings will be drawn upon to inform the assessment of the wider recreational effects.

When assessing tourism, this Chapter deals primarily with amenity, which is defined as the pleasantness of the asset that contributes to its character (*i.e.* the essence of why the asset is visited). Amenity is inextricably linked with both recreational behaviour and tourism.

14.3.3 Elements Scoped Out of Assessment

There are 29 Listed Buildings within 10 kilometres (km) of the centre point of the Site (NGR 257438, 813258). The 29 Listed Buildings include two Category A, 17 Category B and eight Category C Listed Buildings.

The two Category A listed buildings are:

- Whitebridge, Old Bridge (LB 1874), located approximately 6 km west, north-west of the Site; and
- Foyers, British Aluminium Factory (LB 1880), located approximately 10 km north-west of the Site.

Neither Category A Listed Building falls within the zone of theoretical visibility of the Development and, as with the other Category B and C listed buildings within the local area, do not constitute tourist attractions. Listed buildings with 10 km of the Site centre are considered fully within **Chapter 9: Archaeology and Cultural Heritage**. As such, all listed buildings are scoped out of further assessment.

There are 15 Scheduled Monuments within 10 km of the centre point of the Site (NGR 257438, 813258); however, none are promoted/'properties in care' heritage receptors therefore do not constitute tourist attractions. Scheduled Monuments with 10 km of the Site centre are considered fully within **Chapter 9: Archaeology and Cultural Heritage** therefore are scoped out of further assessment.

14.3.4 Study Area

The study areas in this assessment are receptor specific and detailed in the following sections.

14.3.4.1 Socio-Economics

Socio-economic Study Areas are defined either at local, regional, or national scale as follows:

- 'Local' comprises the electoral ward of Aird and Loch Ness & Inverness South. Where statistics are not available for Aird and Loch Ness & Inverness South, the assessment has presented figures from the Highland Council-wide statistics;
- 'Regional' is defined as Highland; the geographical size of the Highland area means that the Development will not affect the entire area. As national statistics apply to Highland as a single area, it will be referred to as a whole for a number of assessments; and
- 'National' is defined as Scotland.

14.3.4.2 Tourism and Recreation

The Primary Study Area for tourism and recreation comprises land *within the application boundary* when considering direct effects and *within 15 km of the Site Boundary* when considering indirect effects.

A Secondary Study Area, comprising land within 10 km of the centre point of the Site (NGR 257438, 813258), is used for assessing direct and indirect effects on Core Paths and Rights of Way.

14.3.5 Baseline Survey Data Sources

The following sources of information have been used to inform the baseline description set out in this Chapter:

- The Highland Council (www.highland.gov.uk);
- Heritage Paths (www.heritagepaths.co.uk);
- National Statistics Online (www.statistics.gov.uk);
- National Records of Scotland (www.nrscotland.gov.uk/statistics-and-data);
- NOMIS Official Labour Market Statistics (www.nomisweb.co.uk);
- Scottish Tourist Board (www.visitscotland.com);
- Scotways (www.scotways.com) and
- Sustrans (www.sustrans.co.uk).

Baseline conditions have been established through desktop studies and consultation including responses to the Scoping Report (February 2020).

14.3.6 Methodology for the Assessment of Effects

14.3.6.1 Socio-Economics

Effects on the socio-economics resources can be described as direct, indirect, induced or cumulative. The assessment aims to predict the likely effects (positive, negative or neutral) arising from the Development; social and economic effects are divided into:

- Direct effects: opportunities that will be created as an immediate effect of the Development;
- Indirect effects: opportunities that will be created by the Development further down the supply chain, for example, companies providing services to the Development;
- Induced effects: opportunities that will be created by employment opportunities, for example, additional spend of wages into the local economy and the purchasing of basic materials, equipment and office space for staff; and
- Cumulative Effects: where the combined effect of two or more developments are of greater significance than those of the Development itself.

The significance of the potential effects of the Development has been classified by professional consideration of the sensitivity of the receptor and the magnitude of change.

14.3.6.2 Tourism and Recreation

Effects on the tourism and recreation resources can be described as direct, indirect or cumulative. The assessment aims to predict the likely effects (positive, negative or neutral) arising from the Development; tourism and recreation effects are divided into:

- Direct effects: physical disturbance to land-use resource and therefore the tourism and recreation resource, such as the footprint of the Development and/or construction/decommissioning activities restricting/blocking access to tourism receptors;
- Indirect effects: visual effects of the Development on users of nearby tourism and recreational receptors; and
- Cumulative Effects: where the combined effect of two or more developments are of greater significance than those of the Development itself.

The significance of the potential effects of the Development has been classified by professional consideration of the sensitivity of the receptor and the magnitude of change.

14.3.6.3 Sensitivity of Receptors

The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Site or the sensitivity of potentially affected receptors, will be assessed in line with best practice guidance, legislation, statutory designations and / or professional judgement.

The sensitivity of the receptor/asset to an effect reflects the level of importance assigned to it. This allows the identification of key economic, tourism and recreational assets.

Table 14.2 details the framework for determining the sensitivity of receptors.

Table 14.2: Framework for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
Very High	The asset has little or no capacity to absorb change without fundamentally altering its present character, is of very high socio-economic, recreational, or tourism value, or of national importance. For example, it is a destination in its own right (for attractions), with a substantial proportion of visitors on a national level and/or possesses priority or weight in national policy.
High	The asset has low capacity to absorb change without fundamentally altering its present character, is of high socio-economic, recreational, or tourism value, or of importance to Scotland.
Medium	The asset has moderate capacity to absorb change without substantially altering its present character, has socio-economic, recreational, or tourism value, or is of regional importance (<i>e.g.</i> Highland). For example, it is a popular destination among current visitors (for attractions), with a significant contribution to the regional economy and/or possesses priority/weight in regional policy.
Low	The asset is tolerant to change without detriment to its character, has low socio-economic, recreational, or tourism value, or is of local importance. For example, it is an incidental destination for current visitors (for attractions) and/or possesses priority/weight in local policy.
Negligible	The asset is resistant to change and is of little socio-economic, recreational, or tourism value. For example, an incidental destination for low numbers of current visitors (for attractions) and/or possesses no weight in authority policy.

14.3.6.4 Magnitude of Change

The magnitude of change will be identified through consideration of the Development, the degree of change to baseline conditions predicted as a result of the Development, the duration and reversibility of an effect and professional judgement, best practice guidance and legislation.

The criteria for assessing the magnitude of an effect are presented in Table 14.3.

Table 14.3: Framework for Determining Magnitude of Change

Magnitude of Change	Definition
High	Total loss or major alteration (positive or negative) of the socio-economic, recreation, or tourism assets/receptors.
Medium	Loss of, or alteration to (positive or negative), one of more key elements of the socio-economic, recreation, or tourism asset's baseline value.
Low	Slight alteration (positive or negative) of the socio-economic, recreation, or tourism asset/receptors.
Negligible	Barely perceptible alteration (positive or negative) of the socio-economic, recreation, or tourism asset/receptors.

14.3.6.5 Significance of Effect

The sensitivity of the asset and the magnitude of the predicted change will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects. Table 14.4 summarises guideline criteria for assessing the significance of effects.

Table 14.4: Framework for Assessment of the Significance of Effects

Magnitude of Change	Sensitivity of Resource or Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light grey in the above table.

Effects can be positive negative or neutral and these are specified where applicable in the assessment within this Chapter.

Consideration is given to the national, regional and local baseline situation when assessing sensitivity with the magnitude of change determined in proportion to the geographic scale relevant to each receptor.

In terms of socio-economic factors, potential effects would be significant if the Development resulted in any fundamental or material changes in population, structure of community, and economic activity during the operational phase of the Development.

For tourism and recreation factors, potential effects would be significant if the Development resulted in any fundamental or material changes in key elements/features

of the receptor or if effects resulted in major, long-term alterations of the baseline conditions of the attraction, accommodation, recreation route etc.

14.3.7 Assessment Limitations

Data has been collated from published sources; no surveys specific to the Development and in support of this assessment have been carried out.

Whilst efforts have been made to ensure that the key tourism and recreation facilities in the area have been identified, it is possible that there are a number of small attractions that will not have been identified through the data collection process.

14.4 BASELINE CONDITIONS

The land within the Site covers an area of approximately 1,694 hectares (ha), centred at approximately NGR 257438, 813258. This land contains the turbines and infrastructure associated with the Operational Corriegarth Wind Farm which has been operational since 2017. Additionally, the Site is currently used as an active grouse shooting estate.

14.4.1 Socio-Economics

14.4.1.1 Population

The Highland Council area is a mainly rural region in the north of Scotland covering an area of around 26,484 km²¹⁸ with an estimated population of 235,830 (June 2019)¹⁹. The largest settlements include Inverness (approximately 63,000 residents), Fort William (approximately 10,000 residents) and Nairn (approximately 10,000 residents) with all other settlements having populations less than 8,000²⁰.

The electoral ward of Aird and Loch Ness, where the Site is located, had a population of 11,418²¹ in 2018; the electoral ward of Inverness South, which largely borders the Site had a population of 15,808²² in 2018. The wider area of Inner Moray Firth has a total population of 153,293²³ according to the latest census in 2011.

In 2018, 22% of the Highland population was over 65 years, which is higher than the Scottish average of 19%²⁴. National Records of Scotland projections²⁵ signal that in Scotland the gap between older and younger populations is expected to expand further over time. The pensionable age (over 65) population is set to continue to increase over

¹⁸ Highland Council (2019) Highland Profile – Key Facts and Figures [Online] Available at: https://www.highland.gov.uk/info/695/council_information_performance_and_statistics/165/highland_profile_-_key_facts_and_figures (Accessed 18/08/2020)

¹⁹ National Records of Scotland (2020) Highland Council Area Profile [Online] Available at: <https://www.nrscotland.gov.uk/files/statistics/council-area-data-sheets/highland-council-profile.html> (Accessed 18/08/2020)

²⁰ Scottish Government (2018) Population Estimates for Settlement and Localities in Scotland, Mid-2016 [Online] Available at: <https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/settlements-and-localities/mid-2016/list-of-tables> (Accessed 18/08/2020)

²¹ Scottish Government (2020) Electoral Ward Aird and Loch Ness [Online] Available at: <https://statistics.gov.scot/atlas/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fid%2Fstatistical-geography%2F513003001> (Accessed 18/08/2020)

²² Scottish Government (2020) Electoral Ward Inverness South [Online] Available at: <https://statistics.gov.scot/atlas/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fid%2Fstatistical-geography%2F513003008> (Accessed 18/08/2020)

²³ Highlands and Islands Enterprise (2014) Inner Moray Firth Area Profile [Online] Available at: <https://www.hie.co.uk/media/3179/innerplusmorayplusfirthplusprofileplus2014.pdf> (Accessed 18/08/2020)

²⁴ National Records for Scotland (2020) Mid-Year Population Estimates Scotland, Mid-2019 [Online] Available at: <https://www.nrscotland.gov.uk/files/statistics/population-estimates/mid-19/mid-year-pop-est-19-report.pdf> (Accessed 18/08/2020)

²⁵ National Records of Scotland (2019) Population Projections of Scotland (2018-based) [Online] Available at: <https://www.nrscotland.gov.uk/files/statistics/population-projections/2018-based/pop-proj-2018-scot-nat-pub.pdf> (Accessed 18/08/2020)

the next 30 years, however with the pensionable age set to rise to 67 in 2028, the number of people over the pensionable age may decrease; the change in pensionable age is not accounted for within this assessment. In Inverness, the percentage change in the number of retired people aged 65 and over is forecast to be approximately 100% between 2010 and 2035²⁶. The Highland dependency ratio (the number of working age people divided by the number of children and retired people) in 2010 was 1.74, however this is expected to fall to 1.18 in 2035, and has the potential to cause labour shortages.

Outward migration of under-24s in Highland is common for the area; between 2016 and 2026, the 16-24 population is expected to decrease by 7.1%²⁷. The 16-24 age group is an important demographic for future economic stability and growth. Continued outward migration of young people from the Highland region presents a risk to future economic development for the region.

14.4.1.2 Employment

Highland has a higher employment percentage compared to Scottish averages. The employment rate (16-64-year olds) in 2018 was 81.2%²⁸, although decreased by 3.1% to 78.1% in 2019²⁹; however, this is still higher than the Scottish national average of 74.8%³⁰. In 2019 the principle employment industries within Highland are:

- Human Health and social work (16% share);
- Wholesale and retail trade (13%);
- Accommodation and food service activities (9%);
- Public administration and defence (9%);
- Construction (8%);
- Education (7%);
- Manufacturing (7%);
- Agriculture, forestry and fishing (6%);
- Transportation and storage (5%);
- Professional, scientific and technical activities (5%);
- Administrative and support service activities (5%);
- Arts, entertainment and recreation (4%);
- Other service activities (2%);
- Information and communication (2%);
- Real estate activities (1%);
- Water supply; sewerage and waste management (1%);
- Financial and insurance activities (1%);
- Electricity, gas and steam (1%); and
- Mining and quarrying (0%)³¹.

²⁶ Highland Council (2012) Population Projections for Council Areas 2010-2035 [Online] Available at: http://www.highland.gov.uk/download/downloads/id/11051/council_area_population_projections_2010 (Accessed 18/08/2020)

²⁷ National Records of Scotland (2019) Highland Council Area Profile [Online] Available at: https://www.nrscotland.gov.uk/files/statistics/council-area-data-sheets/highland-council-profile.html#population_projections (Accessed 18/03/2020)

²⁸ Scottish Government (2019) Regional employment patterns in Scotland: statistics from the Annual Population Survey 2018 [Online] Available at: <https://www.gov.scot/publications/regional-employment-patterns-scotland-statistics-annual-population-survey-2018/pages/3/> (Accessed 18/08/2020)

²⁹ Scottish Government (2020) Scotland's Labour Market: People, Places, and Regions - Statistics from the Annual Population Survey 2019 [Online] Available at: <https://www.gov.scot/publications/scotlands-labour-market-people-places-regions-statistics-annual-population-survey-2019/> (Accessed 18/08/2020)

³⁰ Scottish Government (2020) Scotland's Labour Market: People, Places, and Regions - Statistics from the Annual Population Survey 2019 [Online] Available at: <https://www.gov.scot/publications/scotlands-labour-market-people-places-regions-statistics-annual-population-survey-2019/> (Accessed 18/08/2020)

³¹ Skills Development Scotland (2019) Regional Skills Assessment Highlands and Islands Summary Report [Online] Available at: <https://www.skillsdevelopmentscotland.co.uk/media/46133/highlands-and-islands-rsa-summary-report.pdf> (Accessed 18/08/2020)

The construction sector is expected to see the biggest increase in employment, with 1,500 more jobs expected in the sector by 2029 compared to 2019. Other sectors expecting increases are the administrative and support services sector (1,200 jobs), and professional, scientific and technical activities (1,100 jobs)³². The IMFLDP aims to diversify the local economy, which is fundamental to continuing to create long-term employment opportunities and attract inward investment.

The establishment of the North Coast 500 (NC500) tourist attraction route has contributed to – and is expected to continue to contribute to – employment within Highland; in 2018, 180 jobs were created as a result of the route³³.

The Operational Corriegarth Wind Farm has brought employment benefits to the local area, with the developer of the Operational Corriegarth Wind Farm using the Highland based contractors - RJ MacLeod (Contractors) Limited as the Principal Contractor during construction. The Operational Corriegarth Wind Farm estimated that during operation four to five full-time jobs would be created, with an additional two to three being created from the community fund which estimated to deliver £2.5 million to the local community through the fund over the lifetime of the Operational Corriegarth Wind Farm³⁴.

Discussions with the current operator of the Operational Corriegarth Wind Farm (BayWa r.e. Operation Services Limited) confirmed the following on going requirements:

- Turbine and electrical maintenance;
- High voltage work;
- Roads and civils maintenance;
- Snow clearance;
- Environmental survey work; and
- General buildings maintenance.

The Operational Corriegarth Wind Farm used, and continues to use, local environmental consultants, Nevis Environmental Limited based in Inverness, to undertake work relating to the Operational Corriegarth Wind Farm Habitat Management Plan (HMP), providing further employment opportunities as a result of the construction and operation of the Operational Corriegarth Wind Farm.

14.4.13 Renewables and Economic Development

The UK renewables industry plays a central role in the economy by producing, transforming and supplying energy in its various forms to all sectors. UK Government statistics released on the 31st January 2018 show turnover from renewable energy activity in Scotland was £5,458 million in 2016, with individual sectors showing employment increases of up to 300% between 2015 and 2016³⁵. Additionally, Scottish Government statistics show that in 2017 the Scottish low carbon and renewable energy sector generated over £11 billion in turnover, whilst supporting over 46,000 jobs³⁶. Scottish onshore wind projects, which support 8,000 jobs, delivered almost half (45.8%) of the UK's turnover from onshore wind in 2016, the latest year for which figures are available.

³² Skills Development Scotland (2019) Regional Skills Assessment Highlands and Islands Summary Report [Online] Available at: <https://www.skillsdevelopmentscotland.co.uk/media/46133/highlands-and-islands-rsa-summary-report.pdf> (Accessed 18/08/2020)

³³ BBC News (2019) North Coast 500 'boosted Highland economy by £22m' [Online] Available at: <https://www.bbc.co.uk/news/uk-scotland-highlands-islands-49933065> (Accessed 18/08/2020)

³⁴ Corriegarth Wind Farm Environmental Statement (2007)

³⁵ Scottish Renewables (2018) Scots renewable energy industry turnover £5.5 billion, new UK Government stats show [Online] Available at: <http://www.scottishrenewables.com/news/scots-renewable-energy-industry-turnover/> (Accessed 18/08/2020)

³⁶ Scottish Government (2019) Annual Energy Statement 2019 [Online] Available at: <https://www.gov.scot/publications/annual-energy-statement-2019/pages/3/> (Accessed 18/08/2020)

Scotland's turnover from onshore wind activities totalled £1.5 billion in 2016 and achieving 'world leader' status for renewables in 2017³⁷.

The International Energy Agency (IEA) released statistics following analysis of daily data through mid-April 2020 during the COVID-19 pandemic (published in their Global Energy Review 2020) showing that countries in full lockdown, including the UK, experienced an average 25% decline in energy demand per week³⁸. Due to COVID-19, the requirements for electricity security and resilient energy systems are heightened, with the need for clean energy transitions to be at the centre of development for economic recovery. The IEA also comment that the outbreak of COVID-19, the economy would see a collapse in demand for fossil fuels, meaning electricity will play the biggest role in the global energy system in 2020, erasing a decade's growth of global carbon emissions³⁹.

Investment in renewable energy generation in the Highlands is not only helping to meet Council and national climate change targets but it has also delivered economic benefits for the area.

14.4.2 Tourism and Recreation

14.4.2.1 Tourism and Recreational Receptors

Tourism is a key element in the socio-economic, environmental and cultural welfare of Scotland. In 2018, around 15.5 million overnight trips were taken in Scotland (a 3% increase from 2017), for which visitor expenditure totalled around £5.1 billion⁴⁰.

With regard to Highland, the tourism sector is considered as an increasingly important component of the economy and the IMFLDP supports this by allocating land suitable for tourism opportunities throughout the Inner Moray Firth, including in more rural and remote locations.

The Site is located within a relatively remote setting with recreation opportunity based around the natural environment such as hills, wildlife, lochs and rivers, with various formally recognised tourist attractions within the Primary Study Area. The formally recognised tourist attractions and activities within the Primary Study Area are included within Table 14.5, below.

Table 14.5: Tourist Activities and Attractions within Primary Study Area

Tourist Activity / Attraction	Approximate Distance from nearest indicative turbine location	Contextual Location	Theoretical Visibility from Receptor (Y/N)
Onsite Grouse Shooting	Onsite	Foyers	Yes
Monadhliath Mountain Range	260 m (SW)	Scotland	Yes
Trail of the Seven Lochs	5.3 km (NW)	Loch Ness	Yes
Loch Mhor	5.3 km (NW)	Foyers	Yes

³⁷ WWF (2017) Scotland a 'World Leader' for renewables in 2017 [Online] <https://www.wwf.org.uk/updates/scotland-world-leader-renewables-2017> (Accessed 18/08/2020)

³⁸ The International Energy Agency (2019) COVID-19 [Online] Available at: <https://www.iea.org/topics/covid-19> (Accessed 19/08/2020)

³⁹ The Guardian (2020) Covid-19 crisis will wipe out demand for fossil fuels, says IEA [Online] Available at: <https://www.theguardian.com/business/2020/apr/30/covid-19-crisis-demand-fossil-fuels-iea-renewable-electricity> (Accessed 19/08/2020)

⁴⁰ VisitScotland (2019) Key Facts on Tourism in Scotland 2018 [Online] Available at: <https://www.visitscotland.org/binaries/content/assets/dot-org/pdf/research-papers-2/key-facts-on-tourism-in-scotland-2018-v2.pdf> (Accessed 18/08/2020)

Tourist Activity / Attraction	Approximate Distance from nearest indicative turbine location	Contextual Location	Theoretical Visibility from Receptor (Y/N)
National Cycle Network (NCN) Route 78	7.1 km (W)	Scotland	Yes
South Loch Ness Trail	7.5 km (NW)	Inverness – Fort Augustus	Yes
General Wade's Military Roads	8 km (W)	Whitebridge	Yes
Cairngorms National Park	9 km (S)	Scotland	Yes
The Falls of Foyers	9.2 km (NW)	Foyers	No
Boleskine House	9.7 km (NW)	Easter Boleskine	No
Loch Ness	9.7 km (NW)	Highlands	Yes
Scottish Highland Art	12.3 km (N)	Torness	No
Clog and Craft Shop	14.2 km (W)	Invermoriston	No
Invermoriston Falls	14.2 km (W)	Invermoriston	Yes
Urquhart Castle	14.6 km (NNW)	Drumnadrochit	No
Loch Ness by Jacobite (Clansman Harbour)	15 km (N)	Abriachan	No
4 Great Glen Cycle Route	15 km (SW)	Fort Augustus	Yes
Iceberg Glassblowing Studio	15 km (SW)	Fort Augustus	No
Caledonian Canal (From Fort Augustus)	15 km (SW)	Fort Augustus	No
Caledonian Canal Centre	15 km (SW)	Fort Augustus	No

Tourism activities and attractions listed above which do not have theoretical visibility based on Figure 6.3a-6.3c are scoped-out and not assessed further within this assessment, with the exception of Castle Urquhart which has been included due to its prominent standing and importance within local, regional and national tourism.

The only recreation attraction within the Site is grouse shooting run by the Corriegarth Estate; the grouse shooting is not formally recognised as a tourist attraction and the Corriegarth Estate is financially involved with the project. Therefore, it has been scoped-out of further assessment.

The South Loch Ness Trail; Trail of the Seven Lochs; NCN Route 78; Monadhliath Mountain Range; Cairngorms National Park; Loch Ness; and Castle Urquhart are popular and well-established tourist attractions which contribute to the local, regional, and national tourism industries. They experience high visitor numbers and are important to local, regional, and national economies. The following sections address each attraction in turn, providing detailed information about them, including visitor numbers etc.

South Loch Ness Trail

The walking route extends along the southern side of Loch Ness, approximately 1.4 km north-west of the Site Boundary, at the Site entrance, and approximately 7.5 km north-west of the nearest proposed turbine location. The location of the South Loch Ness Trail is shown on Figure 14.1. The South Loch Ness Trail is a relatively new trail, having being

completed in 2018⁴¹; it forms part of the Loch Ness 360 circular route from Fort Augustus to Inverness via Whitebridge, Inverfarigaig and Dores.

The trail is a regionally important route for recreation and tourism purposes; the trail stretches 58 km along the southern side of Loch Ness from Inverness south-westerly towards Fort Augustus. The route is a very popular route for tourists and experienced walkers, and is split into three sections:

- Section 1: Torbreck to Dores (~11 km);
- Section 2: Dores to Foyers (~22 km); and
- Section 3: Foyers to Fort Augustus (~24.5 km).

Each section of the trail has several points of interest, highlighting its recreational importance to the local area⁴².

Trail of the Seven Lochs

The Trail of the Seven Lochs is a waymarked loop route located east of Loch Ness, stretching from Foyers to Inverness. The route is approximately 80 km long and is located within the Site Boundary; running adjacent to part of the existing access track in the north-west of the Site, and located approximately 5.3 km north-west of the nearest turbine location⁴³.

The trail is a regionally important route for recreation and tourism purposes; and is a very popular route for tourists and experienced walkers.

National Cycle Network Route 78

The NCN Route 78 is an approximately 377 km cycle route stretching from Campeltown in the south-west of Scotland to Inverness in the north of Scotland⁴⁴; the NCN Route 78 is located approximately 1.3 km north-west from the Site Boundary and approximately 7.1 km from the nearest turbine location.

The NCN Route 78 is a well-established, popular cycling route with proficient cyclists, as well as amateurs and tourists; the route is very popular due to its challenging terrain and varied scenery⁴⁵.

Monadhliath Mountain Range

The Monadhliath Mountain Range lies approximately 260 m south-west of the nearest turbine location.

Part of the Monadhliath Mountain Range is designated as a Special Area of Conservation (SAC) due to its blanket bog habitat⁴⁶; the Monadhliath SAC is located approximately 6.1 km south-east of the Site and approximately 7.2 km from the nearest proposed turbine. The mountains are largely comprised of glacial uplands, which provide tourism

⁴¹ BBC News (2018) Inverness-Forst Augustus South Loch Ness Trail completed [Online] Available at: <https://www.bbc.co.uk/news/uk-scotland-highlands-islands-45143261> (Accessed on 13/08/2020)

⁴² VisitInvernessLochNess (2020) The South Loch Ness Trail [Online] Available at: <https://www.visitinvernesslochness.com/explore-the-scottish-highlands/the-south-loch-ness-trail/> (Accessed on 13/08/2020)

⁴³ VisitInvernessLochNess (2020) The Trail of the Seven Lochs [Online] Available at: <https://www.visitinvernesslochness.com/explore-the-scottish-highlands/the-trail-of-the-seven-lochs/> (Accessed on 08/09/2020)

⁴⁴ Sustrans (2020) The Caledonian Way [Online] Available at: <https://www.sustrans.org.uk/find-other-routes/the-caledonia-way> (Accessed on 08/09/2020)

⁴⁵ VisitInvernessLochNess (2020) The Caledonian Way [Online] Available at: <https://www.visitinvernesslochness.com/explore-the-scottish-highlands/caledonia-way/> (Accessed on 08/09/2020)

⁴⁶ Joint Nature Conservation Committee (2020) Monadhliath [Online] Available at: <https://sac.jncc.gov.uk/site/UK0030210> (Accessed on 04/10/2020)

opportunities in the forms of hillwalking, and other outdoor adventure activities based on the natural environment.

Cairngorms National Park

The Cairngorms National Park, Scotland's largest national park, is located in the north-east of Scotland, approximately 8.3 km south of the Site Boundary and approximately 9 km south-east of the nearest turbine location.

The Cairngorms National Park is a protected area of Scotland's north-east and is largely comprised of glacial uplands, which provide tourism opportunities in the forms of hillwalking, mountain biking and other outdoor adventure activities based on the natural environment. Cairngorm Mountain, located within the National Park, is a popular snowsports destination within the National Park⁴⁷. The National Park attracted 1.9 million visitors in 2018 (an increase of 4.7% on 2017); with 0.9 million visitors in 2018 staying overnight in local accommodation⁴⁸. The National Park generated £270.25 million, an increase of 12.1% on 2017, for the Scottish economy in 2018.

Loch Ness

Loch Ness, the world-renowned Scottish body of water, stretches for approximately 37 km south-west of Inverness and is located approximately 3.1 km north-west of the Site Boundary and 9.7 km north-west of the nearest turbine location. The Loch is used by many visitors for a wide-range of activities from recreational walking to boat tours and other water sport activities.

Often best known for its cryptozoological Loch Ness Monster, 'Nessie', the Loch attracts hundreds of thousands of visitors each year; in 2018, the boat tour operator 'Loch Ness by Jacobite' had 311,613 visitors– an 8% increase on 2017 visitor numbers⁴⁹. The outstanding natural beauty of Loch Ness, coupled with its mythological attributes means that the loch is a fundamental source of income for the local economy. A 2018 study found that 'Nessie' was worth approximately £41 million to the Scottish economy⁵⁰.

Urquhart Castle

Urquhart Castle is a castle ruin which sits on the banks of Loch Ness, located approximately 14.6 km north-northwest from the nearest indicative turbine location.

In 2018 the castle was the third most visited Scottish castle, attracting 518,195 visitors in one year; the first time the castle has surpassed 500,000 visitors in a year⁵¹. These statistics represent a 6% increase in visitor numbers for the castle, highlighting that the heritage asset is gaining in popularity and proving an economic asset to the region.

14.4.22 Local Accommodation

There are a number of settlements near to the Site which offer a range of accommodation; the nearest settlement offering accommodation is Whitebridge approximately 7 km south-west of the nearest indicative turbine. Baseline data indicates

⁴⁷ Cairngorm Mountain (2020) Ski & Snowboard [Online] Available at: <https://www.cairngormmountain.co.uk/snowsports/ski-snowboard/> (Accessed

⁴⁸ Cairngorms National Park (2018) Cairngorms National Park's Visitor Economy 2018 [Online] Available at: <https://cairngorms.co.uk/wp-content/uploads/2019/08/CNP-2018-Narrative.pdf> (Accessed on 04/10/2020)

⁴⁹ Visit Scotland (2019) Key Facts on Tourism in Scotland 2018 [Online] Available at: <https://www.visitscotland.org/binaries/content/assets/dot-org/pdf/research-papers-2/key-facts-on-tourism-in-scotland-2018-v2.pdf> (Accessed on 04/10/2020)

⁵⁰ The Press and Journal (2018) Loch Ness Monster worth nearly £41m a year to Scottish Economy [Online] Available at: <https://www.pressandjournal.co.uk/fp/news/highlands/1562103/loch-ness-monster-worth-nearly-41m-a-year-to-scottish-economy/> (Accessed on 04/10/2020)

⁵¹ Historic Environment Scotland (2019) Another record-breaking year for Scottish heritage sites [Online] Available at: <https://www.historicenvironment.scot/about-us/news/another-record-breaking-year-for-scottish-heritage-sites/> (Accessed on 04/10/2020)

that the Whitebridge Hotel is the only visitor accommodation available within Whitebridge. Additionally, Foyers (9 km north-west of the Site), Invermoriston (13.8 km west of the Site), Drumnadrochit (15.8 km north-west of the Site), and Fort Augustus (15.8 km north-west of the Site) are all substantial settlements offering a wide-range of accommodation. Table 14.6 presents local accommodation options close to the Site; this information has been gathered through a search of available online information, and it is acknowledged that there may be additional accommodation available.

Table 14.6: Local Accommodation within the Primary Study Area

Accommodation Name	Address	Approximate Distance from nearest turbine location
Deer View Bed & Breakfast	Lower Knockchoilum, Inverness, IV2 6UR	6.6 km (W)
Samhach Holiday Cottage	Gorthleck, Inverness IV2 6UJ	7.2 km (NW)
Whitebridge Hotel	The Whitebridge Hotel, Whitebridge, Stratherrick, IV2 6UN	7.4 km (WNW)
Wildside Highland Lodges	Wildside Highland Lodges Whitebridge, Inverness, IV2 6UN	7.4 km (WNW)
Rohan Bed and Breakfast	Lower Cultie, IV2 6YP	7.7 km (NW)
Killiechoilum Cottage	Unnamed Road, Inverness, IV2	7.7 km (W)
The Wee Residence	50 Glenlia, Foyers, Inverness, IV2 6XY	8.8 km (NW)
Foyers Roost	Foyers House, Foyers, Inverness, IV2 6XU	9 km (NW)
Foyers Bay House	Foyers Loch Ness, Inverness, IV2 6YB	9 km (NW)
Lodges on Loch Ness	The Lodges on Loch Ness, The Turns, Foyers, South Loch Ness Side, Inverness-shire, IV2 6XU	9 km (NW)
The Craigdarroch Inn	The Craigdarroch Inn Foyers, Loch Ness, Near Inverness, Scottish Highlands, IV2 6XU	9 km (NW)
Foyers Lodge	General Wade's Military Rd, Foyers, Inverness, IV2 6XT	9.7 km (NW)
Loch Ness Shores Camping and Caravanning Club Site	Monument Park Lower, Foyers, Inverness, IV2 6YH	10 km (NW)
Invermoriston Accommodation	Numerous accommodation providers within Invermoriston	14.1 km (W)
Drumnadrochit Accommodation	Numerous accommodation providers within Drumnadrochit	15.9 (NW)
Fort Augustus Accommodation	Numerous accommodation providers within Fort Augustus	17.8 km (W)

Numerous other accommodation and hospitality providers exist within the Primary Study Area, the majority of which are located within the nearby settlements of: Whitebridge, Foyers, Fort Augustus, Invermoriston, and Drumnadrochit. The visual effects upon these settlements are assessed within **Chapter 6: Landscape and Visual Amenity**.

14.4.23 Public Rights of Way and Core Paths

As well as the routes, paths, and trails of regional or national importance, detailed in Section 14.4.2.1, there are approximately 30 Core Paths of local importance within the Primary Study Area. The majority of these 30 Core Paths are greater than 10 km from the centre of the Site and therefore, in terms of the EIA Regulations, unlikely to be subject to any indirect significant effects due to the distance, intervening topography, and existing man-made structures. Core Paths further than 10 km from the centre of the Site are therefore scoped out, with the assessment focusing on Core Paths within the defined Secondary Study Area.

There are six Core Paths within the Secondary Study Area (10 km from the centre of the Site), as shown in Figure 14.1. The nearest Core Path is 'Garthbeg to Errogie, south side of Loch Mhor' (IN25.02), which starts/ends at Garthbeg, within the application boundary. Whilst the Core Path is located within the Site, it does not directly link to the Site access track; the IN25.02 is located approximately 5.2 km from the nearest proposed turbine. A list of Core Paths within Secondary Study Area is provided in Table 14.7 below.

Table 14.7: Identified Core Paths and Rights of Way within Secondary Study Area

Type of Route	Status of Route	Route Name	Route Reference	Approximate Distance from Nearest Turbine
Highland Core Path	Local	Garthbeg to Errogie, south side of Loch Mhor	IN25.02	5.2 km (NW)
Highland Core Path	Local	Dell Lodge - Foyers	IN25.01	7.5 km (NW)
Highland Core Path	Local	Foyers to Gleann Liath	IN17.13	8.7 km (NW)
Highland Core Path	Local	Trinloist to Glenliath	IN17.10	8 km (NW)
Highland Core Path	Local	Carnoch to Errogie	IN17.11	8 km (N)
Highland Core Path	Local	Ault na Goire to Gleann Liath	IN17.12	8.7 km (NW)

In addition to the routes summarised in this section and 14.4.2.1, it is acknowledged that public access may not be limited to such formally recognised routes, particularly under consideration of the Land Reform Act (Scotland) 2003⁵². Recreational walking may include members of the public making use of the wider access tracks associated with the Operational Corriegarth Wind Farm. However, as the Site is used as an active grouse shooting estate there are provisions in place to restrict public access within the Site during times where grouse shooting is taking place; these provisions are in the interests of public health and safety and will remain applicable during all phases of the Development.

14.4.24 Public Attitudes towards Wind Farm Development

The potential for impact on tourism is closely linked to public perception of those visiting the area. This section provides an overview of studies undertaken to assess public perception of wind farm development across the UK.

In 2011, as part of their policy update, VisitScotland commissioned research to learn more about UK consumer attitudes to wind farms. The survey was largely attitudinal based and, according to the results, wind farms do not have any significant impacts on

⁵² Scottish Government (2003) Land Reform (Scotland) Act 2003 [Online] Available at: <https://www.legislation.gov.uk/asp/2003/2/contents> (Accessed on 07/09/2020)

the levels of tourism. This finding is supported by the example of Whitelee Wind Farm Visitor Centre which attracted over 120,000 visitors in the first 12 months of opening in 2009 and was awarded a Gold Award for Green Tourism in 2015⁵³. This is an example of onshore wind increasing tourism and recreational amenities.

Based on their research, VisitScotland published a Position Statement⁵⁴ in 2014 which stated:

"VisitScotland understands and supports the drive for renewable energy and recognises the economic potential of Scotland's vast resource, including the opportunities for wind farm development... There is a mutually supportive relationship between renewable energy developments and sustainable tourism."

A Department of Energy and Climate Change (DECC)⁵⁵ survey on public attitudes showed that in March 2014, 80% of the British public said they supported using renewable energy for electricity, heat and fuel in the UK.

More recently, the Public Attitudes Tracker, published by the Department for Business in 2019⁵⁶, Energy and Industrial Strategy (BEIS) showed 77% of people support the development of onshore wind, which remained stable when compared to 79% recorded in March 2019; long-term support for onshore wind has increased from 65% in March 2015. The advance in onshore wind development in Scotland has also been accompanied by an interest in understanding how the impacts of wind farm developments affect local house prices. In recent years, there has been considerable research looking at measurable effects on whether or not properties near, or in sight of, new wind farm developments see price changes that differ from other houses. A topical study conducted by RenewableUK and the Centre for Economics and Business Research concluded that no adverse impacts were found on house prices from a range of wind farm cases across England and Wales and that there was, in fact, a slight beneficial influence on house prices from the cases analysed⁵⁷.

Shortly after that study was published, an analysis conducted by Gibbons identified that larger wind farms may reduce the values of properties by up to 12% within a 2 km radius and reduce property prices as far as 14 km away⁵⁸. Subsequently, ClimateXChange did a parallel study based on Scottish property following Gibbons' approach, but with an increased resolution and precision of the data⁵⁹. This study, undertaken in 2016, concluded that there is no consistent evidence of adverse impacts of wind developments

⁵³ ScottishPower Renewables (2020) About Whitelee [Online]. Available at:

<https://www.whiteleewindfarm.co.uk/whitelee-windfarm-about-us> (Accessed 02/10/2020)

⁵⁴ VisitScotland (2014) VisitScotland Position Statement – Wind Farm [Online] Available at:

<https://www.visitscotland.org/binaries/content/assets/dot-org/pdf/policies/visitscotland-position-statement---wind-farms---oct-2014.pdf> (Accessed on 18/08/2020)

⁵⁵ Department of Energy and Climate Change (DECC) (2014) Public Attitudes Tracker Survey - Wave 9, 29th April 2014 [Online] Available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/306898/summary_of_key_finding_s_wave_9.pdf (Accessed on 18/08/2020)

⁵⁶ Department for Business, Energy and Industrial Strategy (2019) BEIS Public Attitudes Survey – Wave 33 [Online] Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/884028/BEIS_PAT_W33_-_Key_findings_Final_.pdf (Accessed on 18/08/2020)

⁵⁷ RenewableUK (2014) The Effect of Wind Farms on House Prices [Online] Available at:

<https://www.renewableuk.com/news/304411/RenewableUK--Cebr-Study---The-effect-of-wind-farms-on-house-prices.htm> (Accessed on 18/08/2020)

⁵⁸ Stephen Gibbons (2015) Gone with the Wind: Valuing the Visual Impacts of Wind Turbines through House Prices. *Journal of Environmental Economics and Management* 72, doi: 10.1016/j.jeem.2015.04.006.

⁵⁹ Heblich *et al.*, (2016) Impact of wind turbines on house prices in Scotland [Online] Available at:

https://www.climatechange.org.uk/media/1359/cxc_wind_farms_impact_on_house_prices_final_17_oct_2016.pdf (Accessed on 18/08/2020)

on house price growth and that research sample sizes tend to be too low to be statistically viable and conclude robust results.

14.5 ASSESSMENT OF POTENTIAL EFFECTS

14.5.1 Effects on Socio-Economics

The investment in the Development has potential to generate a range of economic and social effects and opportunities for local businesses, most notably employment opportunities and local spending. Potential social and economic effects can be divided into:

- Wider effects, which are unquantifiable: including effects in the wider economy from renewable energy development, such as research and development, skills development and worker retention.
- Direct effects: for example, employment opportunities in the construction, operation and maintenance and decommissioning of the Development. The nature and scale of the economic effects would depend on the total cost and the sources of the materials and labour. Other direct effects include a community benefit fund; the payment of non-domestic rates; and rental income received by the landowner.
- Indirect effects: such as employment opportunities created down the supply chain by those companies providing services to the Development during construction, operation and decommissioning.
- Induced effects: for instance, employment created by the additional spend of wages into the local economy and the purchasing of basic materials, equipment and office space for staff.

The direct, indirect and induced effects are assessed below for each phase of the Development. This follows a more general assessment of wider benefits.

14.5.1.1 Wider Economic Benefits

In terms of potential supply chain benefits, the Development provides opportunities for the involvement of local, regional and Scottish suppliers in a range of activities, including research and development, design, project management, civil engineering, component fabrication / manufacture, installation and maintenance. There is expertise in all of these areas in the wider region, although a full wind energy supply chain covering all aspects of wind turbine component manufacture has not yet been developed within the region or indeed within Scotland as a whole. Scotland currently houses wind turbine manufacturing plants in Argyll and Bute, Fife, and in the Highlands respectively. Proposals are also emerging for the location and development of wind turbine manufacturing facilities, including those in and around the east coast, although these are currently primarily for offshore machines.

The key consideration in this context is that with an increasing number of wind farm schemes either operational, under development or having gained consent in Scotland, the commercial viability, and with it, job prospects amongst Scottish firms, has improved. Cluster benefits in the industry increase where firms are supported by the spending of other firms within the renewables sector. The net effect is to increase business and employment opportunities within Scotland's renewable energy sector, boosting the performance of local and national economies.

In addition, during the construction process there will be opportunities where those employed will develop skills that will be of benefit to the local economy and to local businesses in the longer term. Further, employment generated through the Development will contribute to diversifying the local economy and help support the retention in the area of the working age population. In order to ensure these opportunities are delivered, the Applicant has made a commitment to work with the Inverness Chamber of Commerce

(ICoC) and Highlands and Islands Enterprise (HIE) to use existing local supply chain networks such as the "O4B" website (<https://www.o4b-highlandsandislands.com/>) as part of their procurement strategy.

O4B Highlands and Islands facilitates trade and engagement between large Project Developers, such as Corriegarth 2 Windfarm Limited, and local suppliers and service providers in the Highlands and Islands by providing a platform for large organisations to promote contracting opportunities originating in the region. The website also allows local suppliers to view opportunities, register as a supplier and respond to notices – free of charge.

14.5.1.2 Construction Effects

Employment

To construct the Development, the Applicant will require contractors to give local companies due consideration for the provision of goods and services. If the Development is granted consent, the range of services that will be required to construct the Development include:

- Construction companies;
- Electrical contractors;
- Plant hire – excavators, wagons;
- Concrete producers;
- Reinforced steel manufacturers;
- Potentially local stone quarries and aggregates;
- Site Managers and Ecological Clerk of Works;
- Fencing;
- Drainage;
- Accommodation;
- General supplies;
- Catering; and
- Cleaning and waste solutions.

The Applicant, during public engagement consultation, sought the details of local businesses which may be relevant to the construction of the Development, asking for details to be left on feedback forms. The Applicant is currently consulting with the Inverness Chamber of Commerce (ICoC) with respect to maximising the opportunities for local contractors and how best use of their online portal Open4Business⁶⁰ can be made.

Local sourcing of equipment is preferred whenever possible, but this procurement is subject to tendering and may be constrained by the specialist nature of some of the equipment. Local contractors will be encouraged to tender for construction, operation and maintenance work, wherever possible, to ensure maximum benefit to local communities.

It is anticipated that a temporary workforce peaking at 60 people will be employed during the 18-month construction period. Calculated by 'job years', one individual working for 18 months would result in 1.5 job years; therefore, 60 individuals working during the 18-month construction period represents 90 job years.

Overall, the construction of the Development will have positive, short-term, direct and indirect effects on the area, through the increase in employment. This will not result in any fundamental or long-term change to population, local services, employment or overall

⁶⁰ Inverness Chamber of Commerce (2020) Inverness Chamber Of Commerce [Online]. Available at: <https://www.inverness-chamber.co.uk/o4b> (Accessed on 02/10/2020)

structure of the community, but will represent a minor positive effect at a local level. This is considered **not significant** in terms of the EIA regulations.

Induced Effects

It is likely that there will be some local employment generated as an indirect result of the construction of the Development. This could include supply chain spin-offs for local businesses and sub-contracted work relating to the transportation of labour and materials. Local shops, cafes, accommodation providers and hotels often experience an increase in turnover during the construction phase as they have opportunities to provide additional services to the developer and their contractors. There are several accommodation options in the local and wider area, and it is expected that local services will be used by temporary construction contractors.

There may also be the opportunity for local people, who are employed by the appointed contractors, to work on the Development. They would be developing skills gained during construction which will be of benefit to both individuals and the local economy in the longer term. Skills gained or improved may include project management and construction skills which would be transferrable to other construction roles, including other wind farm projects.

Overall, the construction of the Development will have positive, short-term, induced effects on the area, through the increase in employment. This will not result in any fundamental or long-term change to population, local services, employment or overall structure of the community, but will represent a minor positive effect on the economy at a local level. This is considered **not significant** in terms of the EIA Regulations.

Capital Expenditure

Based on the BiGGAR Economics report commissioned by RenewableUK⁶¹, onshore wind Capital Expenditure (CAPEX) is £1.32 m per MW on average. This includes the following elements:

- Turbine: Tower; Blades; and Nacelle.
- Balance of Plant: Civil and Project Management; Roads; Substation; Buildings; Turbine foundation and hardstanding; Landscaping/forestry/fencing; Mechanical and electrical installation.
- Grid Connection: Engineering services; Construction; Electrical Components; and industrial equipment and machinery.

The final MW of the project will not be determined until the final turbine model has been selected; however, this assessment assume that the Development has a capacity of 76 MW. Assuming a conservative installed capacity of 76 MW, the total CAPEX of the Development would be expected to be approximately £100 m.

The BiGGAR Report estimates that, of these construction costs, regional expenditure would be 12% (in this case Highland); national expenditure would be 36% (Scotland); and UK expenditure would be 47%. The remaining 53% of construction costs will be spent outwith the UK.

On this basis, it is estimated that, during the construction phase, the Development will be worth approximately £47 million to the UK economy. Of that approximately £36 million is expected to be spent within Scotland (national) and £12 million is expected to be spent within Highland (regional).

⁶¹ RenewableUK (2015) Onshore Wind: Economic Impacts in 2014 [Online] Available at: https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/publications/reports/onshore_economic_benefits_re.pdf (Accessed 17/08/2020)

The Development will bring positive, short-term, direct, indirect and induced effects to the national and regional area, through the expenditure on capital costs.

The change will be of low magnitude at the regional level (medium sensitivity) and negligible at a national level (high sensitivity). Therefore, minor, positive effects are anticipated at a regional and national level, which is considered **not significant** in terms of the EIA Regulations.

14.5.13 Operational Effects

Employment

The Development will have both direct and indirect effects on employment during operation. The Applicant will employ a specialist Operations Team to manage all aspects of operations including the grid contracts, electricity sales, maintenance, health and safety and habitat management. As well as the Project and Site Managers, there will be a requirement for the following services:

- High Voltage (HV) Contractor;
- Wind Turbine Maintenance Contractor;
- Building Services Contractor;
- Statutory Inspections;
- Civils Maintenance (*e.g.* roads, crane pads, buildings and snow clearance); and
- Health, Safety, Environmental Risk Assessments.

To ensure a quick response to any onsite issues, it is preferable that many of these roles will be fulfilled by local companies.

Overall, it is estimated that the operational phase of the Development will generate employment opportunities equivalent to approximately 2-3 Full-Time Equivalent (FTE) workers. Induced effects will include local spending by the Applicant and maintenance contractors.

Overall, the operation of the Development will bring long-term, beneficial, direct, indirect and induced effects to the area, through the increase in employment and business opportunities. This will not result in any fundamental or long term change to population, local services, employment or overall structure of the community, but effects will be of low magnitude at the local level (of low sensitivity). Employment effects arising from the operational phase are of negligible, positive significance, but this is considered to be **not significant** in terms of the EIA Regulations. However, the Development will contribute to employment in Scotland.

Operation Expenditure

In the 2015 BiGGAR report⁶² on the economic benefits of the UK onshore wind industry, the average cost of an onshore wind farm was £59,867 per MW installed per annum. This includes:

- Turbine Maintenance;
- Site Maintenance;
- Operational Management;
- Land Agreements;
- Habitat Management costs;
- Non-domestic rates (business rates);
- Community Benefit; and
- Other.

⁶² RenewableUK (2015) Onshore Wind: Economic Impacts in 2014 [Online] Available at: https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/publications/reports/onshore_economic_benefits_re.pdf (Accessed 17/08/2020)

For the Development, annual Operational Expenditure (OPEX) is expected to be in the region of £4.5 million per annum. Of this total spend, the BiGGAR report estimates 42% will be spent in the local area, which would include business rates and land agreements with the local landowner, as well as a proportion of the maintenance costs. 87% of the total operation and maintenance expenditure will likely be within the UK.

The OPEX for the Development is not substantial in magnitude in comparison to the annual GDP of Highland or the value of the renewable industry in Scotland, with the majority of the expenditure taking place at the local, regional or national level. This is considered to be a positive negligible effect, and **not significant** in terms of the EIA Regulations.

Community Benefit

The Scottish Government has emphasised the importance of communities benefitting from renewable energy generation, including through community benefit funds and shared ownership as outlined the Scottish Energy Strategy⁶³.

The Development will contribute £5,000 per MW installed capacity to a Community Benefit Fund. Based on an assumed installed capacity of 76 MW, this will result in an annual value of approximately £380,000 per year. With a 30-year operational per, this will provide approximately £11.4 million in community benefit.

The Operational Corriegarth Wind Farm has an existing Community Benefit Fund with Stratherrick and Foyers Community Trust⁶⁴, with the owner of the Operational Corriegarth Wind Farm contributing to the fund. The Community Trust is owned and managed by local trust members who organise events and invest in the local area; they have agreements with renewable energy companies to receive community benefit funds on which they can invest in the local area to improve the lives of local residents and ensure that they benefit from local renewable energy projects.

The Applicant will consult the local community as to the best way to manage the community fund contribution however it expects that the payments will be made to the Stratherrick and Foyers Community Benefit Fund as per the existing agreement with the owners of the Operational Corriegarth Wind Farm.

Although not a material consideration for the planning process, the Community Benefit Fund represents a change of medium magnitude for the local community. This is considered a minor, positive long-term, and direct effect and, **not significant** in terms of the EIA Regulations.

14.5.1.4 Decommissioning

Socio-economic effects during the decommissioning phase are anticipated to be of a similar nature and scale as construction effects thereby representing a minor short-term, positive effect at local level, which is considered **not significant** in terms of the EIA Regulations.

14.5.2 Effects on Tourism and Recreation

Potential effects on the tourism and recreational resource are categorised as:

- Direct physical effects: for example, construction activities interfering with rights of access; and

⁶³ Scottish Government (2017) Scottish Energy Strategy: The future of energy in Scotland [Online] Available at: <https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/> (Accessed 17/08/2020)

⁶⁴ Stratherrick and Foyers Community Trust (2020) [Online Website] Available at: <https://www.stratherrickcommunity.org.uk/our-funders> (Accessed 26/08/2020)

- Indirect effects: such as the changes in amenity on tourists and recreational land users.

14.5.2.1 Construction Effects

Onsite Informal Recreation

The Site is accessible via the Land Reform Act (Scotland) 2003⁶⁵, however, access to areas where construction is taking place or where there is construction related activities will be restricted. The Construction (Design and Management) Regulations 2015⁶⁶ is a legal obligation for health and safety purposes. Notices will be placed in prominent locations around the Site with details of any areas with restricted access. Such measures would be agreed in advance with the Council.

In addition, as the Site is used as an active grouse shooting estate, there are provisions in place to restrict public access within the Site during times where grouse shooting is taking place. These provisions are in the interests of public health and safety and they remain applicable during all phases of the Development.

South Loch Ness Trail

The South Loch Ness Trail is approximately 1.4 km north-west of the Site Boundary, at the Site entrance, and approximately 7.5 km north-west of the nearest proposed turbine location, and therefore will not be directly affected by the construction of the Development except for potential effects associated with disruption from construction traffic.

The transport route to the Site, as detailed within **Chapter 11: Traffic and Transport**, commences near Inverness and travels south towards the Site. All traffic would enter the site having travelled from the north. The South Loch Ness trail, as shown on Figure 14.1, crosses the B862 approximately 3 km south of the site entrance. Construction traffic associated with the construction phase of the Development will be over 1 km away from the South Loch Ness Trail at its closest point, and not impact upon the sections where the South Loch Ness Trail crosses the B862.

Consequently, as a result of the intervening distance between construction activity and the South Loch Ness Trail, there will be no construction effects on the South Loch Ness Trail.

Core Path IN25.02

The Site includes a very short section of the Core Path IN25.02, which is a receptor of local importance and therefore low sensitivity. The Core Path IN25.02 starts/ends approximately 5.2 km north-west of the nearest proposed turbine location, adjacent to the existing access track which will be used for construction traffic. The Core Path will remain open throughout the duration of the construction phase. Appropriate health & safety signage will be erected and, as the path will remain open, the only effect to core path users will be increased construction noise from construction traffic in close proximity of the Core Path. This disruption would only be apparent within the immediate environs of the existing access track, and the remainder of Core Path IN25.02 would be unaffected by the Development. Therefore, the magnitude of change on Core Path IN25.02 is low.

As Core Path IN25.02 is considered of low sensitivity and the magnitude of change is predicted to be low, any effects are negligible and short-term, and therefore **not significant** in terms of the EIA Regulations.

⁶⁵ Scottish Government (2003) Land Reform (Scotland) Act 2003 [Online] Available at: <https://www.legislation.gov.uk/asp/2003/2/contents> (Accessed 18/08/2020)

⁶⁶ Health and Safety Executive (2015) The Construction (Design and Management) Regulations 2015 [Online] Available at: <http://www.hse.gov.uk/construction/cdm/2015/index.htm> (Accessed 18/08/2020)

Trail of the Seven Lochs

The Trail of the Seven Lochs is a tourism and recreation receptor considered to be of regional importance and therefore of medium sensitivity. The B851 and B862 is the transportation route to the Site as detailed within **Chapter 11: Traffic and Transport**. The construction traffic route to Site crosses the Trail of the Seven Lochs in two locations: at the access junction to the Site and at Errogie.

At the access junction along the B862, the Trail of the Seven Lochs follows the existing access track southwards to Core Path IN25.02. As with the Core Path IN25.02, health and safety requirements may require signage along the portion of Trail of the Seven Lochs that incorporates the existing access route during construction; however, the route will remain open throughout the duration of construction. The only potential effect that will occur as a result of construction would be a temporary disturbance from increased construction traffic. This would be experienced over 1 km of the 80 km route (1.25%) and would be temporary in nature. Given the temporary nature of the change and the small section of the route potentially affected, magnitude of change is predicted to be low.

As the Trail of the Seven Lochs is considered of medium sensitivity and the magnitude of change is predicted to be low, any effects are minor and short-term, and therefore **not significant** in terms of the EIA Regulations.

National Cycle Network Route 78

The transport route to the Site, as detailed within **Chapter 11: Traffic and Transport**, commences near Inverness and travels south towards the Site. All traffic would enter the site having travelled from the north. NCN Route 78, as shown on Figure 14.1, leaves the B862 approximately 1.5 km south of the site entrance. Construction traffic associated with the construction phase of the Development will be over 1 km away from NCN Route 78 at its closest point and will not impact upon the sections where the NCN Route 78 follows the B862.

Consequently, as a result of the intervening distance between construction activity and NCN Route 78, there will be no construction effects on the NCN Route 78.

Monadhliath Mountain Range

As a tourism and recreational receptor of regional importance, the Monadhliath Mountain Range is considered to be of medium sensitivity. However, as detailed within **Chapter 11: Traffic and Transport**, construction access to the Site will be taken from the north-west of the Site and no construction traffic will enter or pass in close proximity to the Monadhliath Mountain Range. In addition, the construction activity on the Site will be short-term, with no direct effect on the recreational activities of the mountain range. Considering potential visual effects during construction, Chapter 6: Landscape and Visual Amenity identified that the Site is not within a designated landscape, and that the overall landscape value is low when considering the Operational Corriegarth Wind Farm. A moderate and significant landscape effect during construction, whilst noting that this effect would be temporary and largely contained within localised extents.

The Site itself is not within the Monadhliath mountain range, and there would be no direct effect on visitors to the mountain range during construction. Given the short-term and localised nature of any construction effects that would not be a direct effect upon the Monadhliath mountain range, the magnitude of any change is considered to be negligible. This represents a short-term, negligible effect, which is **not significant** in terms of the EIA Regulations.

Cairngorms National Park

As a tourism and recreational receptor of national importance, the Cairngorms National Park is considered to be of very high sensitivity. However, as detailed within **Chapter 11: Traffic and Transport**, construction access to the Site will be taken from the north-west of the Site and no construction traffic will enter or pass in close proximity to the Cairngorms National Park. In addition, the intervening distance between the receptor and the Site (8 km) will mean the Cairngorms National Park will not be impacted by the construction of the Development. As stated in **Chapter 6: Landscape and Visual Amenity**, no specific landscape and visual construction effects on the National Park are identified, however they are considered to be similar to those experienced during operation. The magnitude of any change is considered to be negligible. This represents a short-term, minor effect, which is **not significant** in terms of the EIA Regulations.

Loch Ness

As a tourism and recreational receptor of national importance, Loch Ness is considered to be of high sensitivity. The only potential effects on Loch Ness would occur as a result of effects from construction traffic, summarised in **Chapter 11: Traffic and Transport**. However, the nearest point of the route used for construction is approximately 3 km, from the B862, at the site entrance. Considering the intervening distance between the receptor and the site entrance / construction route to Site, any effects will be negligible and Loch Ness will remain open to recreational users. Due to the intervening distance between the receptor and the Site, Loch Ness will not be impacted by the construction of the Development. Therefore, the magnitude of any change is considered to be negligible. This represents a minor, short-term effect, which is **not significant** in terms of the EIA Regulations.

Urquhart Castle

As a tourism and recreational receptor of regional importance, Urquhart Castle is considered to be of medium sensitivity. Any effects on Castle Urquhart would be limited to visual effects; however, the receptor does not fall within the zone of theoretical visibility (ZTV) for turbines and is therefore unlikely to have any visibility of construction works onsite (as shown in Figure 6.3a-6.3c). Therefore, due to the receptor falling outwith the ZTV and due to the intervening distance between the receptor and the Site, Castle Urquhart will not be impacted by the construction of the Development. Therefore, the magnitude of any change is considered to be negligible. This represents a negligible effect, which is **not significant** in terms of the EIA Regulations.

Other Receptors - Accommodation

Indirect effects on offsite resources such as the accommodation, mentioned in Section 14.4.2.2, and local socio-economics, mentioned in Section 14.4.1, are unlikely to be affected by the construction of the Development. As per **Chapter 11: Traffic and Transport**, the construction route to Site comes south from Inverness; there are no accommodation receptors located directly on the route to Site, therefore in-combination with the intervening distance of these receptors from the Development, it is considered that the magnitude of change would be negligible and that these receptors are of low sensitivity to the Development. Therefore, this represents a negligible, short-term, negative effect which is considered **not significant** in terms of the EIA Regulations.

Local shops, cafes, accommodation providers and hotels often experience an increase in turnover during the construction phase as they have opportunities to provide additional services to the Applicant and their contractors. The Development will result in a minor, short-term, positive effect at local level, which is **not significant** in terms of the EIA Regulations.

Other Receptors – Offsite Recreation and Recreational Routes

The Site is of low sensitivity for recreation as it only includes a very short section of the already assessed Core Path IN25.02 and Trail of the Seven Lochs. The Site does not contain any recreational facilities (with the exception of onsite grouse shooting which is scoped out of assessment as detailed in Section 14.4.2.1) which are of importance at a local, regional or national levels. Additionally, any effects on walking routes will be indirect and limited to visual disturbance for the period of construction.

The magnitude of change would be low, given the limited receptors surrounding the Site; additionally, access to local walking routes will not be impacted by construction. Therefore, the effect is considered to be a negligible effect, which is **not significant** in terms of the EIA Regulations.

14.5.2.2 Operational Effects

Onsite Informal Recreation

The Site will be accessible to the public at all times of the year as per Section 1 and 2 of Land Reform Act (Scotland) 2003. However, temporary exclusions may be required for grouse shooting activity and health and safety reasons during times where essential maintenance is required. Where these are required, clear signage advising of the restrictions will be provided. This will be similar to the current requirements for the Operational Corriegarth Wind Farm. This would represent a low magnitude of change on a low sensitivity receptor, representing a negative, long-term, negligible effect which is **not significant** in terms of the EIA Regulations.

Visual effects associated with the Development may occur at receptor locations, when people are looking towards the Development and from locations where clear views of the turbines are accessible. The visual effects of the Development on tourism and recreational resources are assessed in **Chapter 6: Landscape and Visual Amenity** of the EIA Report. It should be noted that there is a distinction between a visual effect and effects on recreational amenity. Effects on recreational amenity are described as effects that would influence the recreational value *e.g.* use or enjoyment of an asset such as a walking route.

Identified Tourism and Recreation Receptors

The identified receptors for assessment of operational effects are:

- South Loch Ness Trail;
- Trail of the Seven Lochs;
- NCN Route 78;
- Monadhliath Mountain Range;
- Cairngorms National Park;
- Loch Ness; and
- Castle Urquhart.

There will be no direct effects on any of the aforementioned receptors during the operation of the Development.

There is the potential for indirect effects to occur on receptors, where tourism numbers decrease as a result of the Development. Surveys of the public's attitudes to wind farms provide no clear evidence that the presence of wind farms in an area has a negative effect on local tourism (see Section 14.4.2.4). Tourists using local public rights of way and local tourist attractions may have a particular sensitivity to visual effects; however, access to tourist facilities will be unaffected.

Table 14.8, overleaf, summarises the visual effects identified in **Chapter 6: Landscape and Visual Amenity** on the identified tourism and recreational receptors; and provides assessment of the operational effects in the context of tourism and recreation.

Table 14.8: Summary of Operational Visual Effects and Operational Tourism and Recreation Effects on Identified Receptors

Receptor	Summary of Significance of Effect identified in Chapter 6: Landscape and Visual Amenity	Assessment of Tourism and Recreation Operational Effects		
		Sensitivity of Receptor	Magnitude of Change	Significance of Effect & Rationale
South Loch Ness Trail	Moderate (adverse) and significant visual effect for sections of the route. Beyond these sections of the route, the magnitude of change will reduce, resulting in a minor (adverse) and not significant visual effect.	Medium	Negligible	As a whole, the South Loch Ness Trail will not experience significant visual effects. Tourism and recreation users will generally make use of the whole route; the majority of which will not experience any significant visual effects. Therefore, it is unlikely there will be any notable change to the use of the receptor for recreation. The magnitude of change as a result of the operational phase of the Development is negligible. Given the medium sensitivity of the receptor and the negligible magnitude of change, the resultant significance of effect for tourism and recreation is negligible and not significant .
Trail of the Seven Lochs	Scoped out of assessment due to lack of visibility.	Medium	Negligible	Whilst a limited section of the Trail of the Seven Lochs is onsite, the route will remain open through the operation of the Development and there will be no effect on the route other than potential indirect visual effects. However, given the lack of visibility, the medium sensitivity of the receptor and the negligible magnitude of change, the resultant significance of effect for tourism and recreation is negligible and not significant .
NCN Route 78	The Development will result in a medium scale change to the view, experienced from relatively localised geographical extents, resulting in a moderate (adverse) and significant visual effect. Beyond localised geographical extents, the magnitude of visual change will reduce, resulting in a minor (adverse) and not significant visual effect.	High	Negligible	As a whole, the NCN Route 78 will not experience significant visual effects; and that tourism and recreation users will generally make use of more than localised sections, if not the whole route, the magnitude of change as a result of the operational phase of the Development is negligible. Given the high sensitivity of the receptor and the negligible magnitude of change, the resultant significance of effect for tourism and recreation minor and not significant .

Receptor	Summary of Significance of Effect identified in Chapter 6: Landscape and Visual Amenity	Assessment of Tourism and Recreation Operational Effects		
		Sensitivity of Receptor	Magnitude of Change	Significance of Effect & Rationale
Monadhliath Mountain Range	Viewpoints representing the Monadhliath Mountain Range were found to have resultant visual effects considered as minor (adverse) and not significant .	High	Negligible	The Monadhliath Mountain Range will not experience significant visual effects. Visibility of the Development will be limited to nearby locations within the Monadhliath Mountain Range which is only a small section of the entire mountain range. The magnitude of change as a result of the operational phase of the Development is negligible. Given the high sensitivity of the receptor and the negligible magnitude of change, the resultant significance of effect for tourism and recreation is minor and not significant.
Cairngorms National Park	Viewpoints representing the Cairngorms National Park were found to have resultant visual effects considered as minor (adverse) and not significant .	Very High	Negligible	Visibility of the Development will be limited to nearby locations within the Cairngorms National Park. There will be no direct effects on recreational activities within the National Park, and the Development will be viewed as a natural extension to the Operational Corriegarth Wind Farm. Considering the public attitudes towards wind farm development as identified in this Chapter, the magnitude of change as a result of the operational phase of the Development is considered to be negligible. Given the very high sensitivity of the receptor and the negligible magnitude of change, the resultant significance of effect is considered minor and not significant.
Loch Ness	Effects on the Loch Ness and Duntelchaig SLA are considered to be minor (adverse) and not significant .	High	Negligible	For the purposes of this tourism and recreation assessment, only Loch Ness as the receptor is assessed. Visibility of the Development from Loch Ness will be limited to certain location. There will be no direct effects on recreational activities within on Loch Ness, and the Development will be viewed as a natural extension to the Operational Corriegarth Wind Farm. Considering the public attitudes towards wind farm development as identified in this Chapter, the magnitude of change as a result of the operational phase of the Development is considered to be negligible. Given the high sensitivity of the receptor and the negligible magnitude of change, the resultant significance of effect is considered minor and not significant.
Urquhart Castle	N/A	Very High	None	There will be no impact on Urquhart Castle as a result of the Development.

Other Recreational Routes and Receptors

Other recreational receptors, including local shops, cafes, accommodation providers and hotels, as mentioned in Section 14.4.2, are not expected to be affected by the Development during the operational phase due to the intervening distance of these receptors from the Development. It is therefore considered that the magnitude of change would be negligible, representing a negligible effect which is **not significant** in terms of the EIA Regulations.

There are a number of Core Paths identified within the Secondary Study Area, and Core Path IN25.02 starts within the Site; however, during operations it will not be directly impacted. The operation of the Development is not expected to alter the features or characteristics of other nearby Core Paths. It is expected that the Development will have a negligible effect on the behaviour of visitors/tourists that use paths within the Secondary Study Area and is **not significant** in terms of the EIA Regulations.

Tourists and locals using the local core paths and local tourist attractions may have a particular sensitivity to visual effects; however, access to tourist facilities will be unaffected. Thus, even where significant visual effects are predicted, negative effects on tourism receptors during the operation of the Development are **not significant** in terms of the EIA Regulations.

The Development will be regularly maintained by a specialist maintenance team likely to include a part-time maintenance engineer and a small number of staff to occasionally service the turbines; in addition, workers will be employed to undertake ongoing habitat management surveys. Local shops, cafes, accommodation providers and hotels could experience an increase in turnover during the operational phase as they have opportunities to provide additional services to the Development's staff. The Development will result in a minor, positive effect at local level, which is **not significant** in terms of the EIA Regulations.

It should be noted that whilst not scoped in for assessment, onsite grouse shooting will be able to carry on post-construction, during operation, and therefore continue to bring in revenue for the local area.

As stated throughout this Section, in terms of the EIA Regulations the Development will not have a significant effect on tourism and recreation receptors during operation.

14.5.23 Decommissioning Effects

Effects during the decommissioning phase are anticipated to be of a similar nature and scale as construction effects, and are therefore **not significant** in terms of the EIA Regulations.

14.6 MITIGATION AND RESIDUAL EFFECTS

No significant effects have been identified, and therefore mitigation is not required as a result of the Development. However, mitigation in the form of temporary health and safety signage during construction period of the Development will be erected at appropriate locations for the Core Path IN25.02 and the Trail of the Seven Lochs.

All residual effects will remain **not significant**.

14.7 CUMULATIVE EFFECT ASSESSMENT

The appropriate scale for considering cumulative development depends on the nature of the potential effect. These are considered in turn, for each category of potential effect.

There are a number of wind farms within the 15 km of the centre point of the Site (NGR 257438, 813258), either consented or in the planning process, as set out in Table 14.9

Table 14.9: Cumulative Wind Farm Sites within 15 km of the Centre of the Site

Wind Farm	Status of Wind Farm	Turbine Count	Approximate Distance from the Site
Corriegarth	Operational	23	Within the Site
Easter Aberchalder	Operational	1	4.4 km (N)
Dunmaglass	Operational	33	8.5 km (NE)
Aberarder	Consented	12	10.5 (NE)
Dell	Consented	14	10.5 (SW)
Stronelairg	Operational	67	11.3 (S)
Cloiche	Application Submitted	36	13.5 (SW)
Glenshero	Appeal/Public Inquiry	39	14.6 (S)

14.7.1 Socio-Economics

Regional socio-economic effects have been defined as at the scale of Highlands. The beneficial socio-economic effects associated with the Development would be increased and prolonged as a result of the construction and operation of cumulative wind farm developments, benefiting both the construction and energy generation sectors. However, even with the addition of the Development, the combined effect with other wind farms would be considered unlikely to lead to a fundamental change in economic activity within Highlands. This is considered to be **not significant** in the terms of this EIA, and in terms of the EIA Regulations.

Potential exists in the future, should a large enough number of wind farms be consented in the area, for job creation to occur to support the industry. However, at a regional level, the sustaining of jobs, in construction in particular, is considered not significant. Opportunities presented by the construction and operation of new windfarms in the area can be maximised by developers engaging with organisations such as HIE and ICoC to deliver a coordinated approach with respect to the local supply chain and new developments.

The greater the capacity of consented and constructed developments in the area, the more likely it is that the local area can benefit from supply chain opportunities. Additionally, it is likely that operations and maintenance operations of the Development will be based locally as there would be enough opportunity locally to employ full time employees and companies however, these effects are **not significant** in terms of the EIA Regulations.

14.7.2 Tourism and Recreational Effects

Cumulative visual effects on outdoor recreational and tourism facilities resulting from the Development in conjunction with other wind farms in the Study Areas are assessed in **Chapter 6: Landscape and Visual Amenity**.

Cumulative effects on the amenity of tourism and recreation receptors during operation are strongly linked to visual effect. As set out in Section 14.4.2.2, there is no evidence that tourism is adversely impacted by wind farms.

In the Highlands, the region has seen large increases in wind turbine developments in the last decade, with 617.9 MW growth in installed capacity between 2009 and 2015

within the region⁶⁷. This trend is mirrored across Scotland, with 8.4% growth in onshore wind installed capacity between 2017 and 2018⁶⁸.

Even with the increased installation of onshore wind capacity in the Highlands and Scotland, tourism has also risen⁶⁹ over the same period. For example, the NC500 attracted 29,000 more visitors to the north Highlands within its first year of operation (2015-2016)⁷⁰, whilst deployment of onshore wind developments also increased.

The Cairngorms National Park is a tourism and recreation receptor deemed to have very high sensitivity; with an increase in onshore wind developments in the area surrounding the Cairngorms National Park it is important to investigate potential cumulative effects on the Cairngorms National Park. **Chapter 6: Landscape and Visual Amenity** assesses the Cairngorms National Park to experience no significant cumulative visual effects; this, coupled with the evidence that wind turbine developments do not negatively impact upon tourism and recreation users, underlines that it is assessed there will be no significant cumulative effects associated with the Cairngorms National Park.

Overall, it is assessed that wind farm development does not have a noticeable effect on tourism, and no cumulative effects from the Development are anticipated.

⁶⁷ BiGGAR Economics (2017) Wind Farm and Tourism Trends in Scotland [Online] Available at: <https://biggareconomics.co.uk/wp-content/uploads/2020/01/Wind-farms-and-tourism-trends-in-Scotland.pdf> (Accessed 18/08/2020)

⁶⁸ UK Government (2019) Renewable electricity in Scotland, Wales, Northern Ireland and the regions of England in 2018 [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/834159/Regional_Renewables_2018.pdf (Accessed on 18/08/2020)

⁶⁹ Visit Scotland (2019) Inight Department Key Facts on Tourism in Scotland [Online] Available at: <https://www.visitscotland.org/binaries/content/assets/dot-org/pdf/research-papers-2/key-facts-on-tourism-in-scotland-2018-v2.pdf> (Accessed 08/09/2020)

⁷⁰ Highlands and Islands Enterprise (2017) North Coast 500 Economic Baseline Study [Online] Available at: <http://www.hie.co.uk/common/handlers/download-document.ashx?id=a79fc94d-cfce-4eca-aa9b-21b31ee9c331> (Accessed 18/08/2020)

14.8 SUMMARY OF EFFECTS

Table 14.10 provides a summary of the effects detailed within this chapter; where no effects were identified these are not summarised but detailed in the assessments.

Table 14.10: Summary of Effects

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Socio-Economics	Construction & Decommissioning: - Positive, minor increase in employment; and - Positive, minor increase in capital expenditure.	Not Significant	Engagement with local supply chain organisations.	Not Significant
	Operation: - Positive, negligible increase in employment and local business; - Positive, negligible increase in operational expenditure; and - Minor, positive, long-term, investment through community benefit fund.	Not Significant	None	Not Significant
Tourism and Recreation	Construction & Decommissioning: - Negligible/minor, short-term effects relating to construction activities for identified tourism and recreation receptors; - Minor, short-term, positive increase in accommodation use; and - Negligible, short-term effects relating to construction activities for offsite recreation and recreational routes.	Not Significant	Temporary health and safety signage during construction period erected at appropriate locations for the Core path IN25.02 and the Trail of the Seven Lochs.	Not Significant
	Operation: - Negative, negligible, long-term effect on onsite informal recreation as a result of occasional H&S/Grouse shooting restrictions; - Negligible/minor effects, relating to the operation of the Development, for identified tourism and recreation receptors; - Negligible effects, relating to operation of the Development, for offsite recreation and recreational routes; and - Minor, positive increase in local accommodation/business use.	Not Significant	None	Not Significant

14.9 STATEMENT OF SIGNIFICANCE

The renewables industry is an important economic asset to the UK and Scotland, and supports a substantial and growing number of employment opportunities.

Although **not significant** in terms of the EIA Regulations, the Development will further contribute to the beneficial economic effect of renewable energy, and associated skills base within the Scotland.

The establishment of a local community fund will make a valuable contribution to the community surrounding the Site however, **not significant** in terms of the EIA Regulations.

No significant effects in terms of the EIA Regulations are predicted on socio-economics, tourism and recreation and land-use receptors during the construction, operation or decommissioning phases of the Development.

There are a number of recreational opportunities within the Primary Study Area, with more opportunities within the wider area; however, there will be no significant direct or indirect effects on tourism or recreation as a result of the Development both in isolation or cumulatively, although areas within the Site will be inaccessible to the public during the construction and decommissioning phases for health and safety reasons. These effects are considered to **not significant** in terms of the EIA Regulations.

15 CLIMATE CHANGE & CARBON BALANCE

15.1 INTRODUCTION

This Chapter of the Environmental Impact Assessment Report (EIA Report) evaluates the effects of the Corriegarth 2 Wind Farm (the Development) on climate change and carbon balance resource, and presents a Climate Change Impact Assessment (CCIA). This assessment was undertaken by Fraser Clarke, Environmental Consultant at Arcus Consultancy Services Limited (Arcus) and Heather Kwiatkowski, Principal EIA Consultant. The assessment has been technically reviewed by Stuart Davidson, Registered EIA Practitioner and Operational Director at Arcus.

This Chapter of the EIA Report is supported by Technical Appendix A15.1: Carbon Balance Calculations provided in Volume 3.

This Chapter includes the following elements:

- Legislation, Policy and Guidance;
- Assessment Methodology and Significance Criteria;
- Baseline Conditions;
- Assessment of Potential Effects;
- Mitigation and Residual Effects;
- Cumulative Effect Assessment;
- Summary of Effects; and
- Statement of Significance.

15.2 LEGISLATION, POLICY AND GUIDANCE

The following legislation, policy and guidance have been considered in carrying out this assessment:

- Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation 2020¹;
- Electricity Act 1989²;
- Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, as amended³ (the EIA Regulations);
- The Electricity Generation Policy Statement (2013)⁴;
- Letter from Chief Planner to all Heads of Planning in relation to energy targets and SPP (November 2015)⁵;
- Scottish Energy Strategy (December 2017)⁶;
- Onshore Wind Policy Statement (December 2017)⁷;

¹ IEMA (2020) Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation 2020 [Online]. Available at: <https://www.iema.net/resources/reading-room/2020/06/26/iema-eia-guide-to-climate-change-resilience-and-adaptation-2020> (Accessed 30/09/2020)

² UK Government (1989) Electricity Act 1989 [Online] Available at: <https://www.legislation.gov.uk/ukpga/1989/29/contents> (Accessed 14/08/2020)

³ UK Government (2017) Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 [Online] Available at: <https://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 14/08/2020)

⁴ Scottish Government (2013) Electricity Generation Policy Statement 2013 [Online] Available at: <https://www.gov.scot/publications/electricity-generation-policy-statement-2013/> (Accessed 14/08/2020)

⁵ Scottish Government (2015) Letter from Chief Planner to all Heads of Planning in relation to energy targets and SPP [Online] Available at: <https://www.gov.scot/publications/energy-targets-and-scottish-planning-policy-chief-planner-letter/> (Accessed 14/08/2020)

⁶ Scottish Government (2017) The Future of Energy in Scotland: Scottish Energy Strategy [Online] Available at: <https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/> (Accessed 14/08/2020)

⁷ Scottish Government (2017) Onshore Wind: Policy Statement [Online] Available at: <https://www.gov.scot/publications/onshore-wind-policy-statement-9781788515283/> (Accessed 14/08/2020)

- The Scottish Climate Change Plan (2018)⁸;
- The Scottish Government's declaration of a Climate Emergency (April 2019)⁹; and
- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019¹⁰ and the legally binding net zero target for 2045 and interim targets for 2020, 2030 and 2040.

Notable information sources containing baseline and projected climate data include:

- Digest of United Kingdom Energy Statistics (DUKES) 2020¹¹;
- The State of the UK Climate 2019¹²;
- Met Office UK Climate Projections 2018 (updated September 2019)¹³; and
- The Met Office UKCP18 Science Overview Report¹⁴.

Other information sources are referenced throughout the Chapter.

15.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

15.3.1 Scoping Responses and Consultations

Consultation for this EIA Report topic was undertaken with various consultees however, not all responded. Responses relevant to climate change are detailed in Table 15.1.

Table 15.1: Consultation Responses

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee
Scottish Environment Protection Agency (SEPA)	Scoping Response 19/03/2020	In relation to hydrology, and specifically watercourse crossings, SEPA state crossings should be designed to accommodate the 1 in 200 year event plus climate change.	Noted. Hydrology is assessed within Chapter 12 and takes into account the 1 in 200 year event plus climate change. This Chapter further addresses the issues relating to climate change.

⁸ Scottish Government (2018) Climate Change Plan: Third Report on Proposals and Policies 2018 – 2031 (RPP3) [Online] Available at: <https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018-9781788516488/> (Accessed 14/08/2020)

⁹ Scottish Government (2019) Action to Address Climate Emergency [Online] Available at: <https://www.gov.scot/news/action-to-address-climate-emergency/> (Accessed 13/08/2020)

¹⁰ Scottish Government (2019) Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 [Online] Available at: <http://www.legislation.gov.uk/asp/2019/15/enacted> (Accessed 13/08/2020)

¹¹ UK Government (2020) Digest of United Kingdom Energy Statistics 2020 [Online] Available at: <https://www.gov.uk/government/statistics/digest-of-uk-energy-statistics-dukes-2020> (Accessed 12/08/2020)

¹² International Journal of Climatology, volume 39, Issue S1 (July 2020) ed. Radan Huth. Wiley

¹³ Met Office (2019) UK Climate Projections – Updated September 2019 [Online] Available at: <https://www.metoffice.gov.uk/research/collaboration/ukcp> (Accessed 13/08/2020)

¹⁴ Lowe, J.A. *et al.* (2018) UKCP18 Science Overview Report. The Met Office. Available at: <https://www.metoffice.gov.uk/pub/data/weather/uk/ukcp18/science-reports/UKCP18-Overview-report.pdf> (Accessed 13/08/2020)

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee
The Highland Council	Scoping Response 06/04/2020	The EIA Report should take into account climatic factors and also highlight the sustainable development attributes of the Development. Additionally, the Council stated that the EIA Report should include carbon balance calculations/assessment, providing details including the carbon payback period; the Council also stated that carbon emissions should be assessed as a result of construction of the Development.	Noted. This Chapter addresses the Council's comments; this Chapter will include a full and detailed climate change assessment, including carbon balance assessment.

15.3.2 Scope of Assessment

The following assessments are considered in terms of the Development:

- The vulnerability of the Development to climate change;
- The influence of the Development on climate change; and
- A summary of effects on environmental receptors sensitive to climate change.

The vulnerability of the Development to climate change considers effects on the Development as a receptor. In contrast the other two assessments consider effects on environmental receptors as a result of the Development.

15.3.3 Elements Scoped Out of Assessment

The assessment of the influence of the Development on climate change focusses on the overall balance of greenhouse gas (GHG) emissions as climate change is directly linked to these emissions. No further analysis is undertaken of how climate parameters change in direct response to the emissions balance of the Development.

In relation to the effects on other environmental receptors, a qualitative review is undertaken in this Chapter of whether projected climate change will modify the future baseline without the Development sufficiently to change the results of the assessments undertaken in other chapters. The assessments are not repeated in this Chapter, which should be read in conjunction with the technical chapters.

Of the technical assessments included within this EIA Report, receptors within ecology, ornithology and hydrology have been identified as having a potential for the baseline to be modified as a result of climate change. Effects of climate change on ecology, ornithology and hydrology are included in this chapter, with all other technical areas scoped out of further consideration as baseline receptors are unlikely to be affected by the climate changes forecast during the operational phase of the Development.

15.3.4 Study Area / Survey Area

The Study Area considered for the assessment of vulnerability of the Development to climate change consists of all infrastructure proposed within the site boundary (the Site). The assessment will consider the forecast climate changes over the planned operational

phase of the Development i.e. until approximately 2055. Information on climate trends and projections at the Scottish and local scale (where available) are utilised.

The Study Area for the assessment of the influence of the Development on climate change considers GHG emissions (current levels and targets) within the Scottish and UK spatial scale. Reference is made to the global context as appropriate.

For the environmental receptors sensitive to the Development, the Study Areas used are those identified within the respective technical chapters, specifically:

- Ecology;
- Ornithology; and
- Hydrology.

15.3.5 Design Parameters

The design of the Development is a balance of technical, resource and environmental considerations. Those of relevance for the assessments in this Chapter include:

- Installed capacity and capacity factor - for calculation of carbon balance;
- Turbine spacing in relation to prevailing wind direction - for effects on generation, turbulence, vulnerability to damage with potential changes to wind speed, direction and storminess;
- Amount and layout of new track and infrastructure in relation to deep peat – for calculation of carbon balance;
- Buffers to watercourses – for assessing vulnerability to flooding due to changes in precipitation events; and
- Construction Management commitments particularly in relation to minimisation of disturbance and re-use of peat, and potential for flooding (as embedded in the Construction Environmental Management Plan (CEMP), Peat Management Plan (PMP), etc.) – for assessing potential emissions and vulnerability to flooding.

15.3.6 Baseline Survey Methodology

Climate trends and projections are published by the Met Office through the UK Climate Projections website. The UKCP18 became available in November 2018, and was most recently updated in September 2019. The UKCP18 provide the most up to date assessment of how the climate of the UK may change over this century.

UKCP18 uses scenarios for future greenhouse gas emissions called Representative Concentration Pathways (RCPs). The four RCPs attempt to capture a range of potential alternative futures and outcomes linked to global temperature increases and include a wide variety of assumptions on socioeconomic development and commitment to emissions reductions. The sensitivity of the scenario responses is much more pronounced in the second half of the 21st Century, where the responses diverge more rapidly than in the first half of the century. The four RCPs are as follows:

- RCP2.6: assumes an increase in global mean surface temperature of 1.6°C (-.9-2.3) by 2081-2100 (no change scenario);
- RCP4.5: assumes an increase in global mean surface temperature of 2.4°C (1.7-3.2) by 2081-2100 (low emissions scenario);
- RCP6.0: assumes an increase in global mean surface temperature of 2.8°C (2.0-3.7) by 2081-2100 (medium emissions scenario); and
- RCP8.5: assumes an increase in global mean surface temperature of 4.3°C (3.2-5.4) by 2081-2100 (high emissions scenario).

Over the 30-year anticipated lifetime of the Development, the choice of scenario is therefore not fundamental to the assessment but, where appropriate, the medium emissions scenario RCP6.0 is utilised as the future baseline. Reflecting the Paris Climate

Agreement¹⁵, in which most countries including the UK pledged to reduce emissions by 2030, this scenario assumes no further emissions reductions after 2030 and allows for some increase in emissions.

Projections are reported for 20-year time periods through to 2100. The 2021 – 2040 and 2041 - 2060 periods provide the closest projections to the operational phase of the Development. For the purpose of this CCIA, where appropriate the 2040 - 2059 time period is used as the impacts of climate change are anticipated to be more evident with time.

Projected climatic changes at the 50% probability level (central estimate) are utilised, unless otherwise indicated. This is the level where there is as much evidence pointing to a lower outcome as a higher one. There is substantial evidence that the actual climatic change outcome will be in the 10th to 90th percentile range and this is also utilised for limited assessment parameters¹⁶.

15.3.6.1 Vulnerability of the Development to Climate Change

This section of the CCIA identifies aspects of the Development which are potentially vulnerable to the effects of climate change. Where identified, these vulnerabilities can then be mitigated through embedded mitigation or the application of other measures.

Taking into account the nature and location of the Development, the following climate related parameters are considered to have the potential to impact upon the operation of the Development:

- Wind (speed, direction and gustiness);
- Temperature; and
- Precipitation.

The construction and decommissioning stages of the Development are not considered to be vulnerable to climate change and have been scoped out of further consideration.

15.3.6.2 Influence of the Development on Climate Change

This section of the CCIA seeks to quantify the effect of the Development on climate change.

In Scotland, applications submitted under Section 36 of the Electricity Act 1989 are required to undertake the carbon balance assessment using the Scottish Government's carbon calculator tool. This has been completed for the Development (Reference Number: UA89-7D06-2QKC) using the latest version of the calculator (C-CalWebV1.6.1)¹⁷. The carbon assessment methodology used is consistent with that published by the Rural and Environment Research and Analysis Directorate of the Scottish Government entitled 'Calculating carbon savings from wind farms on Scottish peat lands – a new approach'¹⁸. This publication sets out the approach and assumptions that should be used to estimate potential carbon losses and savings from wind farms on Scottish peatlands. The carbon balance assessment is included as Appendix A15.1.

¹⁵ United Nations (2016) Framework Convention on Climate Change. Adoption of the Paris Agreement, 21st Conference of the Parties, Paris [Online] Available at:

<https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf> (Accessed 14/08/2020)

¹⁶ Lowe et al (2018) UKCP18 Science Overview Report (Page 13)

¹⁷ Scottish Government & SEPA. Carbon Calculator Tool v1.6.1 [Online]. Available at: <https://informatics.sepa.org.uk/CarbonCalculator/index.jsp> (05/10/2020)

¹⁸ Nayak et al (2008) Calculating carbon savings from wind farms on Scottish peat lands: a new approach (Scottish Government) [Online] Available at: <https://www.gov.scot/publications/calculating-carbon-savings-wind-farms-scottish-peat-lands-new-approach/pages/13/> (Accessed on 23/03/2020)

The calculation evaluates the balance of total carbon savings and carbon losses over the life of the Development. The potential carbon savings and carbon costs associated with wind farms are as follows:

- Carbon emission savings due to generation (based on displacing emissions from different power sources);
- Lifetime costs associated with manufacture of turbines and construction;
- Loss of carbon from backup power generation;
- Loss of carbon-fixing potential of peatland;
- Loss and/or saving of carbon stored in peatland (by peat removal or changes in drainage);
- Loss and/or saving of carbon-fixing potential as a result of forestry clearance; and
- Carbon gains due to proposed habitat improvements such as bog restoration.

The calculation of the carbon balance of a proposed wind farm provides a mechanism by which the carbon costs of a wind farm development can be weighed against the carbon savings attributable to the wind farm during its lifetime. This calculation is summarised as the length of time (in years) it will take the carbon savings to amount to the carbon costs and is referred to as the 'payback period'. This information can then inform decision makers of the viability of a wind farm development in terms of overall carbon savings.

Calculations are provided for expected, best case and worst case scenarios of Development. The expected scenario is based on the layout of 16 turbines and candidate turbine described in **Chapter 4: Development Description**, and has an estimated installed capacity of up to 76.8 MW. The other scenarios are based on varying assumptions regarding wind energy capacity factor, characteristics of peatland and Development land-take.

The data sources and assumptions used in the carbon balance assessment are detailed in Appendix A15.1. The assessment was informed by an iterative peat probing process, as described in **Chapter 13: Geology and Peat**.

15.3.6.3 Effects on Environmental Receptors Sensitive to Climate Change

This section of the CCIA identifies where climate change has the potential to significantly impact the findings of assessments undertaken and reported elsewhere in this EIA Report. Reference is made to the specific assessment chapters, where the baseline conditions and sensitivity of receptors are discussed, assessments are not repeated.

15.3.7 Methodology for the Assessment of Effects

To determine whether effects are significant under the EIA Regulations, it is appropriate to consider the sensitivity (vulnerability and susceptibility) of the receptor and the magnitude of the impact, taking into account uncertainty. This is based on the professional judgement of the assessor.

15.3.7.1 Sensitivity of Receptors

The sensitivity of the baseline conditions, including the importance of environmental features on or near to the Site or the sensitivity of potentially affected receptors, will be assessed in line with best practice guidance, legislation, statutory designations and / or professional judgement. Table 15.2 details the criteria for determining the sensitivity of receptors.

Table 15.2: Criteria for Determining Sensitivity of Receptors

Sensitivity of Receptor	Definition
Very High	The receptor has little or no ability to absorb change without fundamentally altering its present character, is of very high environmental value, or of international importance.
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance.
Low	The receptor is tolerant of change without detriment or benefit to its character, is low environmental value, or is of local importance.
Very Low	The receptor is resistant to change and is of little environmental value.

15.3.7.2 Magnitude of Change

The magnitude of change will be identified through consideration of the Development, the degree of change to baseline conditions predicted as a result of the Development, the duration and reversibility of an effect and professional judgement, best practice guidance and legislation.

The criteria for assessing the magnitude of change are presented in Table 15.3.

Table 15.3: Criteria for Determining Magnitude of Change

Magnitude of Change	Definition
Very High	A national-level change to the baseline condition of a receptor.
High	A fundamental change (positive or negative) to the baseline condition of the receptor, leading to total loss or major alteration of character.
Medium	A material change (positive or negative) leading to partial loss or alteration of character.
Low	A slight, detectable, alteration of the baseline condition which may be positive or negative.
Negligible	A barely distinguishable change from baseline conditions.

15.3.7.3 Significance of Effect

The sensitivity of the asset and the magnitude of the predicted change will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects.

The IEMA guidelines for CCIA state the following with regards to the assessment of significance:

Once the sensitivity and magnitude have been determined, these should be combined to reach an overall judgement on the significance of the likely environmental effect. As there is no legislative definition of 'significance', the conclusion of whether an effect is significant/the level of significance is down to the CCAR [Climate Change Adaption and Resilience] Coordinator in conjunction with the EIA Coordinator. An explanation of the outcomes of the assessment should be clearly set out.

Appropriate criteria for sensitivity, magnitude and significance for the climate resilience assessment should be developed on a project-by-project basis by the CCAR

Coordinator in conjunction with the EIA Coordinator, and should take into account the aims/purpose of the project.

Table 15.4 outlines the framework for the assessment of significance of effects.

Table 15.4: Framework for Assessment of the Significance of Effects

Magnitude of Change	Sensitivity of Resource or Receptor				
	Very High	High	Medium	Low	Negligible
Very High	Major	Major	Major	Moderate	Minor
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Those predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light grey in the above table.

The categories of significance are described in Table 15.5:

Table 15.5: Categories of Significance of Effect

Significance	Definition
Major	A fundamental change to location, environment, species or sensitive receptor.
Moderate	A material, but non-fundamental change to a location, environmental, species or sensitive receptor.
Minor	A detectable but non-material change to a location, environment, species or sensitive receptor
Negligible	No detectable or material change to a location, environment, species or sensitive receptor.

Effects assessed can be both beneficial (positive) and adverse (negative). Whilst receptors may be considered "high-value", a non-material magnitude of the impact would result in any effect being considered not significant.

15.3.8 Assessment Limitations

The climate change projections are based on global models for a range of GHG emissions scenarios and generally consider regional responses to climate change rather than local responses. This is based on best scientific knowledge at this time and judgements on datasets and future socioeconomic drivers.

Downscaling adds another level of uncertainty. There may be more detail, but the uncertainty of the science may be higher. As understanding of the climate system and ability to model it improves it is likely that future projections will be refined.

The probabilities presented and the estimated ranges are based on a set of modelling, statistical and dataset choices with expert judgement playing an important role. However, as some potential influences on future climate are not yet known some choices may change as the science develops¹⁹.

¹⁹ Lowe *et al* (2018) UKCP18 Science Overview Report

Specifically, in relation to wind, the UKCP18 Wind Fact sheet²⁰ states that local variations due to the land surface are hard to model, particularly in very exposed or sheltered locations. This can be particularly relevant in high wind speed situations where local gusts can result from small scale weather events such as thunderstorms.

15.3.9 Embedded Mitigation

As detailed in **Chapter 3: Site Selection & Design**, the Development has been driven by the key objective of capturing the maximum energy possible, while balancing environmental and technical constraints. The design choices made as a consequence of the key constraints are considered to be mitigation which is 'embedded' in the design; the following are most relevant for the CCIA:

- Development infrastructure is built to withstand strong windspeeds and to harness energy;
- Turbine spacing is sufficient to reduce turbulence effects on turbines downwind;
- The turbines are located to maximise energy generation while minimising environmental impacts;
- The Development design aims to reduce impacts on peat – e.g. through use of existing track layout and avoiding areas of deep peat where possible;
- Implementation of a CEMP, PMP etc. during construction to minimise environmental impacts and peat disturbance; and
- Buffers from watercourses incorporated in layout design, protecting water quality and also protecting Development infrastructure from flooding.

15.4 BASELINE CONDITIONS

The State of the UK Climate 2019²¹ provides the latest report on observed climate data for UK. Key findings are as follows:

- The decade 2010-2019 was on average 0.3°C warmer than the 1981-2010 average and 0.9°C warmer than 1961-1990. The ten warmest years on record have occurred since 2002;
- The decade 2010-2019 has been on average 1% wetter than 1981-2010 and 5% wetter than 1961-1990 for the UK overall. Six of the ten wettest years for the UK in a series from 1862 have occurred since 1998;
- In the context of seasonal changes, for the most recent decade (2010-2019):
 - UK summers have been on average 11% wetter than 1981-2010 and 13% wetter than 1961-1990;
 - UK winters have been on average 4% wetter than 1981-2010 and 12% wetter than 1961-1990; and
- In the UK, there is no strong evidence for trends in storminess as determined by maximum gust speeds over the last five decades.

Climate Projections show that the trends over the 21st Century in the UK are towards warmer and wetter winters and hotter, drier summers, with an increase in frequency and intensity of extremes.

The climate parameters considered most relevant to the assessments referenced within this Chapter are wind speed, temperature and precipitation.

²⁰ UKCP18 (2019) Factsheet: Wind [Online]. Available at: <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-fact-sheet-wind.pdf> (Accessed on 14/08/2020)

²¹ International Journal of Climatology, volume 39, Issue S1 (July 2020) ed. Radan Huth. Wiley

15.4.1 Wind Speed

The global projections over the UK show an increase in near surface (10 metre [m] height) wind speeds over the UK in the second half of the 21st Century, in the winter season when higher wind speeds are generally experienced. The increase is modest when compared to inter-annual variability. This would be accompanied by an increase in frequency of winter storms over the UK²². There are no significant changes forecast in the wind speeds over the first part of the century.

These projections are in line with earlier findings by Pryor and Barthelmie (2010)²³ who concluded that in the near-term (i.e. until the 2050s) there will be no detectable significant change in the wind resource of northern Europe.

15.4.2 Temperature

At a UK level, for period 2041-2060 projected changes to annual mean temperature (compared to 1981-2000) is projected at +1.8°C (50% probability) for RCP8.5 (unmitigated scenario). Results for the 10th to 90th percentile range are between +0.9°C to +2.7°C²⁴. Key observations are that:

- Both winters and summers will be warmer, with more warming in the summer; and
- In summer there is a pronounced north/south divide with greater increases in maximum summer temperatures over the southern UK compared to Northern Scotland.

15.4.3 Precipitation

Rainfall patterns over the UK are not uniform and vary on regional (e.g. Highland-wide) and seasonal scales, which will continue in the future. Future changes are uncertain but point to wetter winters and drier summers in general. Northern Scotland is associated with greatest increased precipitation in winters²⁵.

Over the UK, the changes to precipitation projected for 2041-2060 (compared to 1981-2000) for RCP8.5 (unmitigated scenario) are:

- Winter precipitation – increase of 7%. Results for the 10th to 90th percentile range are between -5% and +21%.
- Summer precipitation – decrease of 15%. Results for the 10th to 90th percentile range are between -31% and +0%.

15.4.4 Greenhouse Gas Emissions and Renewable Energy

The central aim of the Paris Agreement is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C²⁶.

A substantial reduction in greenhouse gas emissions is imperative to avoid irreversible damage caused by the impacts of climate change. *"When it comes to rises in global*

²² UKCP18 (2018) Factsheet: Wind.

²³ Pryor, S.C. and Barthelmie, R. J. (2010) Climate Change Impact on Wind Energy: A Review. Renewable and Sustainable Energy Review, 14(1): 430-437

²⁴ Lowe *et al* (2018) UKCP18 Science Overview Report November 2018 (Updated March 2019) (Table 2.2, Page 16)

²⁵ Lowe *et al* (2018) UKCP18 Science Overview Report

²⁶ UN Climate Change (2015) the Paris Agreement [Online] Available at: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement> (Accessed on 14/08/2020)

average temperature, every fraction of a degree matters” was stated in a recent publication providing analysis for the Global Carbon Budget 2018²⁷.

The 2018 IPCC Special Report²⁸ highlighted that to limit global warming to below 1.5°C by the end of the century, emissions would need to decline by approximately 45% by 2030 and reach net zero around 2050. This is the temperature rise when a variety of increasingly severe effects are considered to occur and the IPCC identifies that rapid and far-reaching transitions are required in all sectors including energy. Action is required immediately to reduce emissions by 50% by 2030. Figures from the Global Carbon Project however report that global CO₂ emissions from fossil fuels and industry have increased every decade from an average of 11.4 gigatonnes of equivalent carbon dioxide (GtCO₂) in the 1960s to an average of 34.7GtCO₂ during 2009-2018. Emissions in 2018 reached a new record high of 36.6GtCO₂. Though global emissions in 2019 have been project to increase by an additional 6%, which is a slower growth than in the past two years²⁹.

The Scottish Government has introduced a number of policies aimed at reducing GHG emissions and meeting renewable energy targets set at a UK, European and International level with ambitious targets for reductions in greenhouse gas emissions. The Climate Change Act (Emissions Reduction Targets) (Scotland) Act 2019 amends the Climate Change (Scotland) Act 2009, was introduced to Parliament in May 2018. The Bill was passed in September 2019 and received Royal Assent in October 2019. Following the Committee on Climate Change recommendation, the Act was amended to set a new target to cut Scottish greenhouse gas emissions to net zero by 2045, five years ahead of the target date set for the whole of the UK, with interim targets now set to cut emissions by 75% and 90% by 2030 and 2040 respectively (in relation to 1990 levels).

The 2nd Scottish Climate Change Adaptation Programme 2019 - 2024 was published in September 2019. This document sets out the Scottish Government’s policies and proposals for climate change adaptation, building on the 1st five-year programme.

Overall Scottish emissions are now 51% below 1990 levels and Scotland is on target to outperform the interim emissions reductions target for at least a 56% reduction in actual emissions by the end of 2020³⁰. To date much of the emissions savings have come from action in the electricity sector, with closure of Scotland’s last remaining coal-fired power station in 2016 and rapid growth in renewable generation to fill the energy gap.

Renewable generation capacity in Scotland has more than trebled in the last 10 years with 11.9 GW of installed generation capacity across the country as of March 2020³¹. It is estimated that renewables generated the equivalent of 90.1% of Scotland’s gross electricity demand in 2019.

However, Scotland has a target to reduce GHG emissions to net-zero by 2045, which includes electricity generation. As stated in the 2019 Progress Report to Parliament by the Climate Change Committee (CCC), Scotland must reduce its emissions by an average

²⁷ Figueres, C., C. Le Quéré, G. P. Peters, G. Whiteman, A. Mahindra, D. Guan, et al. (2018) Carbon Budget 2018: Emissions are still rising: ramp up the cuts, Nature, vol 564, 27-30.

²⁸ Intergovernmental Panel on Climate Change (IPCC) (2018) Global Warming of 1.5°C: Summary for Policymakers [Online] Available at: <https://www.ipcc.ch/sr15/> (Accessed on 14/08/2020)

³⁰ Climate Change Committee (December 2019) Reducing Emissions in Scotland: 2019 Progress Report to Parliament [Online]. Available at <https://www.theccc.org.uk/publication/reducing-emissions-in-scotland-2019-progress-report-to-parliament/#:~:text=It%20assesses%20Scotland's%20progress%20in,a%2010%25%20fall%20in%202016> [Accessed 14/08/2020]

³¹ Scottish Government (2020) Annual Compendium of Scottish Energy Statistics 2020 [Online]. Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/statistics/2019/05/annual-compendium-of-scottish-energy-statistics/documents/annual-compendium-august-2020/annual-compendium-august-2020/govscot%3Adocument/ACSES%2B2020%2B-%2BAugustFinal.pdf> [Accessed 14/08/2020]

of 1.8 million metric tonnes (MtCO₂e). In 2017, emissions fell by 1.4 MtCO₂e in Scotland, less than the Scottish Government's annual reduction targets. To be able to meet its 2045 target, Scotland must further reduce its GHG emissions.

GHG emissions from the electricity sector decreased by 83% between 1990 and 2016, with the Cities for Climate Protection (CCP) setting out policies and proposals to reduce emissions from this sector by a further 28% between 2018 and 2032, taking the overall reduction within the sector to 87% compared to 1990.

With the continued development of onshore wind farms, in the planning and pre-construction phases, it is anticipated that onshore wind farms will continue to make a sizeable contribution to the energy generated from renewable energy technologies within Scotland. The CCP sets out as one of the policy outcomes for this sector that from 2020 onwards, Scotland's electricity generation intensity will be less than 50 grams of carbon dioxide equivalent per kilowatt hour (CO₂eq/kWh), powered by a high penetration of renewables. The CCP latest figures for 2017 show intensity was 24gCO₂e/kWh which displays a fall of 56% since 2016³². With the continued development of onshore wind farms, in the planning and pre-construction phases, it is anticipated that onshore wind farms will continue to make a sizeable contribution to the energy generated from renewable energy technologies within Scotland.

15.5 ASSESSMENT OF POTENTIAL EFFECTS

As a large energy asset of generation in excess of 50 Megawatts (MW), the Development can be classed as an asset of regional importance and classed as Medium sensitivity for the following assessments.

15.5.1 Vulnerability of the Development to Climate Change

15.5.1.1 Wind

As energy content of the wind varies with the cube of the average wind speed³³, small increases in wind speed can result in large increases in wind power. There is a higher risk of damage from strong winds; winds associated with major storm events can be some of the most damaging and disruptive events for the UK with implications for infrastructure.

Wind turbines are designed to capture wind energy, and built to withstand extreme conditions associated with exposed locations. However, wind energy developments could potentially be sensitive to significant changes in variables, including atmospheric circulation and land cover changes as well as changes in the frequency of extreme events (e.g. storms), which could damage wind turbines or alter their efficiency.

Over the lifetime of the Development, UKCP18 states that there are no compelling trends in storminess (as a result of maximum gust speeds) over the last four decades and for wind speed change there is little long-term trend evident. Therefore, the natural variability which exists in wind speed, and subsequently storms, will have a negligible magnitude of change on energy projections and on the efficient operation of the Development.

Given the negligible magnitude of the effect and the medium sensitivity of the Development as a receptor, the effect is assessed as negligible, and there is **no**

³² Scottish Government (2019) Climate Change Plan: monitoring report 2019 [online] Available at: <https://www.gov.scot/publications/climate-change-plan-monitoring-report-2019/pages/3/#:~:text=Renewable%20electricity%20generation%20capacity%20in,2008%20to%2051.7%25%20in%202017> (Accessed 01/10/2020)

³³ Energy Savings Trust (2019) Wind Turbine: Measuring Wind Speed [Online] Available at: https://www.energysavingtrust.org.uk/sites/default/files/reports/wind%20turbine_measuring%20wind%20speed.pdf (Accessed on 23/03/2020)

significant effect in terms of the EIA Regulations predicted as a result of increased wind speeds during the operational phase of the Development.

15.5.1.2 Temperature

Wind energy developments are sensitive to cold weather events and ice forming on blades. When icing does occur, the turbine's own vibration sensors are likely to detect the imbalance and inhibit the operation of the machines³⁴. With the projected trend to warmer conditions, the predicted magnitude of change is negligible. The effect is assessed as negligible and therefore **not significant** in terms of the EIA Regulations.

15.5.1.3 Precipitation

The risk from increased precipitation is the potential for flooding, particularly if it is associated with extreme events. For the Development this increases the risk for potential destruction/disruption of infrastructure, e.g. loss of watercourse crossing, flooding to control building. Buffers from watercourses are embedded in the turbine locations and hardstandings of the Development, where access tracks or watercourse crossing are required, these are designed in lined with best practice with a CEMP implemented during construction. As such, the Development has low sensitivity to increase in precipitation.

UKCP18 show that over the winter season precipitation in this area of Scotland is projected to increase by up to 30% at the medium estimate. Given the embedded mitigation, the magnitude of effect on the operation of the Development is assessed as low and the overall effect is minor and therefore, **not significant**.

15.5.2 Influences of the Development on Climate Change

15.5.2.1 Carbon Savings

Every unit of electricity produced by a wind farm development displaces a unit of electricity which would otherwise have been produced by a conventional (coal or gas) power station, and therefore presents carbon savings.

The electricity produced from the wind farm is assumed to substitute energy production by entirely coal-fired generation, or a mix of fossil fuels, or the national grid mix of energy generation. A renewable energy development would have a maximum potential to save carbon emissions when substituting coal fired generation, which is a possibility if coal is at the bottom of the cost merit order of generation.

However, it is not appropriate to define the electricity source for which this renewable electricity project would substitute, due to uncertainty in future grid mix. For this reason, carbon emission savings are calculated for each scenario in the carbon calculator (Appendix A15.1).

The potential annual carbon emission savings for the Development are provided in Table 15.6. Based on an anticipated capacity factor 40%, it is expected the Development would result in the production of approximately 269,107 MWh annually, equating to 8,073,216 MWh over the operational life of the Development. This equates to displacing approximately 3,600,654 tonnes of fossil fuel mix generation equivalent CO₂ emissions, based on DUKES emission factors³⁵, over the operational life which is a positive environmental effect. The projected change in wind speeds as a result of climate change

³⁴ IEA Wind (2018) IEA Wind TCP Task 19 INTERNATIONAL RECOMMENDATIONS for Ice Fall and Ice Throw Risk Assessments [Online] Available at:

<https://community.ieawind.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=3e92fc30-a54a-4888-e612-79126301c58e&forceDialog=0> (Accessed 01/10/2020)

³⁵ Digest of United Kingdom Energy Statistics

over the operational phase of the Development is considered to be non-material for the purposes of this assessment.

Table 15.6: Carbon Savings for the Development (Expected Scenario)

Type of Electricity Generation	Expected CO ₂ Saving (t CO ₂ yr ⁻¹)
Coal fired electricity generation	265,071
Grid mix electricity generation	53,283
Fossil fuel mix electricity generation	120,022

15.5.2.2 Carbon Losses

The manufacturing, construction and installation of the wind turbines on Site has an associated carbon cost, and carbon losses are also generated by the requirement for extra capacity to back up wind power generation. Carbon losses associated with reduced carbon fixing potential and loss of soil organic matter occurs through excavation of peat for construction and drainage effects.

Organic soils (peatlands) in Scotland act as carbon sinks, whereby they absorb carbon dioxide then they release it due to land use change, such as forestry. Wind farm developments on peatlands may result in a negative impact on these habitats if not appropriately considered during scheme design and development. Changes to the peatland habitat through development could result in a significant effect on its ability to store carbon, potentially resulting in reduced net carbon benefits of the Development.

A peat depth survey was undertaken across the Site where it was established that the average peat depth within the Site is 1.2 m so that areas of deep peat do exist throughout the Site. The design process sought where possible to avoid disturbance to deposits of deep peat; however, due to average peat depths being 1.2 m, the design sought to ensure no turbines were located in greater than 1.5 m of peat. Existing tracks are used where possible to minimise the disturbance to peat and peaty soils and cable trenches will follow the on-site access tracks.

Carbon losses for the expected scenario are summarised in Table 15.7.

Table 15.7: Carbon Losses for the Development (Expected Scenario)

Losses	t CO ₂ Equivalent (total for wind farm lifetime)
Losses due to turbine life (e.g. manufacture, construction, decommissioning)	66,805
Losses due to back-up	34,876
Losses due to reduced carbon fixing potential	1,270
Losses from soil organic matter	26,052
Losses due to Dissolved Organic Carbon (DOC) and Particulate Organic Carbon (POC) leaching	2,163
Losses due to felling forestry	0
TOTAL LOSSES	131,166

15.5.2.3 Payback Period

The carbon payback period is a measurement/indicator to help assess a proposal. The shorter the payback the greater benefit the Development will have in displacing emissions associated with electricity generated by burning fossil fuels.

The payback period is calculated taking the total carbon cost (carbon losses) associated with the Development and dividing by the annual carbon gains from displaced fossil fuel power generation and any site improvements.

The estimated payback period for the Development is 2 years compared to grid-mix electricity generation. In comparison to fossil fuel mix and coal-fired electricity generation the payback period of the Development reduces to 1.1 years and 0.5 years respectively. Table 15.8 below goes into further detail regarding the carbon payback period for the Development.

Table 15.8: Payback in Years for each Scenario used in the Carbon Calculator

Compared to...	Expected Scenario	Best Case Scenario	Worst Case Scenario
Coal fired electricity generation	0.5	0.4	1.1
Grid-mix electricity generation	2	1.4	4.2
Fossil fuel-mix of electricity generation	1.1	0.8	2.3

The CO₂ emission savings for the operational lifetime of the Development (currently predicted as 30 years) would be a net benefit with regards to reducing climate change. This is considered a Low magnitude of change i.e. a slight, detectable, alteration of the baseline condition.

Given the challenge and international urgency of climate change, as identified in the recent IPCC special report, climate is considered to have Very High sensitivity to changes in GHG emissions. The Development is therefore assessed to have Moderate, positive environmental effects, that is **significant** under the EIA Regulations.

15.5.3 Effects of Future Climate Change Scenario on Environmental Receptors Sensitive to Climate Change

The potential for environmental receptors to be impacted by the Development is assessed in Chapters 6-16 of this EIA Report. Of these ecological, ornithological and hydrological receptors are the most sensitive to climate change and are discussed further in Table 15.9 below.

Table 15.9: Climate Change Effects on Environmental Receptors

EIA Report Chapter	Receptor	Climate Change Effect	Effect on Receptor
7	Ecology – Habitats, Protected Species	Temperature: up to + 2°C Shift to wetter winters and dryer summers Negligible change in wind speeds	While changes in temperature could affect the composition and growth rates of plant communities and invertebrates, and hence protected species and habitats, the uncertainties are high and it is not clear that the effect of the Development on those receptors would alter substantially as a result.
8	Ornithology	Temperature: up to + 2°C Shift to wetter winters and dryer summers	A rise in temperature has the potential to impact on habitats which in turn may affect the behaviour of bird interests. As noted above uncertainties are high and the type and significance of

		Negligible change in wind speeds	effects identified from the Development are not anticipated to alter as a result.
12 & 13	Geology, Hydrology and Hydrogeology	Shift to wetter winters and dryer summers	Limited change to future baseline and to the identified effects of the Development.

Given the relatively limited magnitude of change in climate parameters predicted over the operation of the Development, negligible changes to the baseline for environmental receptors are anticipated during this period. This is incorporated into the assessments undertaken in other chapters of this EIA Report.

No additional significant effects will occur as a result of climate change during the operational phase of the Development.

15.6 MITIGATION AND RESIDUAL EFFECTS

As detailed in Section 15.5.2.3, the Development will have a positive effect due to the CO₂ emission savings for the operational lifetime and beyond resulting in a net benefit of the Development to reducing climate change. Any adverse, negative effects as a result of the Development are of such limited, and negligible nature, that they are not significant in terms of the EIA Regulations. As such, no mitigation is required under the EIA Regulations other than that already embedded into the Development and recommended as best practice.

An iterative design approach was taken for the layout of the Development to avoid siting turbines and hardstanding in proximity to watercourses as well as infrastructure in deep peat, where possible, to minimise disturbance of peat soils and associated carbon losses. Further micro-siting will be informed by detailed pre-construction ground investigations.

An Outline PMP has been produced and is provided in **Chapter 7: Ecology** (Section 7.9.1.1). Proposed reuses of the excavated peat are in line with the Scottish Renewables and SEPA Guidance³⁶ and the outline PMP demonstrates that all excavated peat can be suitably re-used on Site. Methods for handling and storing excavated peat have been described in the Outline PMP to ensure its reuse potential is maximised and any carbon losses are minimised. Monitoring of the reinstated areas will be carried out to ensure that the environmental objectives are realised.

The Outline PMP will be updated prior to construction once more detailed site investigation data and detailed engineering designs are available. The temporary peat storage locations will be identified in the updated PMP and will be guided by a geotechnical engineer. The updated PMP will also include detailed method statements and phasing of works, and will be agreed with SEPA and the planning authority prior to construction commencing.

Other mitigation measures will include the management of wind turbines to maintain operational efficiency during their lifetime. Maintenance plans for wind turbines would be developed to maximise turbine output and efficiency. Key performance indicators to monitor and track operational efficiency would be developed.

15.7 CUMULATIVE EFFECT ASSESSMENT

The Scottish and UK Governments have set ambitious targets for reducing GHG emissions by 2045 and 2050 respectively. The Development, in conjunction with other renewable

³⁶ Scottish Renewables, SEPA (2012) Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and Minimisation of Waste [Online] Available at: <https://www.gov.scot/Topics/Business-Industry/Energy/Energy-sources/19185/17852-1/CSavings/guidancepeatwaste> (Accessed 12/08/2020)

energy developments, will contribute to Scotland and the UK's aims to reduce carbon emissions and achieve meet its ambitious greenhouse gas emissions targets.

DUKES 2020 details that renewable electricity represented 37.1% of total UK generation in 2019, with onshore wind's overall share of capacity increasing to 13.3% of all generators overall, up two percentage points on 2018.

The Development will contribute up to 76.8 MW of installed capacity which will contribute to increasing renewable energy generation capacity within Scotland the UK.

The cumulative effect of the Development with other UK renewables generation is considered to be a fundamental change in the climate effects of UK energy supply and contribute to the UK's legally binding emission reduction targets. This represents a major, positive effect that is **significant** under the EIA Regulations

15.8 SUMMARY OF EFFECTS

Table 15.10 provides a summary of the effects detailed within this Chapter.

Table 15.10: Summary of Effects

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Vulnerability of Development to Climate Change				
Development Infrastructure and generation capacity.	Changes to generation capacity through changes in wind speed.	Negligible	None Mitigation is embedded in design	None
Development Infrastructure and operational efficiency.	Damage to infrastructure or operation due to changes in temperature.	Negligible	None	None
Development Infrastructure and operational efficiency.	Potential for flooding of Site and impact on operation through changes to precipitation.	Minor	None Mitigation is embedded in design (e.g. watercourse buffers) and good practice measures as outlined in outline CEMP.	None
Influence of the Development on Climate Change				
Climate - average temperature predictions as linked to GHG emissions.	Reduction in GHG emissions through offsetting of existing conventional generation.	Moderate Major cumulatively	None Embedded mitigation has reduced payback period and maximise positive impact.	Significant contribution cumulatively to regional emissions and renewable energy generation targets.

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Effects on Environmental Receptors				
Environmental Receptors assessed in individual chapters of EIA Report.	Change to future baseline of receptors and assessment results.	Negligible Little change over time period to baseline condition of receptors.	None Mitigation as identified in individual assessment chapters	None

15.9 STATEMENT OF SIGNIFICANCE

The predicted future climatic baseline conditions are highly unlikely to affect the operation of the Development. The Development will have positive effect on carbon savings and a significant positive effect when considered cumulatively with Scottish renewable energy deployment. This is significant in terms of the EIA Regulations.

No additional significant effects to those already identified within the EIA Report will occur as a result of climate change during the operational phase of the Development.

16 OTHER ISSUES

This Chapter of the Environmental Impact Report (EIA Report) evaluates the effects of the Corriegarth 2 Wind Farm (the Development) on any remaining topics that are within the scope of the Environmental Impact Assessment (EIA). The assessments were undertaken by Arcus Consultancy Services Limited (Arcus) with technical review provided by Stuart Davidson, Registered EIA Practitioner and Operational Director at Arcus.

The topics included within this Chapter include:

- Human Health & Safety, including Major Accidents and Disasters;
- Shadow Flicker;
- Waste;
- Telecommunications, Television Reception and Utilities; and
- Aviation.

16.1 HUMAN HEALTH & SAFETY, INCLUDING MAJOR ACCIDENTS & DISASTERS

16.1.1 Introduction

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017¹ (hereafter referred to as the 'EIA Regulations') state that an EIA must identify, describe and assess in an appropriate manner, the expected effects deriving from the vulnerability of the Development to Major Accidents and Disasters (MADS) that are relevant to the Development, as well as upon human health and safety.

16.1.2 Assessment Methodology

In identifying relevant major accidents or disasters, the following definitions are used to guide this assessment which are informed by Institute of Environmental Management and Assessment (IEMA) EIA Quality Mark Article:

- Major Accident – uncontrolled occurrence in the course of the construction or operation of the Development, leading to serious danger to the environment, which may be either immediate or delayed;
- Disaster - An event not directly caused by the Development, leading to serious danger to the environment, which may be either immediate or delayed. It may result from natural sources, such as flooding, adverse weather, ground movement, or from man-made sources (e.g. escalation of a fire from an adjacent facility); and
- Relevance – a relevant major accident or disaster is defined as follows:
 - Caused by the Development;
 - Having the potential to impact upon the Development; and
 - Would be exacerbated or mitigated by the Development.

16.1.3 Vulnerability of the Development to Disasters

The land upon which the Development is proposed within the application boundary (the Site) is not located within an area known for natural disasters such as floods, hurricanes, tornadoes, volcanic eruptions, earthquakes or tsunamis.

As stated in **Chapter 15: Climate Change and Carbon Balance** of this EIA Report, none of the identified climate change trends listed will affect the Development with the exception of increased high wind speed conditions. Due to the exposed nature of wind farm sites, wind turbines are designed to withstand extreme weather conditions. Brake

¹ The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. London: HMSO [Online] Available at: <http://www.legislation.gov.uk/ssi/2017/101/contents/made> (Accessed 11/08/2020)

mechanisms installed on turbines allow them to be operated only under specific wind speeds and, should severe wind speeds be experienced, then the turbines would be shut down. Although an unlikely event for Scotland, the brake mechanism could also apply to a hurricane scenario.

Flooding and ground saturation/landslips on slopes are the most probable natural disaster that could affect the Development. Flood risk is assessed within Section 12.6.1.4 of **Chapter 12: Hydrology and Hydrogeology**. The Development has been designed to minimise the impact of flooding by incorporating a buffer zone between watercourses and turbine bases of 50 m. Measures, including SuDS, to attenuate run-off and intercept sediment prior to run-off entering watercourses are described in Appendix A12.1 and are embedded as part of the Development design. Although no turbines, construction compounds, substations or meteorological masts are located within areas described as having a 0.5 % or greater annual risk of flooding, emergency response plans appropriate for the individual phases of the Development would be in place and implemented to deal with any occurrences. These would ensure the health and safety of employees and the protection of critical infrastructure.

No other natural or man-made disasters are considered to have the realistic potential to occur and therefore are not considered further within this Chapter.

Where the Development has the potential to exacerbate or mitigate effects of disasters this is assessed in other chapters within the EIA Report as relevant, particularly within the hydrological assessment in **Chapter 12: Hydrology and Hydrogeology** of this EIA Report (in relation to flooding), geological assessment within **Chapter 13: Geology and Peat**, and in relation to offsetting of greenhouse gas emissions and related climate change impacts in **Chapter 15: Climate Change & Carbon Balance**.

16.1.4 Potential for the Development to Cause Major Accidents

The risk of environmental accidents is covered, where relevant, in individual technical chapters. For example, the potential for accidents, like spillages, are considered in **Chapter 12: Hydrology and Hydrogeology** of this EIA Report, whilst aviation safety issues are assessed within Section 16.5 of this Chapter. Other general construction health and safety measures would be implemented by the development contractor in line with best practice prior to the commencement of construction, as discussed in Section 16.1.5.

No other major accidents are considered likely to occur. On-site accidents during construction and operation are assessed in the following subsections of this Chapter.

16.1.4.1 Construction Phase

Effects upon health and safety are managed through risk assessments, pursuant to legislation of the European Union such as Directive 2012/18/EU of the European Parliament² on the control of major-accident hazards. The Directive lays down rules for the prevention of major accidents which might result from certain industrial activities and the limitation of their consequences for human health and the environment. Directive 2012/18/EU requires the preparation of emergency plans and response measures which will be covered under equivalent documents relevant to the nature of the Development.

The Construction (Design and Management) Regulations 2015³ (CDM Regulations) are intended to ensure that health and safety issues are properly considered during

² European Parliament (2012) Directive 2012/18/EU [Online] Available at: <https://eur-lex.europa.eu/eli/dir/2012/18/oj> (Accessed on 13/08/2020)

³ Scottish Government (2015) The Construction (Design and Management) Regulations 2015 [Online] Available at: <http://www.legislation.gov.uk/ukSI/2015/51/contents/made> (Accessed on 13/08/2020)

development to reduce the risk of harm. In accordance with the CDM Regulations, a Principal Designer and Principal Contractor would be appointed.

The Principal Designer would have responsibility for coordination of health and safety during the pre-construction phase. Guidance published by the Health and Safety Executive in January 2015, defines principal designers as *"...designers appointed by the client in projects involving more than one contractor. They can be an organisation or an individual with sufficient knowledge, experience and ability to carry out the role."*

Principal contractors are defined in the 2015 CDM Regulations as *"contractors appointed by the client to coordinate the construction phase of a project where it involves more than one contractor ... They ... must possess the skills, knowledge, and experience, and (if an organisation) the organisational capability necessary to carry out their role effectively given the scale and complexity of the project and the nature of the health and safety risks involved."*

Throughout all phases of the Development, cognisance would be made of the following guidance documents produced by RenewableUK, and updated by SafetyOn:

- Wind Turbine Safety Rules Third Edition⁴; and
- Guidance & Supporting Procedures on the Application of Wind Turbine Safety Rules Third Edition⁵.

The remoteness and the type of the Development will reduce the severity of accidents occurring and major accidents occurring as a result of construction are highly unlikely. In the unlikely event that such an event was to occur during construction, emergency response plans would be available and implemented to deal with any occurrences.

The risk of construction accidents as they relate to human health and safety would be covered in the Construction Method Statements (CMS) and Construction Environmental Management Plan (CEMP) and specific risk assessment method statements, prepared in response to conditions attached to any consent. These would include identifying site specific risks and preparing assessments to minimise and manage the risk such as equipment safe handling, personal protection equipment, amongst others. As a result, construction accidents are not considered further within this Chapter.

16.1.4.2 Operational Phase

Electrical infrastructure will be located across the Development in the form of an electrical substation and battery storage facility which will be subject to routine maintenance such that it is not considered to pose a significant risk of creating an accident. Additionally, effects upon population and human health are unlikely due to the remoteness of the Development, the low population density, and adherence to required safety clearances around turbines.

A possible but rare source of danger to human or animal life from a wind turbine would be the loss of a piece of the blade or, in the most exceptional circumstances, of the whole blade from an operational turbine. Many blades are composite structures with no bolts or other separate components. Even for blades with separate control surfaces on or comprising the tips of the blade, separation is highly unlikely. Wind turbines have an exemplary safety record with no recorded instances of fatalities to any member of the

⁴ SafetyOn (2019) Wind Turbine Safety Rules, Third Edition - Issue 2 [Online] Available at: https://safetyon.com/_data/assets/pdf_file/0005/662729/Wind-Turbine-Safety-Rules-Edition-3-2015-Issue-2-December-2019.pdf Accessed on 13/08/2020)

⁵ SafetyOn (2019) Guidance on the Application of Wind Turbine Safety Rules, Third Edition – Issue 3 [Online] Available at: https://safetyon.com/_data/assets/pdf_file/0006/662730/Wind-Turbine-Safety-Rules-Guidance-Edition-3-2015-Issue-3-Dec-2019.pdf (Accessed on 13/08/2020)

public anywhere in the world. The turbines are also designed to shut down automatically during high wind speed conditions, typically in excess of 60 mph.

There is a risk of ice accumulation on turbine blades, nacelles and towers under certain conditions such as periods of very cold weather with high humidity. In those instances where icing of blades occurs, fragments of ice might be released from blades, particularly when the machine is started. The wind turbines would be fitted with vibration sensors to detect any imbalance which might be caused by icing of the blades. This enables the operation of machines with iced blades to be inhibited to eliminate the risk of ice throw.

The possibility of attracting lightning strikes applies to all tall structures, and wind turbines are no different. Appropriate lightning protection measures are incorporated in wind turbines to ensure that lightning is conducted harmlessly past the sensitive parts of the nacelle and down into the ground.

The Scottish Government Online Advice (2014) states *"although wind turbines erected in accordance with best engineering practice should be stable structures, it may be advisable to achieve a set-back from roads and railways of at least the height of the turbine proposed, to assure safety"*.

The distance between the nearest proposed turbines and public roads/footpaths is well in excess of tip height, with the nearest receptor over 5 km from the closest turbine.

16.1.5 Statement of Significance

Due to its location, the Site is not prone to natural disasters. Whilst adverse weather conditions, most notably high wind speed events, ice producing conditions and lightning strikes, do occur within Scotland, wind turbines are designed to withstand extreme weather conditions. Brake mechanisms, vibration sensors and lightning protection measures are installed on turbines allowing them to be operated under optimal conditions and inhibited during extreme weather events.

The risk of construction accidents as they relate to human health and safety are detailed and managed through the CDM Regulations and in the CEMP through specific construction risk assessment method statements, which will be prepared in accordance with conditions attached to any consent of the Development.

Therefore, the overall risk of health and safety including major accidents and disasters is considered negligible and **not significant** in terms of the EIA Regulations.

16.2 SHADOW FLICKER

16.2.1 Introduction

This Section evaluates the effects of shadow flicker from the Development on nearby receptors. Under certain combinations of geographical position and time of day, the sun may pass behind the rotors of a wind turbine and cast a shadow over neighbouring properties. Shadow flicker is an effect that can occur when the shadow of a blade passes over a small opening (such as window), briefly reducing the intensity of light within the room, and causing a flickering to be perceived. Shadow flicker effects only occur inside buildings where the blade casts a shadow across an entire window opening.

16.2.2 Legislation, Policy and Guidance

The following guidance, legislation and information sources have been considered in carrying out this assessment:

- Online Planning Guidance for Renewables and Low Carbon Energy⁶;
- Highland-wide Local Development Plan (the HwLDP)⁷;
- Onshore Wind Energy Supplementary Guidance⁸; and
- Review of Light and Shadow Effects from Wind Turbines in Scotland⁹.

16.2.3 Consultation

Consultation for this EIA Report topic was undertaken with the organisations shown in Table 16.1.

Table 16.1: Consultation Responses

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee
The Highland Council (the Council)	Scoping Response, 06/05/2020	If no properties are located within 11 rotor diameters, which is THC's approach to shadow flicker due to the lower sun given the latitude of the development, the matter of shadow flicker will not require detailed assessment but should still be addressed in the EIA Report.	No properties have been identified within 11 rotor diameters of the Development.

16.2.4 Assessment Methodology

Properties with the potential to be affected by shadow flicker as a result of the Development have been identified using Geographical Information Systems (GIS).

The Onshore Wind Energy Supplementary Guidance detailed in Section 16.2.3 requires a shadow flicker assessment to be undertaken at properties within 10 rotor diameters of the Development.

Shadow flicker is known to occur beyond 10 rotor diameters, as reflected in the Review of Light and Shadow Flicker Effects from Wind Turbines in Scotland; however, the intensity of shadows decreases as the distance to the turbines increases.

The Council requires an assessment of shadow flicker effects on any property within 11 rotor diameters of the nearest turbine.

The Shadow Flicker Study Area around each proposed turbine location extends to a distance of 11 rotor diameters has been identified; 1,463 m, based on the candidate turbine dimensions 149.9 m to tip and an estimated rotor diameter of 133 m.

⁶ Scottish Government (2014) Onshore Wind Turbines: Planning Advice Available at: <https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/> (Accessed on 11/05/2020)

⁷ Highland Council (2012) Highland-wide Local Development Plan [Online] Available at: https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland-wide_local_development_plan (Accessed on 11/05/2020)

⁸ Highland Council (2016) Onshore Wind Energy Supplementary Guidance [Online] Available at: https://www.highland.gov.uk/download/downloads/id/18793/onshore_wind_energy_supplementary_guidance_november_2016.pdf (Accessed 13/08/2020)

⁹ LUC (2017) Review of Light and Shadow Effects from Wind Turbines in Scotland [Online] Available at: <https://www.climatechange.org.uk/research/projects/review-of-light-and-shadow-effects-from-wind-turbines-in-scotland/> (Accessed 13/08/2020)

Ordnance Survey (OS) AddressBase data, OS maps, site visits and available online aerial photography was used to search for any permanent dwellings in the Study Area.

16.2.5 Baseline Conditions and Assessment of Potential Effects

The nearest residential property to the Development is Garrogie Cottage located approximately 3.6 km south-west from the closest turbine (T1). As such, no properties have been identified within the 11 rotor diameter study area (1,463 m).

As no properties are located within the shadow flicker study area, it is unlikely that shadow flicker effects will occur as a result of the Development.

16.2.6 Statement of Significance

No shadow flicker effects will occur during construction or decommissioning.

The effect of shadow flicker has been assessed using appropriate guidance in respect of the operational period. No properties are located within the study area and are therefore unlikely to be affected by shadow flicker. Effects are therefore **not significant** in terms of EIA Regulations.

16.3 WASTE

Exact quantities and types of waste are unknown at this stage of the Development. It is expected that they could include:

- Excavated material;
- Forestry Residues;
- Welfare facility waste;
- Packaging;
- Waste chemicals, fuels and oils;
- Waste metals;
- Waste water from dewatering;
- Waste water from cleaning activities; and
- General construction waste (paper, wood, etc.).

A Site Waste Management Plan (SWMP) will detail how waste streams are to be managed, following the Waste Hierarchy¹⁰ of prevention, reuse, recycle, recover and as a last resort, disposal to landfill. The SWMP will be agreed and implemented prior to construction commencing on Site via a planning condition.

Therefore, it is not considered necessary for waste to be assessed further within this EIA Report and is scoped out for further assessment.

16.4 TELECOMMUNICATIONS, TELEVISION RECEPTION AND UTILITIES

16.4.1 Introduction

Due to the size and nature of wind turbines, they have the potential to interfere with electromagnetic signals passing above ground during operation. Infrastructure affected can include telecommunication links, microwave links and television reception. Aviation can also be affected by turbines and is addressed separately in Section 16.5 of this Chapter.

¹⁰ The Waste Management Licencing (Scotland) Regulations 2011 places a duty on all persons who produce, keep or manage waste to apply the 'Waste Hierarchy' in order to minimise waste production at all stages of a development.

In particular, the tower and rotating blades of wind turbines have the most potential for interference with electromagnetic signals. The degree and nature of the interference will depend on:

- The location of the wind turbines with respect to the receiver and the transmitter;
- Characteristics of the rotor blades;
- Signal frequency; and
- The radio wave propagation in the local atmosphere.

In addition, other infrastructure such as buried utilities may be affected by the construction of the Development.

This section of the EIA Report details the relevant guidance, consultation that has been undertaken with infrastructure operators, the existing baseline for these elements as relevant to the Development and an assessment of the likely effects as a result of the Development.

16.4.2 Guidance

There are a number of documents which provide guidance on telecommunications considerations for wind energy developments. The guidance considered in this assessment are:

- British Wind Energy Association (BWEA), (1994) Best Practice Guidelines of Wind Energy Developments;
- Ofcom (2009) Tall Structures and Their Impact on Broadcast and Other Wireless Service;
- Ofcom (2003) Guidelines for Improving Digital Television and Radio Reception; and
- The Scottish Government (2014) Onshore Wind Turbines.

The potential effects as a result of the Development have been assessed with reference to the above documents.

16.4.3 Consultation

Telecommunication operators were consulted in March 2020 and information requested for any telecommunication links which may be affected due to the Development. Turbine co-ordinates and dimensions were provided.

Table 16.2 provides a summary of the consultation undertaken.

Table 16.2: Consultation Responses

Consultee	Type and Date	Summary of Response	Response to Consultee
British Telecommunications (BT)	Scoping Response, 05/03/2020	No interference.	No further assessment required.
Joint Radio Company (JRC)	Scoping Response, 05/03/2020	No objection, JRC identified that the Development would not interfere with utilities infrastructure.	No further assessment required.
The Highland Council	Scoping Response, 06/04/2020	Recognise community assets that are currently in operation e.g. TV, radio, telecommunication links... Demonstrate what interests they have identified and the	Consultation with relevant telecommunication and utility consultees has been undertaken. Scoping responses from consultees are

Consultee	Type and Date	Summary of Response	Response to Consultee
		outcomes of any consultations with relevant authorities through the provision of written evidence of concluded discussions / agreed outcomes. Results of surveys should be contained within the EIA Report to determine whether any suspensive conditions are required in relation to such issues.	summarised in this table. Results of the assessment of potential effects can be seen in Section 16.4.4.
BT	Further Consultation 13/08/2020	No interference.	No further assessment required.
JRC	Further Consultation 13/08/2020	No interference.	No further assessment required.
Scottish Water	Scoping Consultation	No Scottish Water or Waste infrastructure within the vicinity, so no objection. Site is located within a drinking water catchment though is sufficient distance from the intake so likely to be of low risk	Noted. Consideration of catchment is within Ch. 12 Hydrology and Hydrogeology.

16.4.4 Baseline and Assessment of Effects

16.4.4.1 Telecommunications and Television

Should the construction and operation of the Development materially affect the operation of telecommunication links, such as through degradation of signal quality to the extent that it warrants an objection from the link operator, this would be considered a significant effect. Mitigation is generally available either through rerouting of any affected links or upgrades to the transmitting and / or receiving apparatus.

Consultation with the relevant organisations was initiated during the initial and advanced stages of the EIA to identify any potential microwave or telecommunication links that could be affected by the Development. Ofcom monitors the fixed microwave links throughout the UK, whereas JRC manages the radio spectrum used by the UK Fuel and Power Industry. Atkins undertakes a similar role for the water industry. Arqiva operates the Freeview terrestrial transmission network including BBC and ITV.

The search for existing telecommunication and microwave links was undertaken by providing consultees with turbine coordinates in order for the consultees to model the Development. This ensures all telecommunication and microwave links potentially affected are identified.

BT and JRC identified no links associated with the Development and have raised no objection to the Development.

Digital television signals are rarely affected by the operation of wind turbines; however, in some cases interference can be caused by blocking or reflections. A minimum signal

strength is required for digital television to operate effectively, if a property already receiving a weak digital signal experiences additional blocking or reflections from wind turbines, the signal level may drop, causing the television to pixelate or cut out intermittently. Reflections and blocking from other objects (such as trees) close to a receptor can cause similar effects. Simple measures to boost the signal through an improved receiver are usually sufficient to correct the issue.

The nearest property to the Development is located over 3 km from the nearest turbine. The area surrounding the Site, which will include the nearest properties, receives television signals that were made exclusively digital after the digital switchover was completed, and hence no analogue TV signals are broadcast in the area. As a result, and considering the intervening distance between the nearest turbine and property, television reception received by the nearest properties to the Site will not be affected, and no significant effects will occur. However, in the event that interference which is directly attributable to the Development is experienced, the Applicant will endeavour to implement a suitable mitigation solution. Examples of technical solutions include: changing the receptor height, re-orientating the receptor to receive signals from an alternative transmitter, upgrading the receptor system or installation of satellite television. The requirement for a corrective action would be most appropriately identified after the onsite survey is complete, and the Development is operational.

Broadcast radio (FM, AM and DAB digital radio) are transmitted on lower frequencies than those used by analogue TV signals. Lower frequency signals tend to pass through obstructions more easily than the higher frequency TV signals, and diffraction effects also become more pronounced at lower frequencies. Both of these factors will tend to lessen the impact of wind turbines on radio reception. Should interference to radio signals be experienced as a result of the Development, the technical solutions described in the above paragraph are considered as suitable mitigation measures.

16.4.4.2 Utilities

Other below ground infrastructure, such as utilities, could be affected during construction; however, implementation of best practice would ensure that these are not adversely affected during construction or operation. Scottish Water did not object to the Development via Scoping Opinion.

A linesearch¹¹ utility search was undertaken during the EIA process which identified onsite cabling likely associated with the existing wind farm which would be avoided; however, prior to construction, a more detailed line search for undergrounded utilities would occur and any services located. Adverse effects would be avoided through the implementation of safe systems of work. During construction, there may be construction traffic passing beneath electricity lines along the transportation route. Although it is very unlikely that any damage to this infrastructure will occur, appropriate management measures will be put in place to ensure that electricity lines are not affected by the Development, and that the Development is constructed in accordance with relevant health and safety legislation as appropriate. Following the implementation of such measures, if necessary, there will be no effect on utility infrastructure as a result of the Development, and it is not considered further.

16.4.5 Statement of Significance

Consultation undertaken with the telecommunications consultees has confirmed no fixed communication links operating across the Site and that therefore the Development will not interfere with telecommunications and electromagnetic signals. Effects on television reception are unlikely, and technical solutions are readily available as suitable mitigation

¹¹ Linesearch Online Tool [Online] Available at: <http://www.linesearchbeforeudig.co.uk/#> (Search undertaken 29/05/2020)

measures should adverse effects be present. Adverse effects on infrastructure such as utilities would be avoided through safe systems of work. Therefore, there are **no significant effects** predicted upon telecommunications and utilities as a result of the Development.

16.5 AVIATION

16.5.1 Introduction

Wind turbines have the ability to reflect radio waves and therefore have the potential to interfere with radar systems. In addition, wind turbines can present a physical obstruction at, or close to, an aerodrome or other aviation activity site, such as areas of low flying.

The general approach to wind farm development is to avoid adverse effects on aviation infrastructure where possible, and to find appropriate technical mitigation solutions where this cannot be achieved. Policy guidance and extant regulations in respect of the potential interference effects of wind turbines on air traffic control (ATC) radars are highlighted in civil and military publications. Furthermore, there are airfield physical safeguarding and telecommunication and navigational infrastructure safeguarding requirements.

16.5.2 Guidance and Data Sources

This assessment takes into account consultation, regulatory, safeguarding and operational requirements outlined by Civil Aviation Authority (CAA) Guidance^{12,13}.

The primary sources of information for the technical assessments were:

- NATS (formerly National Air Traffic Services) Aeronautical Information Package – which includes coordinate information for navigation aids at licensed aerodromes;
- Stakeholder provided databases of technical sites
- The Developer's information pertaining to the development including consultation responses; and
- Relevant aviation charts.

16.5.3 Consultation

Consultation with relevant aviation stakeholders is a routine part of windfarm development and the consultation process that is required to be undertaken is also laid down in Civil Aviation Publication (CAP) 764 (for civil aviation issues) and the Wind Energy and Aviation Interests Interim Guidelines¹⁴ (for both civil and military consultation).

Consultation has been undertaken with aviation stakeholders as summarised in Table 16.3.

¹² CAA (2016) CAP 764 Policy and Guidelines on Wind Turbines [Online] Available at: <https://publicapps.caa.co.uk/modalapplication.aspx?catid=1&pagetype=65&appid=11&mode=detail&id=5609> (Accessed 13/08/2020)

¹³ CAA (2019) CAP 670 Air Traffic Service Safety Requirements [Online]. Available at: <http://publicapps.caa.co.uk/modalapplication.aspx?catid=1&pagetype=65&appid=11&mode=detail&id=9124> (Accessed 13/08/2020)

¹⁴ Wind Energy, Defence and Civil Aviation Interests Working Group (2002) Wind Energy and Aviation Interests Interim Guidelines [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48101/file17828.pdf (Accessed 13/08/2020)

Table 16.3: Consultation Responses from Aviation Consultees

Consultee	Summary of Response	Response to Consultee
HIAL Scoping Response 25 th March 2020	Development falls within HIAL safeguarded area for Inverness Airport, therefore turbines could affect instrument flight procedures and performance of electronic aeronautical systems for the airport.	Noted. Further consultation with HIAL ongoing to identify suitable mitigation.
HIAL Further Consultation Discussions ongoing	HIAL have identified that impacts to their primary radar at Inverness Airport are anticipated.	Further consultation is ongoing with HIAL to discuss the impacts and the options for suitable mitigation.
MoD Scoping Response, 25 th March 2020	MOD request the Development should be fitted with MOD accredited infra-red and visible spectrum aviation lighting.	Further consultation with MOD undertaken to remove the requirement for visible spectrum aviation lighting.
MoD Updated response of 14 th August 2020	The MOD replaced the requirement for visible lighting with a requirement for visible <u>or</u> infra-red lighting	Noted.
NATS Scoping Response, 25 th March 2020	Development does not conflict with safeguarding criteria. No safeguarding objection to the proposal.	N/A
NatureScot (formally Scottish Natural Heritage, SNH) Scoping Response 18 th March 2020	Should visible aviation lighting be required, night-time lighting assessment should be undertaken for the WLA.	Aviation safety lighting will be limited to infrared lighting only. No visible lighting is required. A Lighting Impact Assessment is therefore not required.
The Highland Council Scoping Response 6 th April 2020	Aviation lighting may be required due to the proposed scale and location of the turbines. The effect of the aviation lighting should be assessed through the EIA process. A Lighting Impact Assessment will be required. This is a matter that should be considered from all viewpoints.	Aviation safety lighting will be limited to infrared lighting only. No visible lighting is required. A Lighting Impact Assessment is therefore not required.
The Highland Council Scoping Response 6 th April 2020	Recognise community assets that are currently in operation e.g. ...aviation consultees. Demonstrate what interests they have identified and the outcomes of any consultations with relevant authorities through the provision of written evidence of concluded discussions / agreed outcomes. Results of surveys should be contained within the EIA Report to determine whether any suspensive conditions are required in relation to such issues.	Consultation with relevant aviation consultees has been undertaken. Scoping responses from consultees can be seen above.
CAA No response to the Scoping Request.	N/A	N/A

16.5.4 Embedded Mitigation

The Proposed Development has been designed to minimise the potential impacts to the Inverness primary radar. This has involved detailed analysis and micro-siting refinement.

16.5.5 Baseline Conditions and Assessment of Effects

16.5.5.1 MoD

There are no military radars that are predicted to be affected by the Development. Therefore, the magnitude of effect for radar would be 'no effect' and the resulting impact significance would be 'not significant' by definition.

The Development is within a 'low priority' military low flying area. Military low flying areas are of regional scale. The level of acceptable development within a zone is variable and complicated to determine, however the overall sensitivity is considered 'low' are the MoD state the low priority zone is *"less likely to raise concerns"*.

The MoD has not objected to the Development and through further consultation the requirement for visible spectrum aviation lighting has been agreed to be removed by the MoD.

16.5.5.2 Civil Aviation

The nearest licensed aerodrome is Inverness Airport, approximately 42 km northeast of the Site; there are no nearby active unlicensed airfields.

Wind developments can affect airports predominantly by presenting a collision risk to aircraft approaching/departing the airport or by interfering with radar or other navigational aids. The Development falls within the safeguarded areas for Inverness Airport (as defined in CAP 764 – CAA Policy and Guidelines on Wind turbines and CAP 670 – Air Traffic Services Safety Requirements). Therefore, HIAL stated in their scoping response that *"the Development could possibly affect the instrument flight procedures and performance of electronic aeronautical systems for the airport"*.

The proposed development has marginal visibility to the Inverness primary surveillance radar. It has yet to be fully established that this degree of visibility will have any effects on the radar. HIAL, in their scoping response, have adopted a precautionary stance and determined that impacts are likely and hence that radar mitigation is required. HIAL has also stated that they are open to discussions with the Applicant to work to a resolution and establish suitable mitigation which would result in the objection being removed. These discussions are ongoing.

16.5.6 Mitigation

16.5.6.1 MoD

No mitigation required.

16.5.6.2 Civil Aviation

Discussions are ongoing between HIAL and the Applicant to establish radar mitigation.

16.5.7 Residual Effects

Any mitigation strategies will be designed to ensure that adverse impacts are remedied such that any residual effects will not be significant.

16.5.8 Statement of Significance

The potential effects of the Development on aviation activity are understood by the Applicant and Consultees. Significant effects are not predicted for MoD infrastructure; however, some effect is predicted in relation to civil aviation infrastructure. As stated throughout this section, the Applicant and HIAL are in discussions to both better determine impacts and as required to identify suitable mitigation.

17 SUMMARY OF MITIGATION

This Chapter of the Environmental Impact Assessment Report (EIA Report) provides a summary of mitigation measures that have been proposed within the EIA Report to prevent, reduce or offset the effects associated with the Corriegarth 2 Wind Farm (the Development).

Embedded mitigation measures have been integral to the design evolution of the Development as outlined in **Chapter 4: Development Description**. The overall aim of the design strategy was to create a wind farm with a cohesive design that relates to the surrounding landscape whilst taking account of the environmental characteristics of the area in which the Development is located (the Site), for example priority habitats and key ornithological species, peat and hydrological resources.

Table 17.1 presents a schedule of mitigation measures for the Development listed according to the relevant environmental topic, which would be applied during the construction and operation of the Development.

This Chapter has been written by Heather Kwiatkowski, Principal EIA Project Manager at Arcus Consultancy Services Ltd (Arcus). The Chapter has been technically reviewed by Stuart Davidson, Registered EIA Practitioner and Operational Director of Arcus.

Table 17.1 Summary of Mitigation

Environmental Subject Area	Mitigation Proposed	Timing
Chapter 4: Development Description	Micro-siting A micro-siting allowance of 50 metres (m) in all directions is proposed for all turbine infrastructure. This is to allow for a degree of flexibility should unsuitable ground conditions be encountered or in the event of environmental constraints identified during pre-construction surveys. Any changes will be subject to approval of the Ecological Clerk of Works (ECoW) with other specialist environmental advice (e.g. hydrology, archaeology, etc.) as required.	Pre-construction
	Construction Method Statements (CMSs) The construction phase will be controlled via a series of detailed CMSs which will be prepared by a Principal Contractor appointed by the Applicant, who will have overall responsibility for environmental management on the construction site. Construction Environmental Management Plan (CEMP) A Construction Environmental Management Plan (CEMP) will be the overarching document which combines the principles of all other management plans and environmental plans outlined within this EIA Report and would support the CMSs. The CEMP will typically be supported by the following documents which apply to the construction process: • Water Construction Environment Management Plan; • Pollution Prevention Plan (as required under SEPA Construction Licence); • Site Waste Management Plan; • Peat Management Plan; • Ecological Protection Plan (incorporating Species Protection Plan, Breeding Bird Protection Plan and any habitat protection measured required during construction); • Traffic Management Plan.	Pre-construction and during construction

Chapter 6: Landscape and Visual Amenity	Embedded Proposed The layout design of the Development is a vital part of the EIA process and is the stage where the biggest contribution can be made to mitigate potential landscape and visual effects, creating a wind farm which is appropriate for the existing landscape character and visual amenity of an area. The design of the Development has evolved as part of an iterative process which has aimed to provide an optimal design in environmental, as well as technical and economic, terms. Landscape and visual mitigation measures have been a central consideration throughout the design process. General Design Objectives • To develop a cohesive turbine layout which is appropriate in scale and extent and will be legible in key views as experienced from the surrounding landscape; • Avoid dense clusters of overlapping turbines and arrange turbines as far as possible to form an evenly spaced group or array when seen from the surrounding landscape, including key viewpoints; • To create a legible pattern which looks designed and organised, and avoids turbines which stand apart and appear as outliers, 'stray tips' and thus extend the horizontal spread of the Development; • To group turbines to create a balanced and coherent image, minimising opportunity for 'stacking' or overlapping of turbine rotors in rows, instead favouring an irregular cluster; • Select an appropriate scale of wind turbine for the Development (maximum tip height and indicative tower height and rotor diameter), which appears in scale with the landscape and other referenceable features, including other existing wind farm developments, when viewed from the host landscape or adjacent landscapes; and • To develop a layout that relates well to other individual wind farms, or groups of wind farms in the local vicinity, as well as being coherent in its own right; and • To develop a layout that fulfils the above objectives whilst respecting other technical and environmental constraints including ecological, hydrological and ground conditions identified during the EIA process. Site Specific Design Objectives • To complement the layout and design of the Operational Corriegarth Wind Farm, integrating the Development so that it creates a consistent visual image and avoids conflicting or discordant relationships between the two, so that the two developments appear as one coherent wind farm development 'cluster'; • To ensure the Development does not disproportionately increase the horizontal and vertical extents of the Operational Corriegarth Wind Farm; • To design a turbine layout which responds to the underlying landform and is broadly contained by the peripheral topography of the broad natural 'bowl' of the Site, defined by Carn na Saobhaidhe (602 m AOD) and Carn Fliuch-bhaid (656 m AOD) to the west and Carn na Saobhaidhe (811 m AOD) to the east; • Minimise additional effects by avoiding the highest ground and sensitive skylines formed by the surrounding hills and ridges which contain the interior of the Site, including Carn Ruighe na Gaoithe and Beinn Bhùraich	Pre-submission

Environmental Subject Area	Mitigation Proposed	Timing
	(780 m AOD) to the north, and Carn a' Choire Sheilich (791 m AOD) and neighbouring summits to the south, south-east; • Seek to avoid siting turbines such that those of the proposed extension are seen against the skyline from key viewpoints; • To develop a layout which minimises additional visibility and potential effects on nationally and locally designated landscapes and wild land areas, including the Cairngorms National Park (CNP) and Loch Ness and Duntelchaig Special Landscape Area (SLA), and Wild Land Area (WLA) 20: Monadhliath, beyond those which currently arise from the presence of the Operational Corriegarth Wind Farm; and • To develop a layout which avoids or minimises potential effects on views from settlements, and residential properties within close proximity, most notably those within Stratherrick to the west and north-west of the Site; and • Utilise existing onsite infrastructure as far as possible (e.g. access tracks), and consider the siting of additional ancillary infrastructure to minimise visibility from key sensitive receptors (e.g. transformers, substation/control building). The proposed turbine layout has been designed to minimise potential adverse effects on the surrounding landscape and visual resource. The resulting turbine layout design presents a simple, well balanced image of the Development in views experienced by sensitive visual receptors from designated landscapes and wild land, promoted viewpoints, settlements, recreational routes, transport routes and popular local hill summits across the Study Area. The selection of the candidate turbine has taken into account potential effects on sensitive landscape character types and designated landscapes, in addition to compatibility with the composition and scale of the Operational Corriegarth Wind Farm. The location and management of construction activities has been carefully considered to minimise landscape and visual effects. Ground disturbance on-site would be restricted as far as practicable and any soil materials excavated would be retained on the site for re-use on areas to be re-vegetated following the construction phase. The location of existing infrastructure has influenced the design and siting of the proposed substation, construction compound and tracks. These elements are positioned to minimise further visibility of site infrastructure beyond that of the Operational Corriegarth Wind Farm.	

Environmental Subject Area	Mitigation Proposed	Timing
Chapter 7: Ecology	A critical design consideration has been the avoidance of habitats with high conservation value and potential groundwater dependency, which has been largely achieved by siting the majority of the Development out with sensitive habitats and making use of existing tracks associated with the Operational Corriegarth Wind Farm. Additionally, the sensitive designs of watercourse crossing and culverts have been developed to safeguard the water environment, will also help effectively mitigate construction-related direct and indirect impacts to fish and other aquatic features.	Pre-submission
	Mitigation through practice aims to safeguard of protected species during construction and operation and to restore and enhance peatland habitats. These measures include: • As part of the Ecological Protection Plan (EPP), the Principal Contractor will appoint an Ecological Clerk of Works (ECoW) to provide ecological and environmental advice during construction, including the monitoring of compliance with the recommendations of this EIA Report and subsequent planning conditions; • Pre-construction Surveys for protected species, such as otter and water vole, as well as electro-fishing will be undertaken to provide up-to-date information about the distribution and abundance of the protected species identified in the baseline. The results of the surveys will inform the need for and scope of any species protection plans and associated mitigation and licencing requirements for incorporating into the EPP; • A Habitat Management Plan (HMP) will be produced to inform and guide the commencement of practical habitat creation and restoration techniques during the life cycle of the Development.	Pre-construction and during construction
	Mitigation by Practice during the operational phase will ensure no tree generation within 50 m of turbine locations.	Operation

Environmental Subject Area	Mitigation Proposed	Timing
Chapter 8: Ornithology	The Ecological Protection Plan (EPP) would include a breeding bird protection plan to ensure that disruption to nesting birds, and any disturbance to Schedule 1 breeding birds during the construction period is avoided. Pre-construction surveys carried out by a suitably qualified ornithologist would determine whether any breeding activity is taking place within potential species-specific disturbance zones of any proposed infrastructure. A HMP would be implemented to include: • Peatland and habitat restoration, which would be, as a minimum, equivalent in extent to the area of blanket bog to be lost by the Development. This would be located over 500 m from proposed turbine locations, and provide improved habitats for breeding waders and raptor prey, and therefore potentially encourage raptors to forage within; and • Management of deer grazing, so that a diverse sward and shrub level can be created, thereby providing suitable nesting habitat for waders, grouse and potentially raptors. During operation, the following measures would be implemented as part of the HMP: • Removal of carrion from within the Site within 200 m of the Development's wind turbines; • A raptor monitoring programme would be conducted across the estate to determine whether there are any red kite (or white-tailed eagle) nests or roost sites present, helping to inform other management measures listed here; • Within the north of the estate where there is woodland habitat, efforts would be made to conserve any mature trees used, or areas of suitable woodland for nesting red kite/white-tailed eagle, and develop existing stands of maturing trees so they can be used in the future. Annual monitoring would help inform estate management and ensure no disturbance would occur to active nest or roost sites, and that suitable trees can be maintained/safeguarded for future use; • Effort would be made to satellite tag or tag red kites and/or white-tailed eagles from nests within the estate, or in the local area. Tagging would help determine birds' usage and flight activity near wind turbines and where they most often forage, to target any future management. Increasing tagging would also potentially decrease the likelihood of illegal persecution which continues to be reported in some parts of the Highlands; and • A financial/ data sharing contribution would be made to the Regional Eagle Conservation Management Programme (RECM) within NHZ 10 to help continue the progress seen by the increase in active golden eagle territories in recent years.	Pre-construction and during construction Operation
Chapter 9: Archaeology and Cultural Heritage	Known archaeological features have been avoided and no mitigation is recommended. The greatest archaeological potential for unknown and unrecorded archaeology of significance is in proximity to the watercourses and most likely to be shieling huts; however, there was no visible sign of shielings at the proposed watercourse crossings associated with the Development so that this potential is low with no mitigation required.	N/A

Environmental Subject Area	Mitigation Proposed	Timing
Chapter 10: Noise	On-site concrete batching plant will be employed during the construction of turbine foundations, rather than importing ready-mix concrete, in order to reduce traffic numbers and therefore associated haulage noise levels, avoiding a potential significant adverse effect. Mitigation for construction traffic noise will be offered to the residents of Garthbeg Bungalow, in the form of temporary noise control barriers installed at the boundary of their garden adjacent to the site access track. The good practice measures will be implemented to include: • Operations shall be limited to times agreed with the Highland Council; • Deliveries of turbine components, plant and materials by HGV to site shall only take place by designated routes and within times agreed with the Council; • The site contractors shall be required to employ the best practicable means of reducing noise emissions from plant, machinery and construction activities, as advocated in BS 5228; • Where practicable, the work programme will be phased, which would help to reduce the combined effects arising from several noisy operations; • Where necessary and practicable, noise from fixed plant and equipment will be contained within suitable acoustic enclosures or behind acoustic screens; • All sub-contractors appointed by the main contractor will be formally and legally obliged, and required through contract, to comply with all environmental noise conditions; • Where practicable, night-time working will not be carried out. Local residents shall be notified in advance of any night-time construction activities likely to generate significant noise levels, e.g., abnormal load movement; and • Any plant and equipment normally required for operation at night (23:00 - 07:00), e.g. generators or dewatering pumps, shall be silenced or suitably shielded to ensure that the night-time lower threshold of 45 dB, LAeq,night shall not be exceeded at the nearest noise-sensitive receptors.	Construction
Chapter 11: Traffic and Transportation	On-site concrete batching plant will be employed during the construction of turbine foundations, rather than importing ready-mix concrete, in order to reduce traffic numbers and therefore associated haulage noise levels, avoiding a potential significant adverse effect. Implementation of a Traffic Management Plant, in consultation with the Community Liaison Group, to include at minimum: • Management of junctions; • Timing of movements; and • Traffic management measures. A framework Construction TMP is provided at Appendix 11.1 to the EIA Report.	Construction

Environmental Subject Area	Mitigation Proposed	Timing
Chapter 12: Hydrology and Hydrogeology	The following mitigation measures relating to the hydrological environment are embedded into the design and construction of the Development: 50 m watercourse buffers for construction works with the exception of watercourse crossings. Construction good practice methods and works for protection of hydrological receptors as outlined in the Appendix A12.1: Outline WCEMP. The Outline WCEMP describes water management measures to control surface water run-off and drain hardstanding's and other structures during the construction and operation of the Development. This will form part of a Pollution Prevention Plan (PPP) to be implemented for the Development.	Pre-submission Construction
Chapter 13: Geology & Peat	Micrositing allowance of 50 m for turbine, where feasible in regards to other constraints, to reduce the impact on deep peat and peaty soils. Peat re-use will be contained to onsite uses within the estate, along infrastructure, borrow pits and in compensatory Habitat Management and degraded bog improvements. Implementation of construction best practice, good drainage and regular slide risk monitoring to be incorporated into the CEMP. Slope stability monitoring will occur during pre-construction and construction phases of work, including for both peat stability and non-peat related stability. These would focus on locations highlighted as being of risk as highlighted in the Hazard Risk Zonation Plan. Best practice measures for managing excavated peat and peaty soils are detailed in the Outline Peat Management Plan, Appendix 13.2.	Pre-construction and during construction
Chapter 14: Socio-Economics, Recreation and Tourism	Temporary health and safety signage during construction period of the Development will be erected at appropriate locations for the Core Path IN25.02 and the Trail of the Seven Lochs. Engagement with the Inverness Chamber of Commerce (ICoC) and Highlands and Islands Enterprise (HIE) to use existing local supply chain networks such as the "O4B" website (https://www.o4b-highlandsandislands.com/) as part of their procurement strategy.	Construction

Environmental Subject Area	Mitigation Proposed	Timing
Chapter 15: Climate Change	The design choices made as a consequence of the key constraints are considered to be mitigation which is 'embedded' in the design; the following are most relevant for the CCIA: • Development infrastructure is built to withstand strong windspeeds and to harness energy; • Turbine spacing is sufficient to reduce turbulence effects on turbines downwind; • The turbines are located to maximise energy generation while minimising environmental impacts; • The Development design aims to reduce impacts on peat – e.g. through use of existing track layout and avoiding areas of deep peat where possible; • Implementation of a CEMP, PMP etc. during construction to minimise environmental impacts and peat disturbance; and • Buffers from watercourses incorporated in layout design, protecting water quality and also protecting Development infrastructure from flooding.	Pre-submission
Chapter 16: Other Issues	No effects identified for Telecommunications and Television. However, in the event that interference which is directly attributable to the Development is experienced, the Applicant will endeavour to implement a suitable mitigation solution. The general approach to wind farm development is to avoid adverse effects on aviation infrastructure where possible, and to find appropriate technical mitigation solutions where this cannot be achieved. The proposed development has marginal visibility to the Inverness primary surveillance radar. It has yet to be fully established that this degree of visibility will have any effects on the radar. HIAL, in their scoping response, have adopted a precautionary stance and determined that impacts are likely and hence that radar mitigation is required. HIAL has also stated that they are open to discussions with the Applicant to work to a resolution and establish suitable mitigation which would result in the objection being removed. These discussions are ongoing.	Pre-construction and during construction