

RES Group

Cairn Duhie Wind Farm **EIA Scoping Report**

Draft report

Prepared by LUC

February 2020

RES Group

Cairn Duhie Wind Farm
EIA Scoping Report

Version	Status	Prepared	Checked	Approved	Date
1.	Template for issue to team	L. Mallon / C. Wells	J. Cottin	J. Cottin	13.12.2019
2.	Draft Scoping Report for client review	L. Mallon	J. Cottin	J. Wright	31.01.2020

Contents

Figures	ii	Site and Proposed Study Area	15
		Landscape Character	16
		Designated Landscapes and Wild Land Areas	16
Chapter 1	1	Visual Receptors	17
Introduction		Design Considerations	17
Project Background	1	Proposed Surveys and Assessment Methodology	18
Application for Section 36 Consent	1	Visualisations	18
The Applicant	2	Landscape Effects	18
Document Structure	2	Visual Effects	18
		Cumulative LVIA (CLVIA)	20
		Assessment of Visible Aviation Lighting	22
		Approach to Mitigation	22
		Consultation Proposals	22
Chapter 2	3	Chapter 6	
The EIA Process and Assessment Methodology		Hydrology, Hydrogeology, Geology and Peat	23
What is EIA?	3	Introduction	23
The EIA Process	3	Existing Conditions	23
Screening	4	Design Considerations	24
Scoping	4	Survey and Assessment Methodology	24
Baseline Conditions	4	Potential Effects	26
Assessment of Effects	4	Approach to Mitigation	26
Assessing Significance	5	Consultation Proposals	27
Cumulative Assessment	6	Chapter 7	
Approach to Mitigation	6	Ecology	28
Uncertainty	6	Introduction	28
EIA Report Structure	6	Existing Conditions	28
		Design Considerations	30
Chapter 3	8	Survey and Assessment Methodology	30
Project and Site Description		Potential Effects	32
The Site and Surroundings	8	Approach to Mitigation	32
The Proposed Development	8	Consultation Proposals	32
		Chapter 8	
Chapter 4	11	Ornithology	34
Planning and Legislative Context		Introduction	34
Introduction	11	Existing Conditions	34
Local Planning Policy	11	Design Considerations	36
National Planning Policy	13		
Chapter 5	15		
Landscape and Visual Effects			
Introduction	15		

Contents

Survey and Assessment Methodology	36	Potential Effects	49
Potential Effects	38	Approach to Mitigation	50
Approach to Mitigation	39	Consultation Proposals	50
Consultation Proposals	39		
<hr/>			
Chapter 9		Chapter 13	
Cultural Heritage	40	Other Issues	51
Introduction	40	Introduction	51
Existing Conditions	40	Aviation	51
Design Considerations	41	Communications and Telecommunications	52
Survey and Assessment Methodology	41	Shadow Flicker	52
Potential Effects	41	Climate Change, including Carbon Balance	52
Approach to Mitigation	42	Population and Human Health (including dust)	53
Consultation Proposals	43	Major Accidents and Disasters	53
		Consultation Proposals	53
<hr/>			
Chapter 10		Appendix A	
Noise	44	Consultee List	A-1
Introduction	44		
Existing Conditions	44	Appendix B	
Design Considerations	44	Questions for Consultees	B-1
Survey and Assessment Methodology	44		
Potential Effects	45	Figures	
Approach to Mitigation	45	Figure 1.1: Site Location	
Consultation Proposals	45	Figure 1.2: Consented Site Layout (2017) and Proposed Site Layout (2020)	
		Figure 3.1: Site Layout of Proposed Development	
<hr/>			
Chapter 11		Figure 5.1: Landscape Character Types	
Access, Traffic and Transport	46	Figure 5.2: Designated Landscapes and Wild Land Areas	
Introduction	46	Figure 5.3: Blade Tip Height (149.9m) Zone of Theoretical Visibility (ZTV) and Viewpoint Locations	
Existing Conditions	46	Figure 5.4: Cumulative Wind Farm Development	
Survey and Assessment Methodology	46	Figure 7.1: Ecological Designated Sites within 5km	
Approach to Mitigation	47	Figure 8.1: Ornithological Designated Sites within 20km	
Consultation Proposals	47	Figure 8.2: Vantage Points and Viewsheds	
		Figure 8.3: Site Boundary, Ornithology Survey and Study Areas	
<hr/>			
Chapter 12			
Socio-economics	49		
Introduction	49		
Existing Conditions	49		
Design Considerations	49		
Survey and Assessment Methodology	49		

Contents

Figure 9.1: Cultural Heritage Designations and Zone of Theoretical Visibility (ZTV)

Chapter 1

Introduction

Project Background

1.1 RES UK & Ireland Ltd (hereinafter referred to as RES), a subsidiary of Renewable Energy Systems Holdings Ltd, is proposing to develop the Cairn Duhie Wind Farm (hereinafter referred to as 'the proposed development').

1.2 The site is located near Ferness, Nairnshire, and is approximately 15km south-east of Nairn and 13.5km north/north-west of Grantown-on-Spey. The site is within the administrative boundary of the Highland Council (THC). The location of the proposed development is shown in **Figure 1.1**.

1.3 The proposed development is located on the site of the consented Cairn Duhie Wind Farm (hereinafter referred to as the 'consented development') which was approved in 2017 and comprises 20 wind turbines up to 110m to turbine blade tip. The consented layout is shown in **Figure 1.2** alongside the proposed re-design of the consented development which comprises 16 turbines, each up to 149.9m in height to blade tip.

Application for Section 36 Consent

1.4 Following a review of technical, economic and environmental factors, RES considers that there is a need to seek to optimise the consented development to maximise the opportunity to contribute to current renewable energy targets and to ensure financial viability.

1.5 RES therefore intends to apply to the Scottish Government Energy Consents Unit (ECU) for a new Section 36 consent under the Electricity Act 1989 ('the Act') for the development of a revised design of Cairn Duhie Wind Farm for 16 turbines up to 149.9m (subject to final design). The application will be made to the ECU as it is anticipated that the proposed development will have a generation capacity in excess of 50 MW. The site boundary will remain the same as the consented development. In addition, a direction will be sought for deemed planning permission under Section 57 of the Town and Country Planning (Scotland) Act 1997, as amended.

1.6 It is acknowledged that the proposed development should be subject to an Environmental Impact Assessment (EIA) under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ('the EIA Regulations'), and the application for Section 36 consent will

be accompanied by an EIA Report. Further details on the approach to the EIA are provided in **Chapter 2**.

1.7 The EIA Regulations provide for obtaining a Scoping Opinion from Scottish Ministers as to the environmental effects to be considered in the EIA (Regulation 12). This document accompanies RES's written request to the Scottish Government for a 'Scoping Opinion' as to which environmental effects are to be considered in the EIA. It provides details of the proposed development, the site and surrounding area, and the environmental survey work undertaken to date. Likely significant effects as a result of the proposed wind farm are identified and the proposed approach to assessing these is outlined.

The Applicant

1.8 RES is the world's largest independent renewable energy company active in onshore and offshore wind, solar energy, energy storage and transmission and distribution. At the forefront of the Industry for over 35 years, RES has delivered more than 17 gigawatts (GW) of renewable energy projects across the globe and supports an operational asset portfolio exceeding 5GW worldwide for a large client base. Understanding the unique needs of corporate clients, RES has secured 1GW of Power Purchase Agreements (PPAs) enabling access to energy at the lowest cost. RES employs more than 2,000 people and is active in 10 countries.

1.9 From its Glasgow office, RES has been developing, constructing and operating wind farms in Scotland since 1993. RES has developed and/or built sixteen wind farms in Scotland, with a total generation capacity of 417 megawatts (MW). RES is currently preparing to construct Blary Hill Wind Farm in Argyll and Bute and will shortly complete construction of Solwaybank Wind Farm in Dumfries and Galloway.

Document Structure

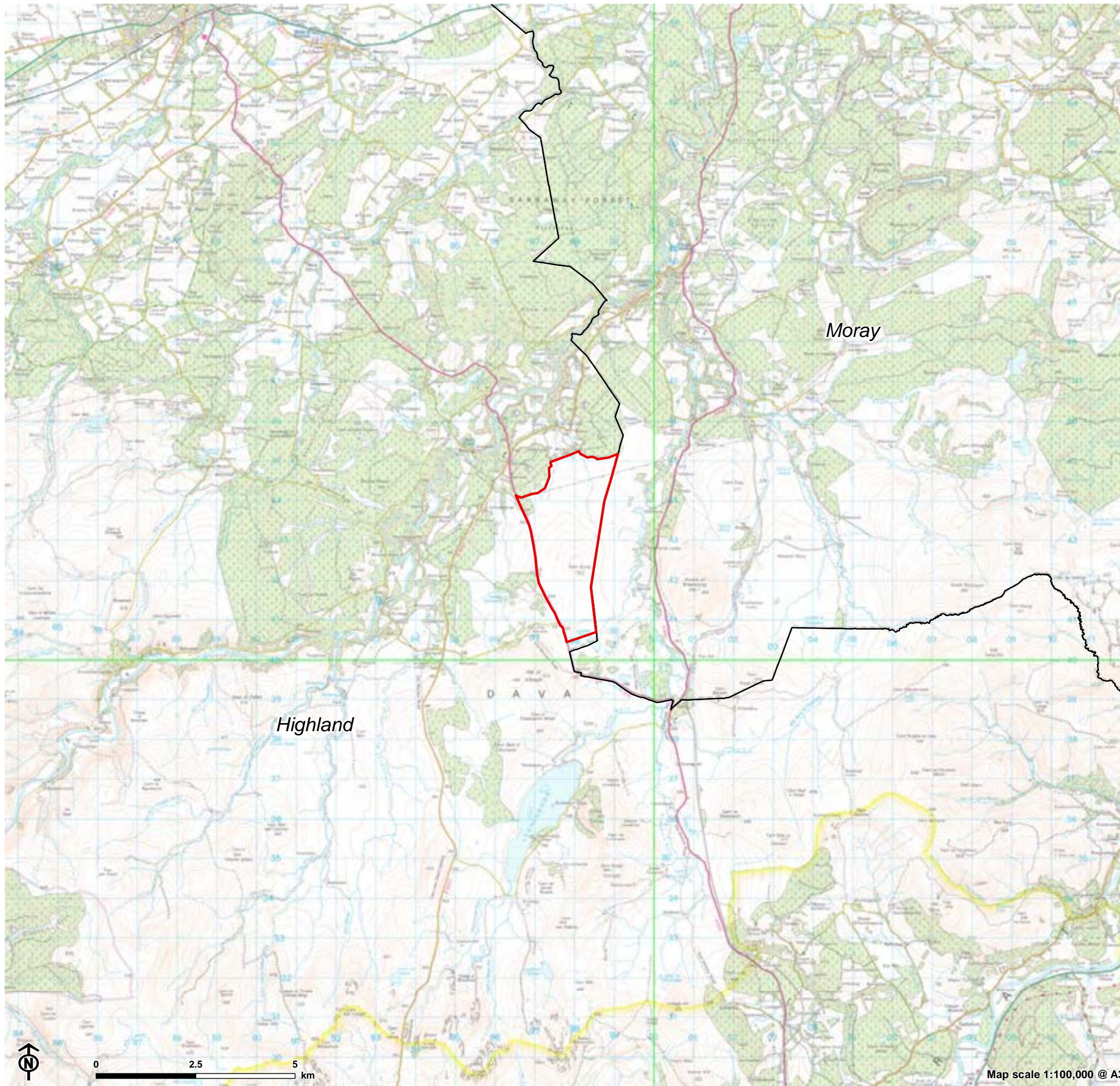
1.10 The remainder of this report is structured as follows:

- **Chapter 2** provides information on the EIA process and assessment methodology;
- **Chapter 3** provides a brief description of the site and the nature and purpose of the proposed development;
- **Chapter 4** describes the policy and legislation relevant to the proposed development; and
- **Chapters 5-13** outline the topic areas to be considered in the EIA.

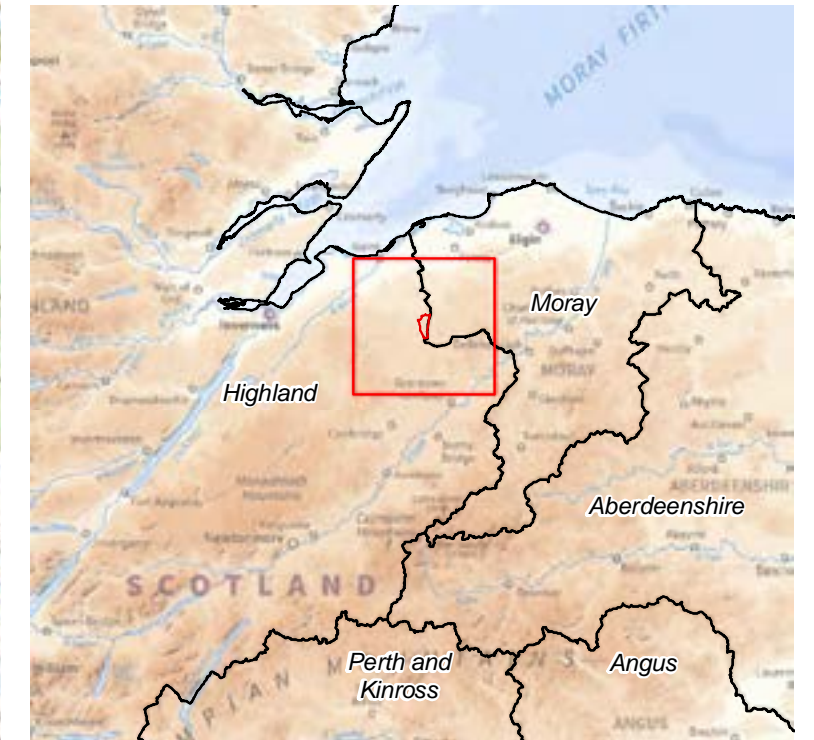
1.11 Appendix 1 details the consultees that will be approached by the ECU to inform the scope of the EIA, as well as those that will be approached for information to inform the EIA.

1.12 The Scoping Report is submitted to confirm the approach to the EIA and a number of specific questions are embedded within the Scoping Report to seek to inform consultee responses. These are collated in **Appendix 2**.

Figure 1.1: Site Location



- Site boundary
- Local authority boundary



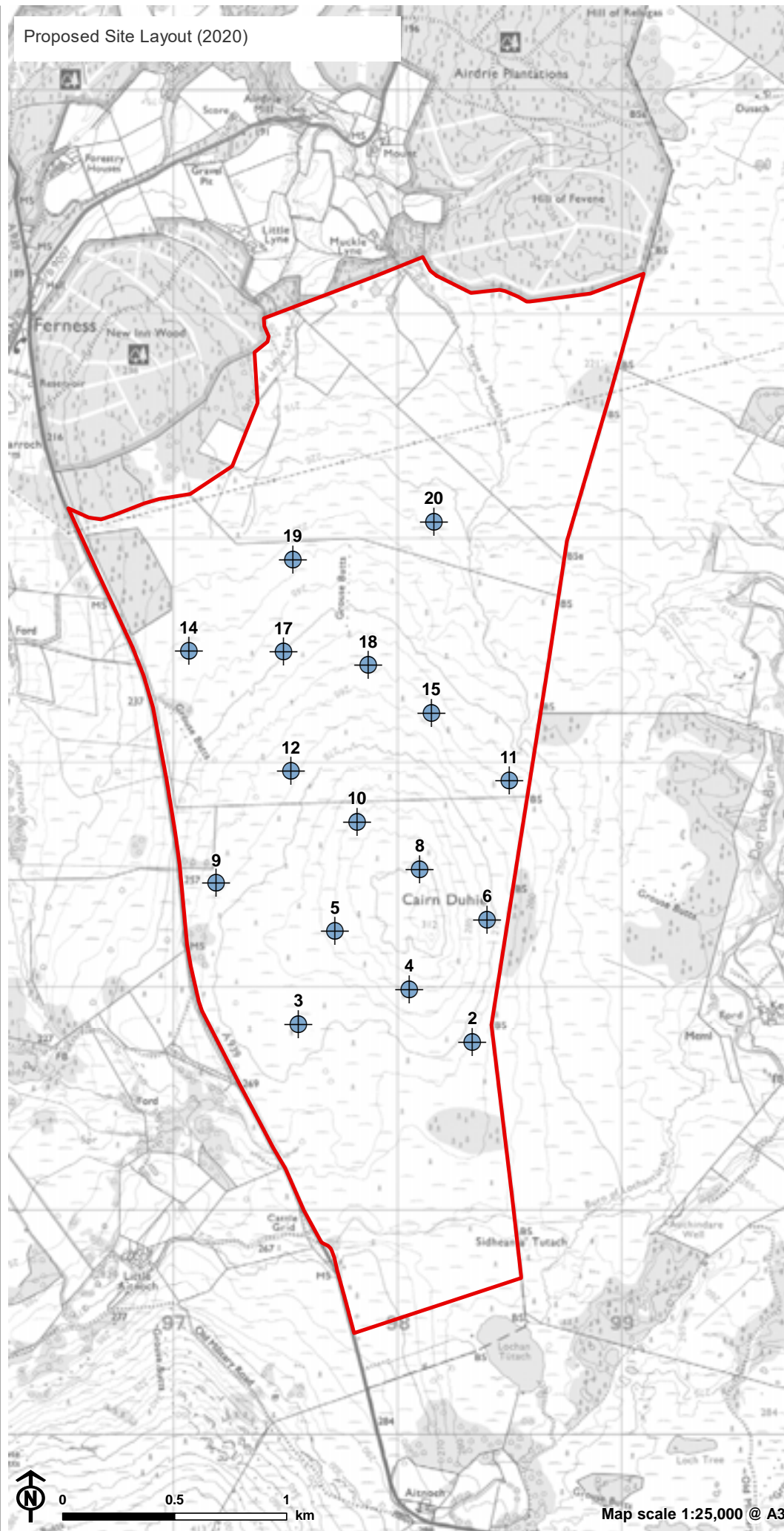
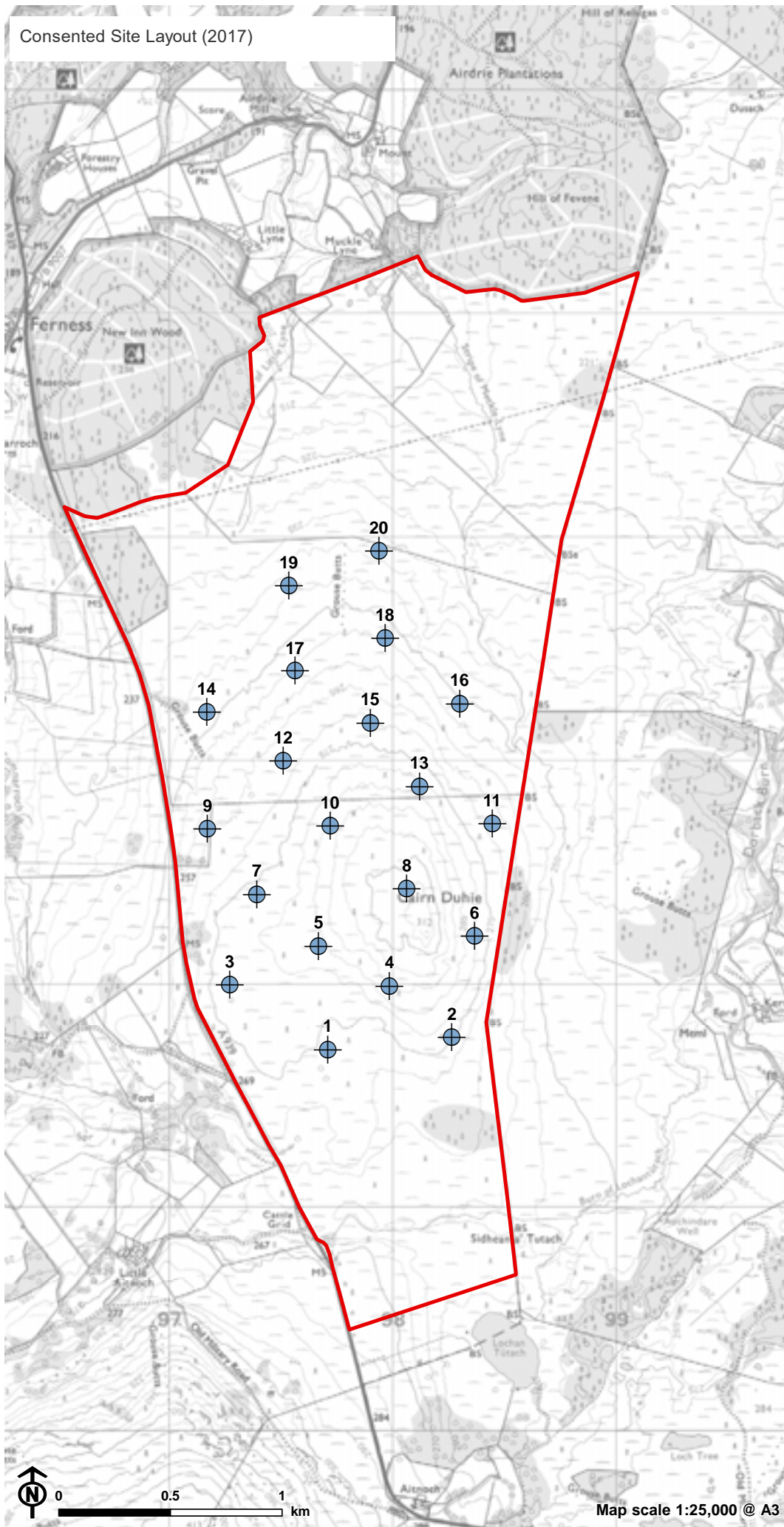




Figure 1.2: Consented Site Layout (2017) and Proposed Site Layout (2020)

-  Turbine
-  Site boundary

Chapter 2

The EIA Process and Assessment Methodology

What is EIA?

2.1 EIA is the process of systematically compiling, evaluating and presenting all the likely significant environmental effects, both positive and negative, of a proposed development, to assist the determining authority in considering the application. It enables the significance of these effects, and the scope for reducing negative, or enhancing positive, effects to be clearly understood. The information compiled during the EIA is presented within an EIA Report to accompany the application for consent. Early detection of potentially adverse environmental effects informs iterations to the design of the proposed development to avoid or reduce effects.

2.2 EIA is an iterative process and runs in tandem with project design. As potential effects are identified, the design of the proposed development will be adjusted to reduce or avoid adverse effects where possible, and mitigation measures will be proposed as appropriate.

2.3 The EIA will be conducted in accordance with current Scottish Government regulations, policy and guidance, including:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;
- Scottish Government Web Based Guidance on wind turbines (May 2014);
- Scottish Planning Policy (SPP) (June 2014);
- Planning Advice Note (PAN) 3/2010 Community Engagement (2010);
- Planning Circular 3 2013 Development Management Procedures;
- Scottish Natural Heritage (SNH) (2018) (Version 5), A Handbook on Environmental Impact Assessment;
- Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment; and
- PAN 1/2013 Environmental Impact Assessment (updated June 2017).

The EIA Process

2.4 The EIA process usually follows the following stages:

- Screening may be the first stage of the EIA process where the relevant authorities need to decide whether EIA is required.
- Once it has been agreed that EIA is required, scoping is undertaken to define what should be assessed as part of the EIA and reported in the EIA Report.
- With the scope set, relevant information on the environmental baseline conditions is collected. This information is then used initially to understand the likely environmental effects and to inform the design of the development to minimise the potential for significant adverse effects.
- The formal assessment process is undertaken on the final design to identify the likely significant effects of the development.
- Where significant adverse effects cannot be minimised through alterations to the design, mitigation measures are considered.
- Monitoring to measure the actual significance of the effect during and post-construction to allow management of mitigation where appropriate.

2.5 Once the EIA is completed, the EIA Report is submitted to the determining authority for consideration with the application for consent.

Screening

2.6 Development projects that are described within Schedule 1 of the EIA Regulations will always require EIA and are referred to as 'Schedule 1 Developments'. Development projects listed in Schedule 2 that are located in a 'sensitive area', or which exceed one of the relevant criteria or thresholds given in Schedule 2 are referred to as 'Schedule 2 Developments'. Not all Schedule 2 Developments require EIA as only a development project that is likely to have significant environmental effects by virtue of its size, location or nature will require such assessment. A development project that requires EIA is referred to as 'EIA development'.

2.7 In this case, the proposed development (as described in **Chapter 3**) is of a type described within Schedule 2 as an installation for the harnessing of wind power for energy production. It is not located within a 'sensitive area' as defined by the EIA Regulations; however, the project would exceed both of the applicable thresholds as it involves more than two wind turbines with hub heights of more than fifteen metres. The requirement for EIA is therefore determined on the basis of whether the project would be likely to give rise to significant effects on the environment by virtue of its size, nature or location.

2.8 The scale, nature and location of the proposed development are such that, to allow the environmental impacts of the project to be appropriately considered, RES has taken the decision to prepare an EIA. As such, no Screening Opinion will be sought.

Scoping

2.9 The purpose of scoping is to focus the EIA on the likely and relevant significant environmental effects associated with the development. On the basis of the expert judgement of the assessment team, experience from similar projects, as well as additional policy, guidance and standards of relevance, each topic chapter within this report will outline both:

- Potential likely significant effects associated with the construction and/or operation of the proposed development, identified for detailed consideration within the EIA Report.
- Effects which are considered unlikely to be significant and requiring no further assessment. Whilst these topics fall outside of the scope of assessment, they will be referred to in turn within the EIA Report.

Baseline Conditions

2.10 The EIA Regulations require that aspects of the environment, which are likely to be significantly affected by the proposed development, are clearly defined within the EIA Report. To achieve this, it is necessary to gather environmental information on the current and existing status of each topic proposed for consideration as part of the EIA, i.e. 'baseline conditions'.

2.11 Baseline conditions are not static, and it is often necessary to update them with further baseline surveys to ensure that the data upon which the EIA is based is up to date and accurately reflects the current situation of the receiving environment. For the purposes of the assessment, the baseline is considered to be the existing site which is currently undeveloped. Details on the existing conditions of the site, and the surveys which have been undertaken for each topic are detailed in **Chapters 5 to 13** below.

2.12 In accordance with the 2017 EIA Regulations, climate change will also be considered in the context of understanding the baseline conditions for each topic area.

Assessment of Effects

2.13 For each topic that is identified as requiring further study, a detailed technical assessment will be carried out in line with the scope and methodology agreed upon with relevant consultees. Individual technical assessment will be undertaken by a competent and appropriately qualified

consultant in which technical standards and relevant guidance will be adhered to. A range of relevant and appropriate methodologies will be employed to assess the potential effects associated with the proposed development. These assessments will take both the construction and operational phases of the proposed development into account and will be carried out in relation to the site and surrounding area.

2.14 The EIA Regulations (Regulation 4 (2), (3) and (4)) specify that:

“(2) The environmental impact assessment must identify, describe and assess in an appropriate manner, in light of the circumstances relating to the proposed development, the direct and indirect significant effects of the proposed development (including, where the proposed development will have operational effects, such operational effects) on the factors specified in paragraph (3) and the interaction between those factors.

(3) The factors are —

- (a) population and human health;*
- (b) biodiversity, and in particular species and habitats protected under Council Directive 92/43/EEC on the conservation of natural habitats and wild flora and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds;*
- (c) land, soil, water, air and climate; and*
- (d) material assets, cultural heritage and the landscape.*

(4) The effects to be identified, described and assessed under paragraph (2) include the expected effects deriving from the vulnerability of the development to risks, so far as relevant to the development, of major accidents and disasters.”

2.15 The EIA is being coordinated by LUC, and the following topics have been identified for detailed assessment for the proposed development. The organisations undertaking the specialist assessments are also noted below:

- Landscape and Visual Amenity (LUC);
- Hydrology, Hydrogeology, Geology and Peat (Wallingford HydroSolutions and SLR);
- Ecology (MacArthur Green);
- Ornithology (MacArthur Green);
- Cultural Heritage (SLR);
- Noise (RES);
- Access, Traffic and Transport (Pell Frischmann);

- Socio-Economics (LUC); and
- Other Issues (LUC).

2.16 The EIA Regulations (Regulation 5 (2)) further specify that:

“(2) An EIA report is a report prepared in accordance with this regulation by the developer which includes (at least)

- (a) a description of the development comprising information on the site, design, size and other relevant features of the development;*
- (b) a description of the likely significant effects of the development on the environment;*
- (c) a description of the features of the development and any measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;*
- (d) a description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;*
- (e) a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and*
- (f) any other information specified in schedule 4 relevant to the specific characteristics of the development and to the environmental features likely to be affected.”*

Assessing Significance

2.17 The EIA Regulations do not define significance and it is, therefore, necessary to define this for the proposed development. The methods for predicting the nature and magnitude of any potential impacts vary according to the topic assessed. Quantitative methods of assessment can predict values that can be compared against published thresholds and indicative criteria in Government guidance and standards. However, it is not always possible to ascribe values to environmental assessments and thus qualitative assessments are also used. Such assessments rely on previous experience and professional judgement. The methodologies used for assessing each topic area will be described within the individual chapters of the EIA Report.

2.18 The following criteria will be used to evaluate the significance of potential impacts of the proposed development.

- sensitivity, importance or value of the resource of receptor;
- extent and magnitude of the impact;

- duration of the impact;
- nature of the impact;
- performance against environmental quality standards; and
- compatibility with environmental policies.

Cumulative Assessment

2.19 An assessment will be made of the likely significant cumulative effects of the proposed development in combination with other wind farms including¹:

- schemes which have been submitted to the relevant authorities but not yet determined;
- schemes which are consented; and
- schemes which are under construction².

2.20 The scope and methodology for the cumulative assessment will be agreed with the relevant statutory consultees, including the Highland Council and Scottish Natural Heritage (SNH). Study areas will be defined separately for each topic assessed in the EIA to reflect the likely extent of potential effects.

Approach to Mitigation

2.21 Part 7 of Schedule 4 of the EIA Regulations notes that the EIA Report should include:

“A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases”.

2.22 In many cases, mitigation measures are embedded within the proposed development (either through design, good practice during construction, or operation), whereby likely significant adverse effects are avoided. However, where necessary, additional mitigation measures are required to reduce the significance of effects.

Uncertainty

2.23 The EIA process is designed to enable good decision-making based on the best possible information about the environmental effects of a proposed development. There will, however, always be an element of uncertainty as to the exact scale and nature of the effects. These may arise through shortcomings in available information or due to the limitations of the professional judgement process. As required in Schedule 4, Part 6 of the EIA Regulations, it is important that such uncertainty is explicitly recognised, and that the EIA Report includes:

“A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved”.

EIA Report Structure

2.24 The EIA Report structure will be structured as follows, subject to any changes to the scope identified through the consultation process:

- development description;
- an outline of the main alternatives studied and an indication of the main reasons for choosing the preferred option;
- details of the planning and renewable energy policy context that is relevant to the proposed development;
- individual environmental assessment topic chapters, including a description of the mitigation measures required to prevent, reduce and, where possible, offset any significant adverse effects on the environment; enhancement measures where possible will also be included.

2.25 Each chapter of the EIA Report, where practicable, will adopt a consistent format. This will ensure compliance with the EIA Regulations regarding completeness and accuracy. Each chapter will comprise an opening introduction to the topic followed by:

- Methodology, Consultation and Legislation/Policy/Guidance;

¹ The EIA Regulations require only that the assessment considers effects resulting from “the cumulation of the impact with the impact of other existing and/or approved development”, however schemes which are the subject of valid

planning applications will also be considered where required and agreed with the determining authorities.

² Operational schemes will be considered as part of the baseline for the purposes of the assessments.

Chapter 2

The EIA Process and Assessment Methodology

Cairn Duhie Wind Farm

February 2020

- Environmental Baseline (derived from desk studies and surveys undertaken);
- Impact Assessment (identification of the impacts and their significance);
- Mitigation (and monitoring as appropriate);
- Residual Effects (assessment of impact significance once mitigation has been incorporated); and
- Summary.

2.26 The EIA Report will also include a Non-Technical Summary (NTS) and supporting technical appendices including tables, figures and reports.

Chapter 3

Project and Site Description

The Site and Surroundings

3.1 The proposed development is situated approximately 2km to the south-east of the small settlement of Ferness (distance from the settlement to the site centre) and approximately 15m to the south east of Nairn (distance from the centre of Nairn to the site centre), located within the Inner Moray Firth, which is part of The Highland Council area. The site is bounded to the west by the A939 road and the B9007 to the north, whilst the eastern extent is parallel to the local authority boundary with Moray Council, which is physically marked by a post and wire fence. The site covers an area of approximately 666 hectares (ha). The location of the proposed development is shown on **Figure 1.1**.

3.2 The landform of the site is characteristic of the wider landscape, comprising open upland with a mixture of land cover, including degraded bog and heath habitats with localised wooded areas and scattered mature trees, with coniferous plantations occupying areas to the north. In addition, 275 kilovolt (kV) overhead transmission lines mounted on steel towers traverse the northern part of the site to the west. Contained within the site is the low conical hill of Cairn Duhie, marking the highest point (at 312m Above Ordnance Datum (AOD)). Land gently slopes down from this point in all directions, reaching the lowest point to the north of the site (200m AOD). The site is enclosed by higher topography to the south and east by the Hill of Aitnoch (413m AOD) and the Knock of Braemoray (456m AOD) respectively.

3.3 There are several minor watercourses located within the site, including evidence of systematic drainage channels, as well as the Burn of Lochantùtach, which drains the southern extents of the site and is a tributary of the Dorback Burn which flows perpendicular to the east of the site. The northern part of the site is drained by the Stripe of Muckle Lyne and the Stripe of Little Lyne, which both drain northwards into the River Findhorn. To the south of the site lies Lochan Tùtach.

The Proposed Development

3.4 RES is investigating the potential for a wind farm development (a re-design of the consented 20-turbine Cairn Duhie Wind Farm), consisting of the erection, 35-year operation and subsequent decommissioning of 16 turbines, each up to 149.9m in height to blade tip. The principal elements of the proposed development are described in

further detail below. The site layout of the proposed development is shown in Figure 3.1.

Wind Turbines

3.5 The turbines would be of a typical modern design comprising a three bladed rotor hub mounted on a nacelle (containing a gearbox and a generator), tower and foundation.

3.6 Final turbine selection would be made following the grant of consent following a tendering and procurement exercise. The EIA will therefore be undertaken on the basis of a candidate turbine design consisting of:

- A horizontal axis type with a rotor consisting of three blades, each up to approximately 57m in length (giving a total rotor diameter of up to approximately 117m);
- A maximum height to vertical blade tip of 149.9m.

Access

3.7 It is expected that the principal access routes that will be used for general construction traffic will be:

- Route 1: Approach from the west of Nairn along the A96 before joining the A939 in Nairn and following southwards to the site entrance; and
- Route 2: Approach from the east of Nairn along the A96 before joining the A939 in Nairn and following southwards to the site entrance.
- Route 3: smaller volumes of traffic approaching from south of the site leaving the A9 at the Granish junction and following the A95 to Dulnain Bridge then taking the A938, B9007 and A939 to site.

3.8 It is expected that the wind turbines would be delivered to the Port of Inverness. From here, the turbines would depart and continue north-east on Longman Drive/Stadium Road. The route continues under the Kessock Bridge heading south-east on the A9, before turning east onto the A95 towards Carrbridge, continuing north-east along the A95 then joining the A938 at Dulnain Bridge to head west. Following the A938 turn, the route continues west before turning onto the B9007, proceeding north to Ferness, and finally turning south on the A939 towards the site entrance. The majority of the proposed turbine delivery route has recently been successfully used for the Tom na Clach wind farm project.

3.9 Off-site highways work will be required to facilitate wind turbine component delivery. The two areas where this is anticipated include minor widening of the junction of the A938/B9007 and constructing an access track, linking the B9007 and the A939, through a triangular field in Ferness village.

Associated Development

Site Tracks

3.10 On site tracks will provide access for construction and maintenance vehicles from the site entry point to the substation and wind turbines. These would be installed at the commencement of the construction phase and would remain until the end of the decommissioning phase. They would have a 4.5m running width with local widening on corners and would be surfaced with coarse aggregate. Depending on localised ground conditions, they would either be cut into, or floated above, the ground.

Temporary Construction Compound

3.11 A temporary construction compound and storage area will be installed to provide a secure area for site office facilities and storage of materials and components. The compound will be constructed adjacent to the site track, with a 50m x 60m hardcore base. At the end of the construction phase the hardcore base will be covered over and allowed to re-vegetate or retained as a location for battery storage if suitable.

Crane Hardstandings

3.12 Crane hardstandings will provide a level and firm base for the cranes at the location of each turbine. Each would be 40m x 30m and surfaced with coarse aggregate.

Transformer Housings

3.13 The transformers to step up the voltage exported from each turbine (from 690 volts (V) to 33kV) would be placed within the wind turbines.

High Voltage and Control Cables

3.14 Power and control circuits will be required to link each turbine to the on-site substation. Cables would be buried in trenches (dimensions to be determined by ground conditions but typically 0.5m wide x 1m deep).

Forestry

3.15 Areas potentially required for tree felling are relatively small pockets of mixed woodland scattered across the site; it is anticipated that, if required, tree felling will be undertaken by the Estate. All works will be carried out in accordance with the UK Forestry Standard and Forestry Commission Forest and Water Guidelines, in consultation with the Estate Forester. As much of the felled timber will be recovered as possible for use as domestic wood fuel on the Estate. Any remaining material will be used as mulch for the replanted areas of woodland.

Substation

3.16 The proposed development would include a new onsite substation, substation compound and control building. The sub-station compound would contain a 33kV/275kV step-up transformer, associated switchgear and ancillary equipment. The control building required at the sub-station would accommodate metering equipment, switchgear, the central computer system and electrical control panels.

3.17 It is assumed that the grid connection transformer equipment will be enclosed inside a grid connection building for weather protection; however, this requirement will be reviewed with the network operator as the final grid connection design is determined.

Grid Connection

3.18 It is proposed that a direct grid connection between the wind farm substation and the 275kV network would be wholly within the site boundary.

3.19 The grid connection option will be described in the EIA Report and consideration of the environmental effects of the indicative grid connection included within the assessment should sufficient detail be available from the Network Operator.

Battery Storage Compound

3.20 A stone hardstand for potential battery storage would be constructed if this is considered to be feasible following further review during the EIA. If taken forward, batteries would be sited within steel containers and surrounded with security fencing.

Construction Works

3.21 It is estimated that it would take approximately 15 months to construct the proposed development. Construction works would include the following main activities:

- construction of the temporary construction compound;
- construction of site access tracks, passing places and any watercourse crossings;
- construction of culverts under tracks to facilitate drainage and maintain existing hydrology;
- construction of turbine foundations and transformer plinths;
- construction of an onsite substation and battery storage facility infrastructure;
- excavation of trenches and cable laying adjacent to site tracks;
- movement onto site and erection of wind turbines;

- commissioning of the site; and
- restoration of temporary construction areas.

3.22 Where possible, construction activities will be carried out concurrently to reduce the overall length of the construction programme. Phasing of the construction process may result in civil engineering works progressing in some areas of the site whilst turbines are being erected elsewhere. To minimise disruption to land use, site restoration would be undertaken as early as possible.

3.23 A detailed programme of works would be produced by the construction contractors prior to the commencement of works on site.

3.24 Should consent for the proposed development be granted, it is likely that construction hours would be restricted by means of a consent condition.

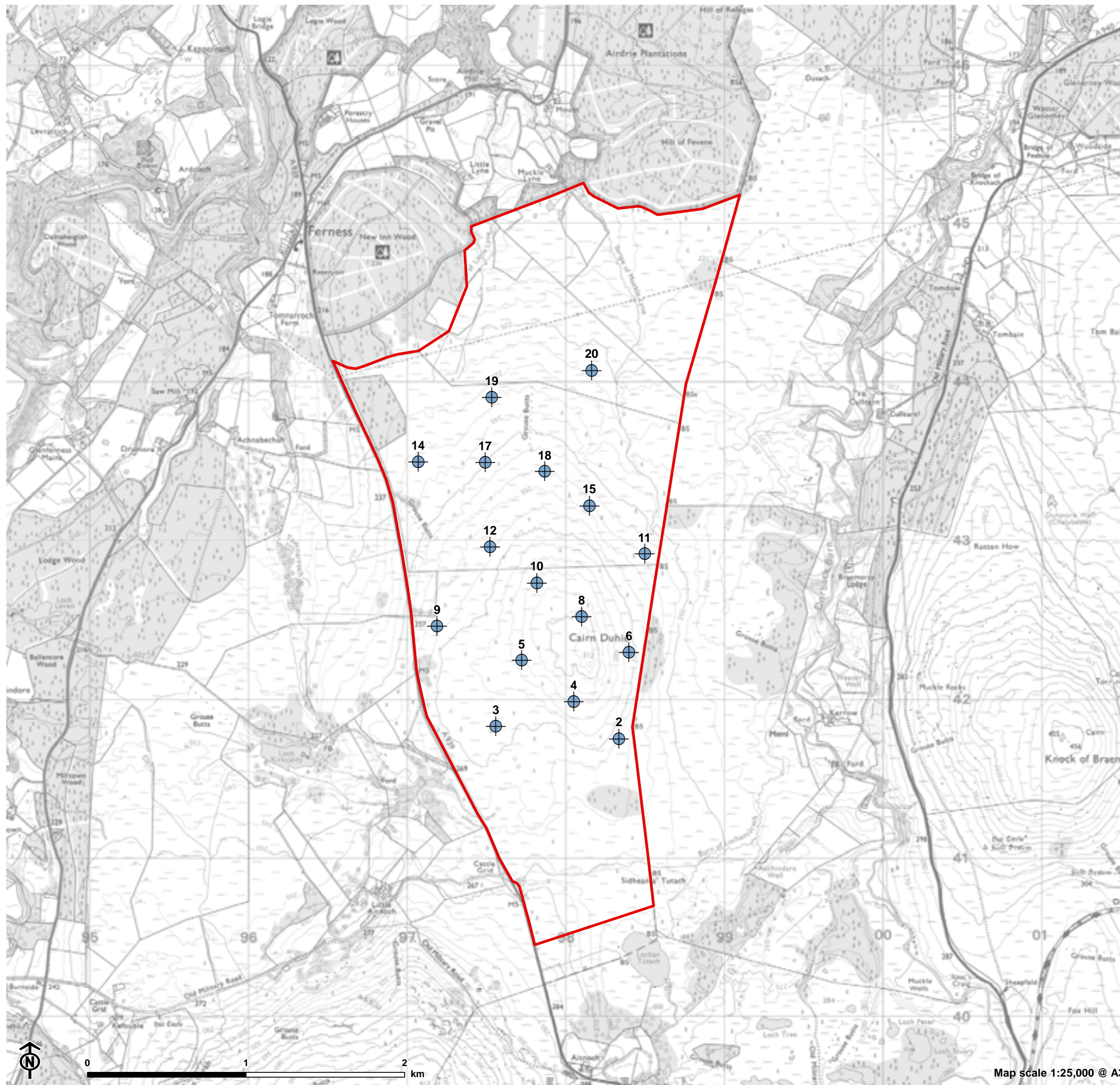
3.25 Construction material would typically be transported by road from source or seaport. Large loads such as wind turbine components (rotor blades, tower sections and nacelles) would be transported to the site by specialised abnormal load vehicles using the designated route described above.



Wind Farm Life and Decommissioning

3.26 The expected operational life of the proposed development is 35 years from the date of commissioning. Towards the end of this period, a decision would be made as to whether to refurbish, remove, or replace the turbines. If refurbishment or replacement were to be chosen, relevant applications for consent would be made.

3.27 The EIA Report will include high level information on the likely process that will be undertaken to decommission the proposed development at the end of its lifespan. However, it is not proposed to undertake a detailed assessment of the decommissioning effects associated with the proposed development as the future baseline conditions (environmental and other developments) cannot be predicted accurately at this stage and the proposals for refurbishment/ decommissioning are not known at this stage.

Figure 3.1: Site Layout of proposed development



-  Turbine
-  Site boundary

Chapter 4

Planning and Legislative Context

Introduction

4.1 This chapter of the Scoping Report sets out the planning policy context that is relevant to the proposed development. It includes:

- The Highland-Wide Local Development Plan;
- The Inner Moray Firth Local Development Plan;
- The National Planning Framework 3;
- Scottish Planning Policy; and
- Other material considerations.

Local Planning Policy

The Highland Council Local Development Plan

4.2 The Highland Council has begun the process of reviewing the Highland-wide Local Development Plan (HwLDP) with consultation on the Main Issues Report beginning in 2016. However, the review of the HwLDP was postponed due to the publication of the Planning (Scotland) Act 2019 which has outlined changes to the Scottish planning system, including changes to the content of LDPs and how they are prepared, as well as a broadening of the issues covered by national policy. Until the implications of the Planning Bill are more clearly understood, the review has been delayed.

4.3 In light of this, renewable energy policy detailed in the HwLDP adopted in 2012 remains relevant. The main policy relating to renewable energy and onshore wind energy developments specifically is Policy 67. The beginning of Policy 67 provides information on the general approach to renewable energy developments:

“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.”

4.4 Policy 67 also contains information on factors which will be taken into consideration, on an individual and cumulative basis.

“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, work places and recognised visitor sites (in or outwith 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;*

- *land and water-based traffic and transport interests; and*
- *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.”

4.5 Policy 67 also includes some specific information concerning onshore wind energy developments:

“The Onshore Wind Energy Supplementary Guidance will replace parts of the Highland Renewable Energy Strategy. It will identify: areas to be afforded protection from windfarms; other areas with constraints; and broad areas of search for windfarms. 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 windfarms, 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.”

Inner Moray Firth Local Development Plan

4.6 There are no specific policies relating to onshore wind energy developments within the Inner Moray Firth Local Development Plan (IMFLDP). However, reference to onshore renewables is made in the overarching Plan vision:

“By 2031, the number of jobs, people and facilities in Ross-shire will have significantly increased and the area will be increasingly self-sufficient. Nigg, Invergordon, Highland Deephaven will have enhanced their reputation

as a focal point for North Sea oil, cruise ship berthing, rail and sea freight, specialist large scale marine related land uses with specific locational characteristics, and fabrication of both on-shore and offshore renewables.”

4.7 Reference is made throughout the Plan to the important role that the Inverness to Nairn Growth Area will play as a Strategic Employment Site in relation to the renewables and fabrication sector, supporting both the local economy and the wider renewables sector in Scotland as highlighted in the National Renewables Infrastructure Plan (NRIP).

The Highland Council: Onshore Wind Supplementary Guidance (November 2016) and Addendum Supplementary Guidance ‘Part 2b’, December 2017

4.8 The Highland Council’s Onshore Wind Energy Supplementary Guidance was adopted in November 2016. This sets out the Council’s spatial framework for onshore wind development in accordance with the requirements of Scottish Planning Policy (2014). As indicated within the Supplementary Guidance, the Spatial Framework contains information on the requirements for safeguarding areas concerning onshore wind energy development. There are three groupings within the Spatial Framework as described below:

- Group 1: Areas where windfarms will not be acceptable;
- Group 2: Areas of significant protection; and
- Group 3: Areas with potential for wind farm development.

4.9 Based on initial review, the Proposed Development falls partly within Group 2, requiring significant protection due to Class 1 priority peatland, and Group 3 which describes land which may be suitable for wind farm development.

National Planning Policy

The National Planning framework 3

4.10 National Planning Framework 3 (‘NPF3’) serves as the long-term planning strategy for Scotland and captures a spatial expression of the Government’s economic strategy and plans for development and investment in infrastructure. Planning decisions are expected to support delivery of the aims and objectives of NPF3.

4.11 The key themes of the vision are to ensure, through development, that Scotland is a successful, sustainable place, a leader in low carbon energy generation, a natural and resilient place and a connected place. NPF3 recognises that to ensure that Scotland is a sustainable place and a leader in low carbon energy generation, renewable energy will continue

to make a significant contribution to the diversification of energy supplies.

4.12 NPF3 is a material consideration when determining applications and, as such, will be a consideration in determining the application for the proposed development.

Scottish Planning Policy

4.13 Scottish Planning Policy (SPP) was published in 2014 and sets out national planning policies which reflect the strategic priorities for operation of the planning system and for the proposed development and use of land, whilst being cognisant of the flexibility required to reflect local circumstances. SPP directly relates to the preparation of development plans, the design of development and the determination of planning applications and appeals.

4.14 SPP recognises that considerations relating to the determination of planning applications will be relative to the scale and characteristics of the proposal and area, including for instance the net economic impacts (positive/negative) of the proposal.

4.15 SPP also recognises the need to maintain and enhance existing capacity. This is particularly important where the principle of a wind farm is considered acceptable

Climate Change Bill

4.16 The Climate Change Bill, passed in September 2019, updates Scotland’s framework of statutory emission reduction targets by increasing the ambition enshrined in the Climate Change (Scotland) Act 2009. The provisions of the Bill are based upon the advice received by the Scottish Government from the Committee on Climate Change (CCC).

4.17 The key provision in the Bill is a more ambitious emission reduction target for 2045. Advice from the CCC is that a 90% reduction in greenhouse gas emissions by 2050 would be more consistent with limiting temperature rise to 1.5°C than the current 80% target. The Scottish Government has therefore proposed to increase the ambition of the 2045 target to achieve net-zero emissions from all greenhouse gases by 2045, recognising the social, environmental and economic benefits that this will deliver.

Scottish Climate Change Plan

4.18 The Scottish Government published its updated Climate Change Plan (CCP) in February 2018. The plan sets out how Scotland can deliver its climate change target of 66% emissions reductions, relative to the baseline, for the period 2018-2032. The Plan includes emissions reduction trajectories for a range of sectors, in addition to indicators for monitoring progress.

4.19 The CCP confirms the Scottish Government support for the COP21 Paris Agreement, which sets the standard for the international response to climate change.

4.20 In terms of the electricity sector, the CCP states that:

- By 2032, Scotland's electricity system will supply a growing share of Scotland's energy needs and by 2030, 50% of all Scotland's energy needs will come from renewables.
- By 2032, Scotland's electricity system will be largely decarbonised and be increasingly important as a power source for heat and transport.
- Electricity will be increasingly important as a power source for heat and in transport to charge Scotland's growing fleet of ultra-low emission vehicles.

4.21 It is understood that following the passing of the Climate Change Bill, the current Climate Change Plan is being revised in line with the net-zero target set out in the Bill, and it is expected that this will be published later in 2020.

Scottish Energy Strategy

4.22 Targets for electricity generation are also set out in Scotland's first Energy Strategy which was published by the Scottish Government, in December 2017, and acts as a free-standing companion document to the Climate Change Plan. The Strategy sets out a target for Scotland to achieve almost complete decarbonisation of energy and sets a new 2030 'all energy' target for the equivalent of 50% of Scotland's heat, transport and electricity consumption to be supplied from renewable sources, with Scotland a world leader in renewable and low carbon technologies and services.

4.23 The Strategy sets out the Government's clear position on onshore wind, namely that:

"our energy and climate change goals mean that onshore wind must continue to play a vital role in Scotland's future – helping to decarbonise our electricity, heat and transport systems, boosting our economy, and meeting local and national demand.

That means continuing to support development in the right places, and – increasing the extension and replacement of existing sites with new and larger turbines, all based on an appropriate, case by case assessment of their effects and impacts and it means developers and communities working together and continuing to strike the right balance between environmental impacts, local support, benefits, and – where possible economic benefits driving from community ownership."

4.24 The Strategy adds that:

"this can be done in a way which is compatible with Scotland's magnificent landscapes, including our areas of wild land. This means that the relevant planning and consenting processes will remain vitally important. A major review of the Scottish planning system is well underway and will continue as now to fully reflect the important role of renewable energy and energy infrastructure, in the right places."

Onshore Wind Policy Statement

4.25 The Onshore Wind Policy Statement, published in December 2017, sets out the up-to-date national policy position in relation to onshore wind. The Ministerial Foreword sets out that *"there is no question that onshore wind is a vital component of the huge industrial opportunity that renewables more generally create for Scotland"*.

4.26 It adds that *"our energy and climate change goals mean that onshore wind will continue to play a vital role in Scotland's future – helping to substantively decarbonise our electricity supplies, heat and transport systems, thereby boosting our economy"*.

Chapter 5

Landscape and Visual Effects

Introduction

5.1 This chapter sets out the proposed approach to assessing the potential effects of the proposed development on landscape character and visual amenity through a Landscape and Visual Impact Assessment (LVIA). The primary guidance for LVIA is the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)³. In addition, SNH has published several documents that have been adopted as industry standard good practice on landscape and visual assessments of wind farm proposals.

5.2 The LVIA will consider direct and indirect effects on landscape resources, landscape character, and the implications for designated landscapes and wild land, and cumulative effects, i.e. the incremental effects of the proposed development in combination with other existing and proposed wind farm developments. It will examine the nature and extent of effects arising from the introduction of the proposed turbines, as well as the ancillary infrastructure (i.e. access tracks, masts, transformers etc.) which will be assessed during both the construction and operational phases of the proposed development.

5.3 The LVIA will be completed by Chartered Landscape Architects, and in accordance with relevant best practice documents. LUC's team of Chartered Landscape Architects has extensive experience in the siting, design and assessment of onshore wind energy developments, and was responsible for the LVIA for the consented development, as well as providing landscape and visual evidence at the subsequent appeal.

Site and Proposed Study Area

5.4 It is proposed that the Study Area for the LVIA will cover a radius of 40km from the outermost turbines of the proposed development in all directions, as recommended in current guidance for turbines between 131-150m to blade tip⁴, and in agreement with statutory consultees SNH, The Highland Council, Moray Council and the Cairngorms National Park Authority (CNPA).

5.5 The landform of the site consists of Open Upland with Cairn Duhie marking the highest point of the site. Land cover

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

⁴ SNH (February 2017) *Visual Representation of Wind Farms Guidance*. Version 2.2

consists of degraded bog and heath habitats and there are a number of minor watercourses throughout the site that drain into surrounding burns including the Burn of Lochantùtach which runs through the southern extent of the site. A more detailed description of the site is provided in **Chapter 3**.

Landscape Character

5.6 SNH has recently made available, via their website, an updated national Landscape Character Assessment for Scotland⁵.

5.7 The site is located within Landscape Character Type (LCT) 291: Open Rolling Uplands, as shown in **Figure 5.1**. Key characteristics include:

- *“High, rolling moorland with gentle gradients and limited relief in the west becomes hillier in the eastern reaches.*
- *Simple, rolling landscape of heather moorland and grassland, with few plantations or structures, and the contrasting setting it provides for the occasional farmed valleys at the margins and close to roads.*
- *Interest provided by occasional natural and built point features in the simple landscape, such as lochans, summits, small farms, stone bridges, crofts and abandoned shielings.*
- *General lack of modern structures (pylons, wind turbines, masts and houses), particularly in the central area close to roads and the Dava Way, from where most people experience the area. However due to the openness of this landscape there are views to commercial wind energy development in neighbouring areas to the east.*
- *Elevated, open and expansive views across the landscape, and long-distance views from the edge of the plateau to the north and south. Difference in extent and focus of views between east and west.*
- *Sense of remoteness from lack of roads and built development, coupled with abandoned buildings, rail lines and historic roads.”*⁶

5.8 The LVIA will consider the potential for direct effects on LCT 291 as well as indirect effects upon LCTs in the Study Area from which potential visibility is indicated by Zone of Theoretical Visibility (ZTV) mapping.

Designated Landscapes and Wild Land Areas

5.9 The site itself is not within a designated landscape but there are a number of designated landscapes within the Study Area as shown in **Figure 5.2**, including the Drynachan, Lochindorb and Dava Moors Special Landscape Area (SLA), which borders the site to the south-west, and the Cairngorms National Park (NP) which is approximately 8km to the south. Within the Moray Council area, there are a number of other SLA designations to the east and north-east of the site including the Findhorn Valley and the Wooded Estates SLA, located less than 5km from the site to the north-east. As with LCTs, the theoretical inter-visibility with the proposed development will be described in the LVIA and used as a means of identifying which designated areas require further assessment.

5.10 There are several Gardens and Designed Landscapes (GDLs) within the Study Area. These will be considered in the cultural heritage assessment.

5.11 Wild Land Areas (WLA) are not statutory designations, but NPF3 recognises wild land as a “*nationally important asset*” (NPF3, p.42), whilst SPP notes that development plans “*should identify and safeguard the character of areas of wild land as identified on the 2014 SNH map of wild land areas*” (SPP, p.47) and lists areas of wild land as Group 2: Areas of Significant Protection (SPP, Table 1, p.39).

5.12 There are no WLAs within the site boundary. The closest are WLA 15: Cairngorms which is located approximately 24km to the south of the site at its closest point, and WLA 20: Monadhliath which is located approximately 27km to the south-west of the site at its closest point. There are no other WLAs within the Study Area. The ZTV on **Figure 5.3** indicates that there will be scattered theoretical visibility of the proposed development from within the northern extent of WLA 15: Cairngorms. Due to the distance of WLA 15: Cairngorms from the site however, it is unlikely that a Wild Land Assessment will be required.

5.13 Nationally and locally designated landscapes and WLAs within the Study Area are listed in **Table 5.1** below and shown on **Figure 5.2**.

⁵ SNH (2019) Scottish Landscape Character Types Map and Descriptions

⁶ SNH (2019) National Landscape Character Assessment. Landscape Character Type 291 Open Rolling Upland

Table 5.1: Designated Landscapes within the Study Area

Name	Designation	Approximate distance from the Site (km)
Drynachan, Lochindorb and Dava Moors	Special Landscape Area	<1
Findhorn Valley and the Wooded Estates	Special Landscape Area	1.7
Cairngorms	National Park	8
Pluscarden Valley	Special Landscape Area	14
Culbin to Burghead Coast	Special Landscape Area	14
Cluny Hill	Special Landscape Area	14.5
Sutors of Cromarty, Rosemarkie and Fort George	Special Landscape Area	17
The Spey Valley	Special Landscape Area	18
Ben Rinnes	Special Landscape Area	19.2
Cairngorms	Wild Land Area	25
Quarrelwood	Special Landscape Area	26
Monadhliath	Wild Land Area	27
The Cairngorm Mountains	National Scenic Area	27
Burghead to Lossiemouth Coast	Special Landscape Area	27.5
Spynie	Special Landscape Area	31.5
Loch Ness and Duntelchaig	Special Landscape Area	32
Lossiemouth to Portgordon Coast	Special Landscape Area	37.5
Lower Spey and Gordon Castle Policies	Special Landscape Area	38

Visual Receptors

5.14 Visual receptors to be considered will include:

- local residents;
- tourists or visitors, which includes users of outdoor recreational facilities including strategic recreational footpaths, cycle routes or rights of way, whose attention may be focused on the landscape;
- visitors to important landscape features with physical, cultural or historic attributes;
- hill walkers, which includes those walking on unmarked footpaths; and
- transport route users.

Design Considerations

5.15 The design of the proposed development will aim to achieve a coherent and structured form, in line with guidance provided by SNH⁷. The EIA Report will present the rationale behind the final design strategy and document the iterative design process in response to the technical and environmental constraints identified through the EIA process. The objective in designing the proposed development will be to develop a layout that responds to its setting in terms of landform and pattern, and which presents a simple visual image, avoiding the clustering of turbines and the isolation of outlying turbines in views from key locations and views from sequential routes seen by a range of different receptors (people) of varying sensitivity. It is also recognised that the final layout will need to balance a wide range of technical and environmental considerations.

5.16 The design of the proposed development will also consider its interaction in both landscape and visual terms with other existing and proposed wind farms, which are mainly to the east and west of the site.

5.17 All elements of the proposed wind farm infrastructure will be considered in terms of locational and design choice, and the LVIA will set out how the design of ancillary elements has evolved to minimise visual effects, especially from nearby and sensitive visual receptors.

5.18 THC Onshore Wind Energy Supplementary Guidance⁸ includes landscape and visual criteria against which development proposals will be assessed by THC and Moray Council. These criteria will be considered as part of the iterative EIA process and refinement of the layout of the proposed development.

⁷ SNH (2017), Siting and Designing Wind Farms in the Landscape. Version 3a

⁸ The Highland Council (November 2016) Onshore Wind Energy Supplementary Guidance

Proposed Surveys and Assessment Methodology

5.19 The LVIA will be undertaken in line with current guidance and good practice to produce a robust and reliable assessment. This will be achieved using LUC's most recent methodologies which have been developed in accordance with GLVIA3, drawing on subsequent technical clarifications published by the Landscape Institute, and LUC's extensive experience in the field.

Visualisations

5.20 Wirelines and photomontage visualisations will be used to consider and illustrate changes to views. Photomontages will involve overlaying computer-generated perspectives of the proposed development over the photographs of the existing situation to illustrate how the views will change against the current baseline. Other (cumulative) wind farm developments visible from each of the viewpoints will be shown on the wirelines. Visualisations will be prepared in accordance with SNH (2017) and THC (2016) visualisation guidance.

5.21 Any ancillary elements such as permanent anemometer masts, access tracks etc. will be shown in photomontages for viewpoints within 5km when they would be visible. Beyond 5km it is considered unlikely that these ancillary elements would form more than a minor element of the entire development when compared to the turbines.

Landscape Effects

5.22 Predicted changes on both the physical landscape of the site and landscape character within the 40km Study Area will be identified. However, it is anticipated that potential significant direct and indirect effects will be limited to a more focussed area extending up to 15-20km from the site.

5.23 In accordance with GLVIA3, effects will be considered in terms of the magnitude of change to the landscape, including its key characteristics as set out in published landscape character assessments. Magnitude is assessed in terms of the scale, geographical extent, duration and reversibility of the effect. The sensitivity of the landscape will also be taken into account, acknowledging value placed on the landscape

through designation, and the inherent susceptibility to wind energy development. These aspects will inform a judgement regarding the overall significance of each effect.

Visual Effects

5.24 Visual effects are experienced by people at different locations throughout the Study Area, at static locations (for example settlements or viewpoints) and transitional locations (such as sequential views from routes, including roads and foot paths). Visual receptors are the people who will be affected by changes in views at these places, and they are usually grouped by what they are doing at those places (for example residents, motorists, recreational users etc.).

5.25 GLVIA3 states that the nature of visual receptors, commonly referred to as their sensitivity, should be assessed in terms of the susceptibility of the receptor to change in views/visual amenity and the value attached to particular views. The nature of the effect should be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect. These aspects will all be considered to inform a judgement regarding the overall significance of effect.

5.26 An initial review of key receptors identified within the LVIA carried out for the previously consented scheme has informed the scoping of visual receptors likely to be affected by the proposed development.

5.27 Assessment of the visual effects of the proposed development will be based on analysis of the ZTVs, field studies and assessment of representative viewpoints. **Figure 5.3** shows a maximum turbine blade tip height (149.9 m) ZTV of an indicative turbine layout, which is subject to further refinement, with proposed assessment viewpoint locations. The assessment viewpoint locations have been selected to provide a representative range of viewing distances and viewing experiences, including views from settlements, points of interest and sequential views from routes. A list of proposed viewpoints for the assessment is set out in **Table 5.2**. It should be noted that viewpoints will be subject to further refinement in the field, subsequent to the scoping process and consultation with relevant stakeholders.

Table 5.2: Proposed Assessment Viewpoints

VP	Viewpoint Name	Grid Reference		Distance from Site boundary (km)	Reason for selection
1	Little Aitnoch	297077	840869	1.0	Represents views experienced by residential receptors at Little Aitnoch, as well as road users travelling towards the A939 via the old military road that passes through Little Aitnoch.
2	Ferness	296210	844740	1.6	Represents views experienced by road users at the junction between the B9007 and the A939 and similar views experienced by residential receptors at Ferness.
3a	A940, above Kerrow	300046	841888	1.7	Represents views experienced by road users of the A940 travelling both north and south.
3b	Knock of Braemoray	301100	841800	2.8	Represents elevated views experienced by recreational receptors from this hill summit, with views across the Drynachan, Lochindorb and Dava Moors SLA to the south-west.
4	A939, west of Aitnoch	298000	839720	2.0	Represents views experienced by road users of the A939 travelling northwards, as well as similar views experienced by residential receptors at Aitnoch.
5	Ardclach Bell Tower	295385	845323	2.6	Represents views experienced by tourist/ recreational receptors visiting the historic visitor attraction of Ardclach Bell Tower.
6	Dava Junction	300865	839260	3.6	Represents views experienced by road users at the Dava Junction, between the A939 and the A940.
7	B9007, Old Military Road	294194	838864	4.4	Represents views experienced by road users of the B9007 travelling northwards.
8	A939 and Dava Way	301400	834555	7.9	Represents views experienced by road users of the A939 travelling northwards, as well as similar views experienced by recreational receptors travelling along the Dava Way.
9	Carn nan Gabhar above Lochindorb	298030	833770	7.9	Represents elevated views experienced by recreational receptors from the summit of Carn nan Gabhar.
10	Carn Kitty	309000	842750	10.6	Represents elevated views experienced by recreational receptors from the summit of Carn Kitty.
11	Carn Allt Laoigh	292200	831200	11.8	Represents elevated views experienced by recreational receptors from this hill summit at the edge of the CNP boundary, with views across the Drynachan, Lochindorb and Dava Moors SLA to the north, and the CNP to the south.
12	Creagan a' Chaise	310400	824200	21.4	Represents elevated views experienced by recreational receptors from the summit of Creagan a' Chaise within the CNP, with views across the Drynachan, Lochindorb and Dava Moors SLA to the north.

Cumulative LVIA (CLVIA)

5.28 A cumulative LVIA (CLVIA) will be undertaken in accordance with GLVIA3 and SNH Guidance⁹. Initial consideration will be given to all wind farms within 40km which have a valid application, are consented, under construction or are operational. Single turbines, and turbines less than 50m height to tip, will not be considered within the CLVIA, unless they are within 5km of the site. Turbines of less than 20m height to tip will not be considered. Schemes at scoping will not be considered, with the exception of the proposed Ourack wind farm, which is located approximately 8km to the south-east of the proposed development.

5.29 The intervisibility of the proposed development with other wind farms in the surrounding area will be illustrated using combined ZTV (CZTV) maps, using ZTVs of each wind farm overlain on a base map. Pairs of ZTVs will be prepared, shown together on a series of figures, to illustrate the key relationships between the proposed development and other existing or proposed wind farms close to the site. Where groups of wind farms lie close together or in similar directions

at greater distances, they will be grouped to rationalise the number of figures required. Cumulative visual effects will be assessed through analysis of CZTVs, views from individual viewpoints and sequential views from key routes, based on computer-generated wireframes. The magnitude of cumulative change to landscape character reflects the additional influence the proposed development has on the characteristics and character of the landscape, assuming the other wind farm schemes are already present. Various scenarios will be considered, reflecting the status and therefore the level of certainty of other wind farms being present in the landscape (i.e. in planning, at appeal, or consented).

5.30 Table 5.3 presents all known wind energy developments within 40km that fit the cumulative criteria discussed above, and this list will be used to select those that will be considered within the CLVIA. An initial list of wind farms to be considered in the CLVIA are shown on Figure 5.4. It is accepted that the cumulative situation will change in time and this will be considered during consultation and updated within the assessment.

Table 5.3: Wind Farm Developments to be considered as part of the Cumulative Assessment

Wind farm	No. of turbines	Easting	Northing	Tip height (m)	Status	Approx. distance from centre of wind farm (km)
Hill of Glaschyle	12	303600	847914	100	Operational	7.7
Ourack	27	305152	839391	180	Design/Scoping	8.0
Berry Burn	29	307886	844292	104	Operational	10.2
Clash Gour	48	308372	845245	176	Appeal/Public Inquiry	10.8
Tom nan Clach	13	286143	835069	125	Operational	13.9
Pauls Hill	28	311746	840863	100	Operational	14.0
Pauls Hill 2	7	313355	841358	149.9	Appeal/Public Inquiry	15.6
Meikle Hill	6	315238	850204	126.5	Consented	18.9
Moy	20	279230	837010	125	Operational	19.4
Roths – Phase 2	18	317357	849561	125	Operational	20.7
Kellas	4	317790	851562	110	Under construction	21.8
Roths – Phase 1	22	318245	850487	100	Operational	21.8
Roths – Phase 3	29	320553	847928	225	Appeal/Public Inquiry	23.3
Hunthill	4	323662	846881	67	Under construction	26.1

⁹ SNH (March 2012) Assessing the Cumulative Impact of Onshore Wind Energy Developments

Wind farm	No. of turbines	Easting	Northing	Tip height (m)	Status	Approx. distance from centre of wind farm (km)
Farr	40	273163	829141	101	Operational	28.1
Kyllachy	20	273510	827652	110	Under construction	28.6
Dorenell	59	331964	828600	126	Operational	36.9
Hill of Towie 2	16	335176	844888	125	Consented	37.4
Hill of Towie	21	336080	846678	100	Operational	38.4

Assessment of Visible Aviation Lighting

5.31 In the interests of aviation safety structures, including wind turbines, of ≥ 150 m require visible aviation lighting¹⁰. Potential visual effects arising from the necessity for this visible lighting (typically consisting of 2000 candela red lights mounted on the wind turbine nacelle and intermediate 32 candela lights mounted on the wind turbine tower) will be a key consideration. Informed by current SNH (2017) visualisation guidance and scoping advice¹¹ the assessment of visual effects will consider the effects of aviation lighting.

5.32 The assessment will be carried out as part of the LVIA and included within the assessment or as a Technical Appendix to the EIA Report, and will be informed by a hub height ZTV as a starting point to illustrate the areas from which nacelle may be visible. Visibility of turbine lighting visibility from each LVIA assessment viewpoint will be considered, however the night-time assessment will focus on viewpoints from which significant effects may be anticipated.

5.33 Night time photomontage visualisations will be prepared from 2 or 3 of the final LVIA assessment viewpoints outlined in Table 5.2. The baseline night-time context and presence of existing artificial lighting at these locations will be described, with the related sensitivity identified and the magnitude of change arising from the proposed aviation lighting assessed. The predicted effects of aviation lighting on the visual amenity at these viewpoints will be drawn on to provide general comment on the likely effects across the wider Study Area.

Approach to Mitigation

5.34 The primary form of mitigation for landscape and visual effects, including cumulative effects, is through iterative design of the layout of the turbines and associated infrastructure, as seen from key viewpoints. Design development will be set out in detail in the design strategy that will form part of the EIA Report.

Consultation Proposals

5.35 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- The Highland Council;
- Moray Council;
- SNH; and
- CNPA.

Questions for Consultees

Q5.1: Can consultees confirm that GLVIA3 is an appropriate methodological starting point for the LVIA assessment? Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, including cumulative effects?

Q5.2: Are there other sources of information which should inform the baseline and assessment of potential effects on landscape character and designated landscapes?

Q5.3: Are there any comments on the proposed list of assessment viewpoint locations listed in **Table 5.2**?

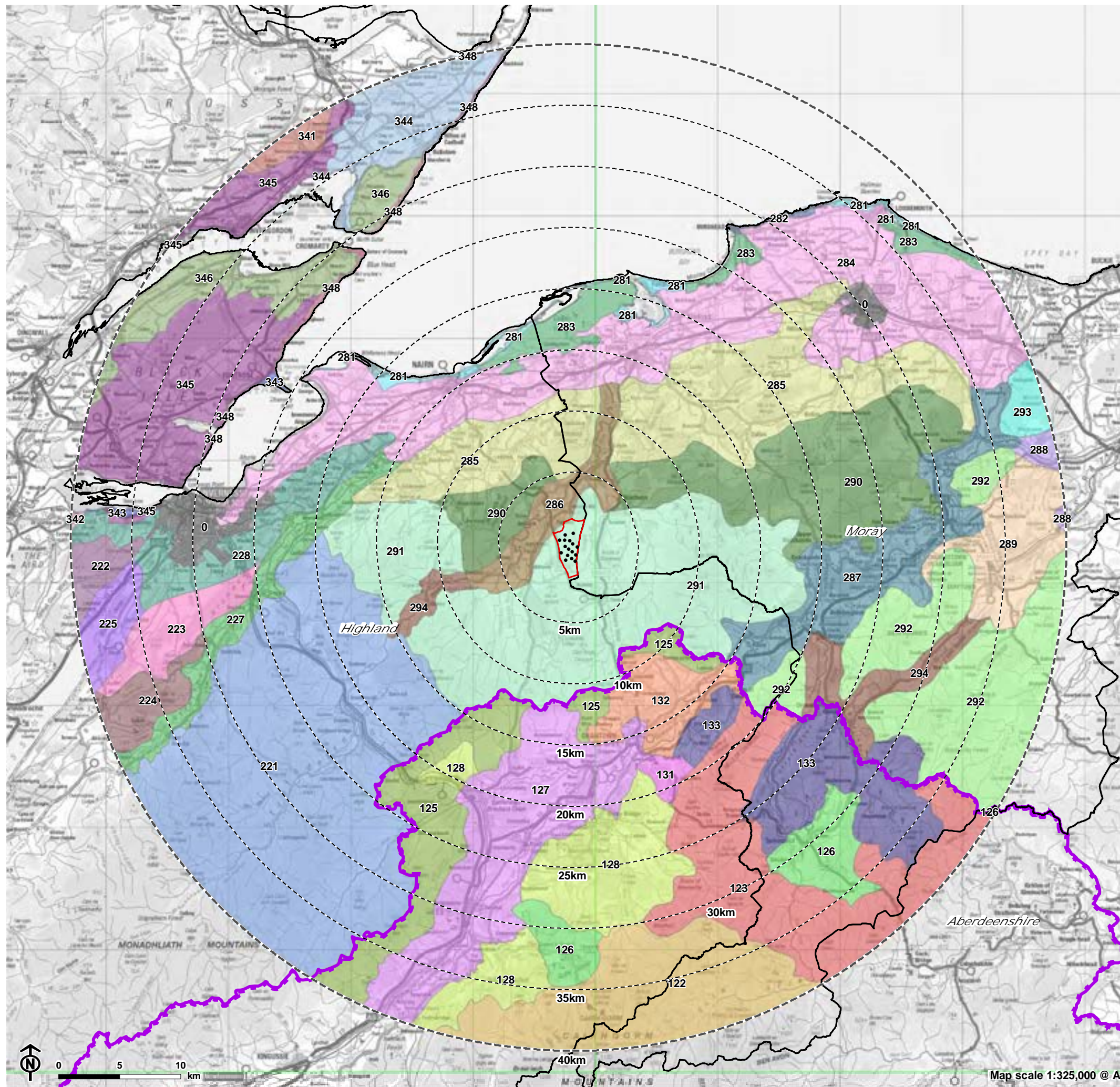
Q5.4: Are there any further wind farms, in addition to those shown on **Figure 5.4**, to consider as part of the cumulative assessment?

Q5.5: Are there any further landscape or visual receptors to be considered within the assessment (i.e. where it is expected that significant effects may occur)?

¹⁰ Civil Aviation Authority (2016) CAA Policy and Guidelines on Wind Turbines CAP 764

¹¹ SNH (2017), Siting and Designing Wind Farms in the Landscape. Version 3a

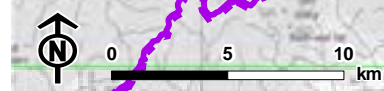
Figure 5.1: Landscape Character Types



- Turbine
- ▭ Site boundary
- ⋯ 5km intervals from outer turbines
- ⋯ 40km study area
- ▭ Local authority boundary
- ▭ Cairngorms National Park

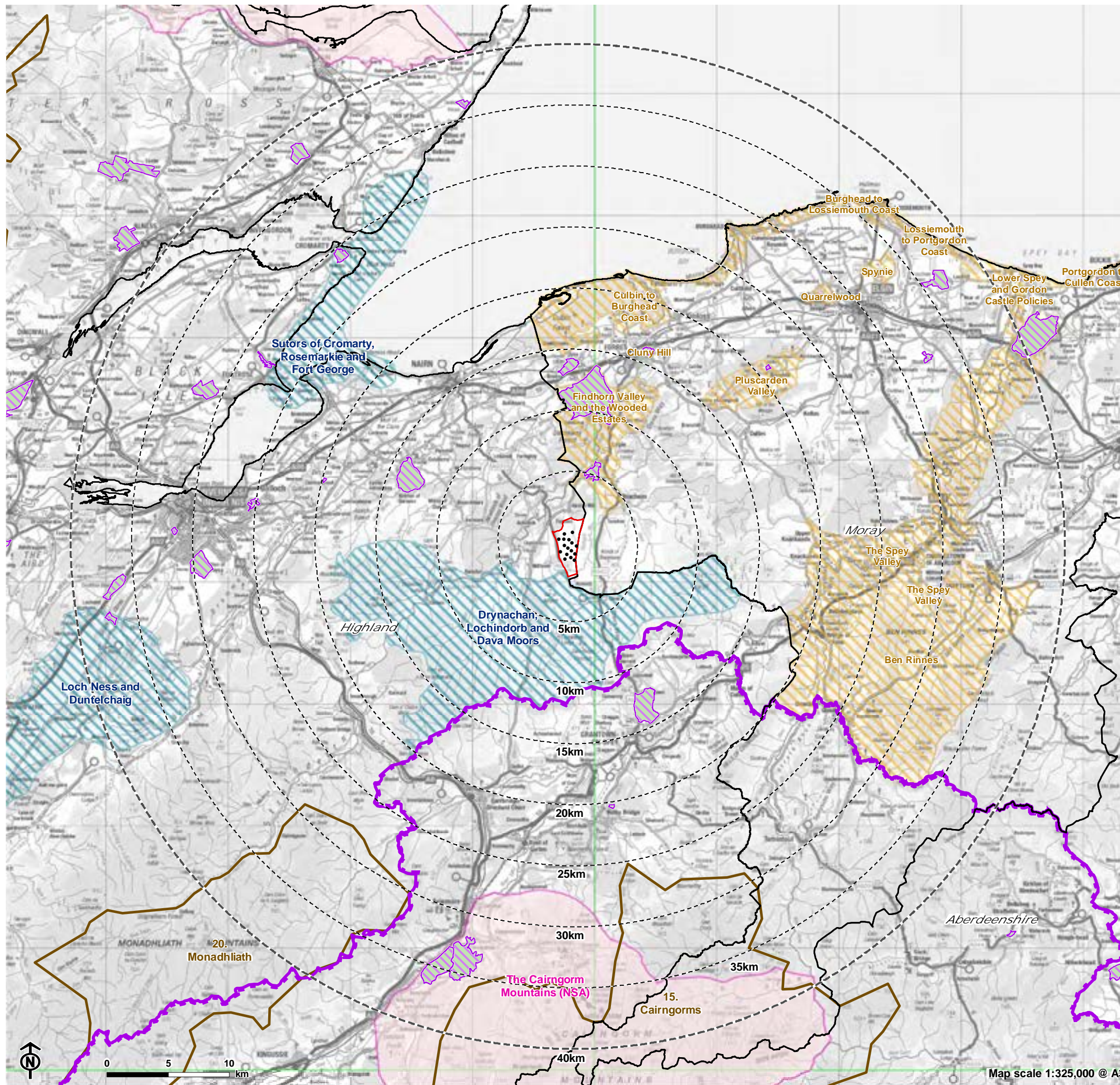
Landscape Character Types (SNH 2019)

- | | |
|--|---|
| 0. Urban | 281. Beaches, Dunes and Links - Moray & Nairn |
| 122. Mountain Massif - Cairngorms | 282. Cliffs and Rocky Coast - Moray & Nairn |
| 123. Smooth Rounded Hills - Cairngorms | 283. Coastal Forest |
| 125. Rolling Uplands - Cairngorms | 284. Coastal Farmlands - Moray & Nairn |
| 126. Upland Glen - Cairngorms | 285. Rolling Farmland and Forests - Moray & Nairn |
| 127. Upland Strath | 286. Narrow Wooded Valley - Moray & Nairn |
| 128. Forested Upland Fringe | 287. Broad Farmed Valley |
| 131. Upland Basin - Cairngorms | 288. Upland Farmland |
| 132. Undulating Wooded Farmland - Cairngorms | 289. Upland Farmed Valleys |
| 133. Farmed Straths and Glens | 290. Upland Moorland and Forestry |
| 221. Rolling Uplands - Inverness | 291. Open Rolling Upland |
| 222. Rocky Moorland Plateau - Inverness | 292. Open Upland |
| 223. Flat Moorland Plateau with Woodland | 293. Low Forested Hills |
| 224. Farmed and Wooded Foothills | 294. Upland Valleys - Moray & Nairn |
| 225. Broad Steep-Sided Glen | 341. Forest Edge Farming |
| 227. Farmed Strath - Inverness | 342. Farmed River Plains |
| 228. Rolling Farmland and Woodland | 343. Coastal Shelf |
| | 344. Lowland Farmed Plain - Ross & Cromarty |
| | 345. Farmed and Forested Slopes - Ross & Cromarty |
| | 346. Open Farmed Slopes |
| | 348. Cliffs and Rocky Coasts - Ross & Cromarty |



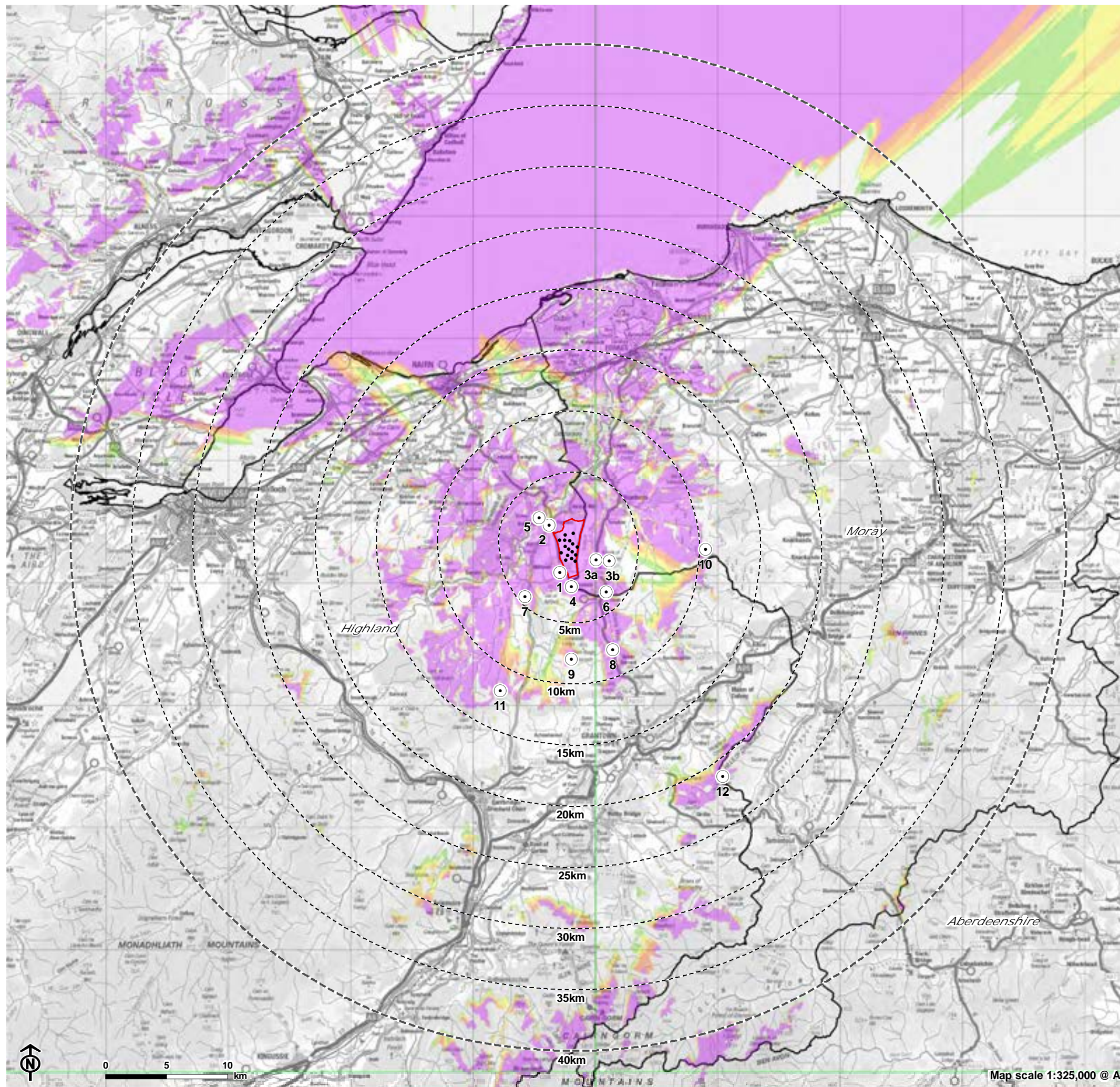
Map scale 1:325,000 @ A3

Figure 5.2: Designated Landscapes & Wild Land Areas



- Turbine
 - Site boundary
 - 5km intervals from outer turbines
 - 40km study area
 - Local authority boundary
- Landscape Designations**
- National Scenic Area (NSA)
 - Cairngorms National Park
 - Wild Land Area
 - Garden and Designed Landscape (GDL)
- Local Landscape Designations**
- Special Landscape Area (Moray Council)
 - Special Landscape Area (The Highland Council)

Figure 5.3: Blade Tip Height (149.9m) Zone of Theoretical Visibility (ZTV) and Viewpoint Locations



- Turbine
- ▭ Site boundary
- ⋯ 5km intervals from outer turbines
- ⋯ 40km study area
- ▭ Local authority boundary

Potential turbine visibility to tip height (149.9m)

- ▭ 1 - 3 turbines visible
- ▭ 4 - 6 turbines visible
- ▭ 7 - 9 turbines visible
- ▭ 10 - 12 turbines visible
- ▭ 13 - 16 turbines visible

- Viewpoint location

1. Little Aitnoch
2. Ferness
- 3a. A940, above Kerrow
- 3b. Knock of Braemoray
4. A939, west of Aitnoch
5. Ardlach Bell Tower
6. Dava Junction
7. B9007, Old Military Road
8. A939 and Dava Way
9. Carn nan Gabhar above Lochindorb
10. Carn Kitty
11. Carn Allt Laoigh
12. Creagan a' Chaise

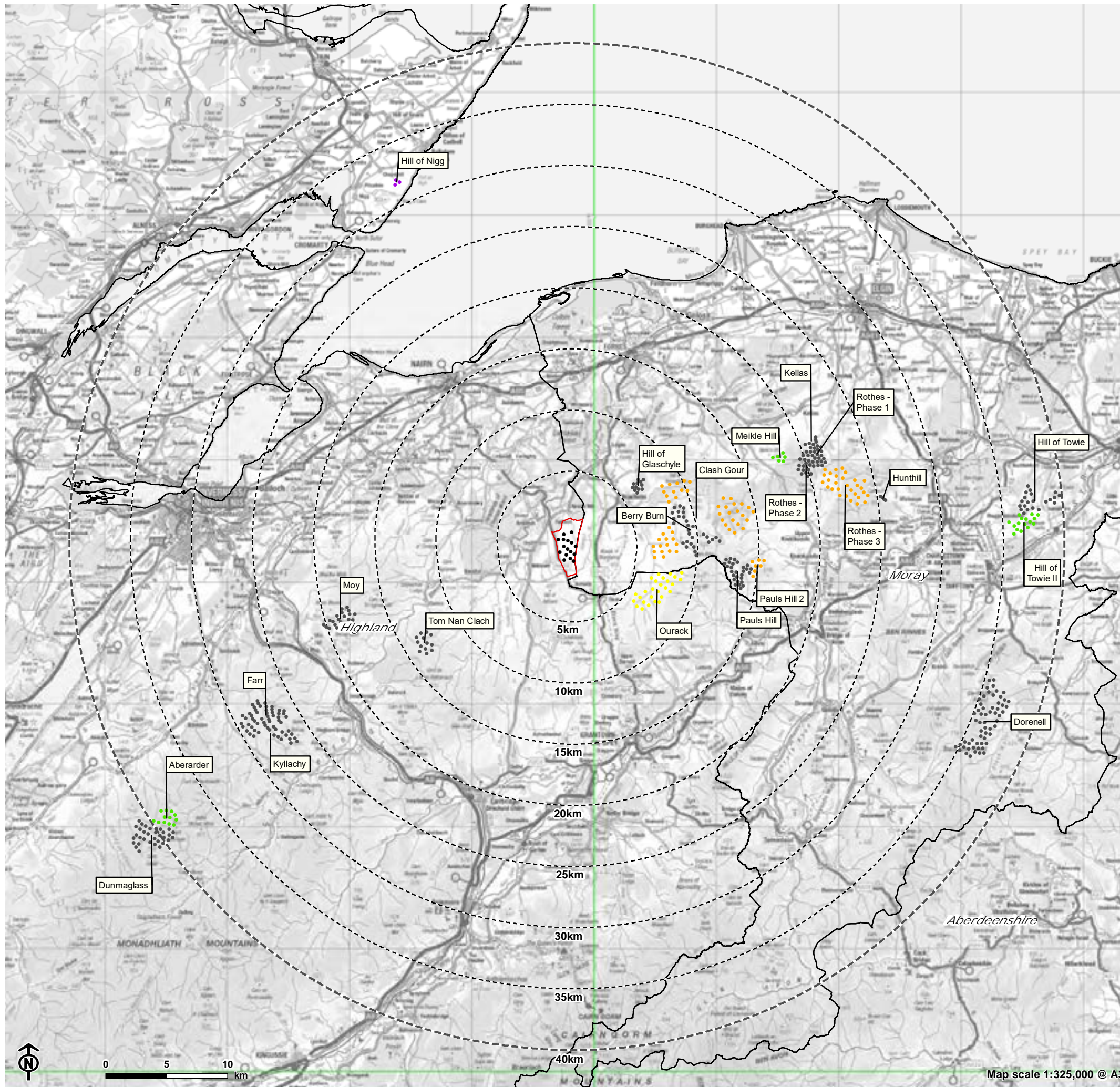
Notes:

The ZTV is calculated to turbine tip height (149.9m) from a viewing height of 2m above ground level.

The terrain model assumes bare ground and is derived from OS Terrain 50 height data (obtained from Ordnance Survey in July 2019).

Earth curvature and atmospheric refraction have been taken into account. The ZTV was calculated using ArcMap 10.5.1.

Figure 5.4: Other Wind Farm Developments



- Turbine
- ▭ Site boundary
- - - 5km intervals from outer turbines
- - - 40km study area
- ▭ Local authority boundary

Cumulative wind farms (by status)

- Operational/under construction
- Consented
- Application submitted
- Appeal/Public Inquiry
- Design/Scoping

Notes:
 Cumulative windfarms based on information available to LUC on 15/01/2020.
 The following schemes are proposed to be scoped out of the cumulative LVIA:
 1. Turbines below 50m tip
 2. Single turbine beyond 5km
 3. Schemes at scoping stage (with exception of Ourack Wind Farm)



Map scale 1:325,000 @ A3

Chapter 6

Hydrology, Hydrogeology, Geology and Peat

Introduction

6.1 This chapter sets out the proposed approach to the assessment of the potential effects of the proposed development on hydrology, hydrogeology, geology and peat during construction and operation of the proposed development.

Existing Conditions

6.2 This section outlines the preliminary hydrology, hydrogeology, geology and peat baseline of the site and identifies the assessment requirements in relation to the surface and groundwater resources within the area.

Surface Hydrology, Site Drainage and Flooding

6.3 The site is situated within the River Findhorn Catchment. The northern and western extents of the site drain directly into the River Findhorn via the Stripe of Little Lyne, Stripe of Muckle Lyne and Tomnarroch Burn to the north and the burn of Lochantutach which is a confluence to the Dorback Burn to the east of the site. These catchments have an overall Water Framework Directive (WFD) quality classification of 'Good' as of 2018.

6.4 The Lochan Turtach is situated along the southern boundary of the site. The Loch drains away from the site boundary as per the surrounding topography.

6.5 A review of the Scottish Environment Protection Agency's (SEPA's) online flood mapping indicates that the site is not at risk of pluvial, fluvial or coastal flooding, and there are no reports of historic flooding in the vicinity of the site. Therefore, the risk of flooding across the site is considered to be negligible.

Geology, Hydrogeology and Soils

6.6 The British Geological Survey (BGS) online mapping service indicates that the site is underlain by two main bedrock geologies. Bedrock in the west of the site is dominated by an Unnamed Igneous Intrusion of Ordovician to Silurian felsic rock, with the east of the site underlain mainly by bedrock of the Grampian group and a small area of Moine Supergroup. The recorded superficial deposits are shown to be Till of the Diamicton type, and peat with small areas of glacial sand and gravel.

6.7 A review of Scotland's Soils Map indicates a range of peats on site including semi-confined, valley peats at 50-100cm deep, Podzols and Gleys. A Phase 1 peat survey was completed by MacArthur Green Ltd in 2012 and confirmed the presence and depth of peat on site as detailed further below.

6.8 The Scottish Soils Map indicated that there is high soil runoff risk across the site with the soils having limited capacity to store rainfall or to allow water to infiltrate.

Peat

6.9 The 2012 peat depth probe survey was carried out over the proposed development area using methods outlined in the following key guidance documents.

- Good practice during wind farm construction (SNH, FCS & SEPA, 2010);
- Developments on peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste (Scottish Renewables and SEPA version 1, January 2010); and
- Developments on peatlands: Site surveys (SNH, SEPA, SG and the James Hutton Institute, August 2011).

6.10 As a result of the survey, a peat depth model was then generated to inform the design of the consented wind farm, to help reduce impacts associated with blanket mire habitats, carbon losses, and to inform the peat stability assessment.

6.11 Once the layout for the proposed development has been finalised, further peat probing will be undertaken along the infrastructure at a 50m interval, a revised peat depth model will be prepared and a peat slide risk assessment will be undertaken for the proposed development.

Water Quality and Water Use

6.12 The site is situated within a Drinking Water Protected Area for groundwater. The Ground Waterbody name is Strathnairn, Speyside and Cairngorms and has a WFD ground water classification status of 'Good'.

6.13 The site lies within the River Findhorn WFD river basin which has an overall status of 'Good', as of 2018, with good ecological and biological status. Currently, the River Findhorn does not suffer from any pressures.

6.14 The soil leaching potential of the geology is classified as low, with deep soils with low permeability due to medium to fine textured subsoils or thick organic surface layers to prevent contaminants from infiltrating.

6.15 A number of private water supplies (PWS) have been identified within close proximity of the proposed development. The source and nature of these supplies were confirmed during the EIA process for the consented development. The

locations and status of these PWS will be reviewed and confirmed relative to the proposed development as the EIA progresses.

6.16 Both the Highland Council and Moray Council will be contacted to obtain any additional information regarding PWS following submission of the EIA for the consented development.

Groundwater Dependent Terrestrial Ecosystems (GWDTEs)

6.17 A number of GWDTEs have been identified within the site by a National Vegetation Classification (NVC) Survey undertaken in 2012. The GWDTEs are all underlain by peat and either till or glaciofluvial superficial deposits, which are likely to have a high surface-groundwater connectivity with upslope runoff.

Design Considerations

6.18 Development will be orientated around 250m exclusion zones to be identified around PWS abstraction points and in the vicinity of the surface water features.

6.19 Appropriate buffers will be provided around identified GWDTEs to ensure any impacts are kept to a minimum.

6.20 An assessment of proposed water crossings will be conducted once the design of the proposed development has been finalised. Any proposed new or upgraded site track water crossing will be subject to (Controlled Activities) (Scotland) Regulations 2011 (CAR). The SEPA Position Statements on Culverting of Watercourses (WAT-PS-06-02) and Sediment Management (WAT-PS-06-03) will also be taken into account within this assessment, along with the supporting guidance provided in the Good Practice Guide - River Crossings (WAT-SG-25).

6.21 The location of peat across the site will be reviewed to inform the design of the development to ensure the impacts associated with peat loss are minimised. The use of the carbon calculator tool will minimise the carbon impact of the proposed development.

Survey and Assessment Methodology

6.22 The potential effects of the proposed wind farm will be assessed relative to the baseline environment through a desk-based study utilising existing survey data where available.

Legislative Provisions and Published Guidance

6.23 A considerable body of guidance material has been produced for wind farm construction in the peat uplands of the UK. Relevant guidance documents that will be considered during the peat assessment are drawn from sources

throughout the UK, which effectively constitute UK-wide best practice, as follows:

- Scottish Renewables, SNH, SEPA, Forestry Commission Scotland (FCS), 2010. Good Practice During Wind Farm Construction.
- Natural England, 2010. Investigating the impacts of wind farms on peatlands.
- Scottish Renewables and SEPA, 2012. Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste.
- SEPA, 2012. Land Use Planning System SEPA Guidance Note 4 Planning guidance on wind farm developments.
- Calculating Carbon Savings from Wind Farms on Scottish Peatlands – A new Approach (Nayak et al., 2008; Nayak et al., 2010 and Smith et al., 2011).
- SNH, SEPA, Scottish Government and The James Hutton Institute 2011. Guidance Developments on Peatland: Site Surveys.
- Joint Nature Conservation Committee, 2011. JNCC Report No. 445 Towards an assessment of the state of UK Peatlands.
- Scottish Government, 2017. Proposed electricity generation developments: peat landslide hazard best practice guide..

Baseline Assessment Methodology

6.24 A comprehensive desk-based study forms the baseline of this assessment. A range of publicly available sources of information will be used to assess the conditions of the baseline environment and its subsequent sensitivity to the proposed development. The following baseline conditions will be assessed:

- Geology, hydrogeology and soils of the application boundary and sub-catchments.
- Details of designated and protected areas within the drainage pathways of the application boundary.
- Watercourses within the application boundary (as detailed on Ordnance Survey 1:10,000 mapping), in addition to existing and potential watercourse crossings, artificial and/or natural drainage pathways.
- The quality and condition of the watercourse within the application boundary and sub-catchments.
- Flow characteristics of the catchments draining to/from the application boundary, as any reduction in baseflows or a change in the magnitude and frequency of flood

peaks in the watercourses as a result of the proposed wind farm are critical issues with regards to flood risk, water supplies and aquatic ecology.

- The location and nature of public and private water supply abstractions within the application boundary and sub-catchments, recognised by local authorities and SEPA.

6.25 As noted above, a peat survey has previously identified the presence and depth of peat across the development site. This will enable a detailed assessment of the baseline conditions of the peat extent at the site to inform the location of the proposed turbines and associated infrastructure to ensure minimal disruption.

6.26 Following design freeze, a detailed peat survey will be conducted at the proposed infrastructure locations, consisting of a 10m corridor at 50m intervals along the proposed track and a 10m spacing transects north-south and east-west out to 100m for each proposed turbine base. Peat core samples will also be taken at up to 10 spatially distributed locations to provide a reasonable indication of both horizontal and vertical variability.

6.27 The collected peat and hydrological information will be reviewed with reference to the peatland habitats noted in the ecological baseline. This will identify any areas of peatland habitat which would be sensitive to direct or indirect changes as a result of the proposed development.

Impact Assessment Methodology

6.28 The assessment of impacts on the hydrology, hydrogeology, geology and peat baseline environment of the proposed development will be conducted using the following process:

- Examination of infrastructure design and construction and operational methodologies.
- Identification of potential significant impacts differentiated between short term construction impacts and long term operational impacts for each receptor identified.
- For each potential impact, identification of mitigation measures to avoid, minimise or remedy any adverse impacts and enhance any positive benefits.
- Identification of residual impacts following the implementation of mitigation measures.
- Definition of the residual impact, based on the extent of change to the baseline environment.

6.29 The final significance of the residual impacts upon the baseline environment will be defined as a function of the sensitivity of receptors and the magnitude of change.

Potential Effects

6.30 The assessment will consider the potential effects associated with construction and operation of the proposed development as detailed below.

Potential Effects Scoped into the Assessment

6.31 The proposed wind farm may induce a series of potential adverse impacts upon the baseline hydrology, hydrogeology and geological environment within the vicinity of the proposed development during construction and operation.

6.32 The potential direct significant impacts of the proposed development on the baseline environment relate to water quality, water resources and flood risk of the surface and ground water in the draining sub-catchments. The wind farm has the potential to cause changes to the catchment runoff regime, surface water quality, water supply, river flow regime and river morphology due to changes in erosion and deposition.

6.33 There is potential for reductions in water quality through sedimentation and changes in in-stream water hydrochemistry as a result of ground disturbance.

6.34 The primary short-term construction impacts include the potential for reductions in water quality through sedimentation, accidental release of pollutants and changes to in-stream hydrochemistry. The potential water quality impacts through enhanced erosion of disturbed peaty soils will be considered in more detail during the EIA. These impacts will be assessed in relation to the quality of the identified private water supplies in the area.

6.35 The site will be assessed for flood risk in line with SEPA guidelines, although it is considered that a full Flood Risk Assessment will not be required due to low flood risk as identified above.

6.36 The construction of the wind farm has the potential to impact upon the supply of water for GWDTEs, through a possible reduction in the water table, changes to the groundwater distribution and changes to infiltration and surface water runoff patterns influencing groundwater flow. This will be analysed further as part of the EIA.

6.37 The potential impacts arising from the operation of the proposed development would primarily be through the accidental release of pollutants. The long-term potential impacts of the infrastructure include an increase in impermeable areas which may impact upon surface water runoff and consequently surface water flood risk. Furthermore, if inappropriately designed, infrastructure may lead to sediment generation from concentrated runoff points.

6.38 Wind farms do not pose major risk to ground water if constructed in line with pollution best practice, however

foundations, borrow pits and access roads and trenches can disrupt groundwater flow. Removal of protective layers of soil can make groundwater more vulnerable to pollution from leaks of spills from vehicles and construction equipment. Any ground water abstractions within 100m from roads tracks and trenches and 250m from borrow pits and foundations will be identified.

6.39 Where peat is present, disturbance of deposits may result in instability, drying and oxidation of the peat, together with sedimentation and acidification of the draining watercourses. Potential impacts also include both direct and indirect impacts on the ecology of the peatland through land take and changes in hydro-ecology. The erosion of peat may result in sedimentation and increased colour downstream resulting in negative impacts upon water resources.

Potential Effects Scoped Out of Detailed Assessment

6.40 It is not considered that any potential effects can be scoped out of detailed assessment at this stage, however, as noted above, it is considered unlikely that a full FRA will be required.

Approach to Mitigation

6.41 Impacts arising from the development will be avoided as much as possible through the design process and through careful construction and the use of standard good practice measures. The assessment will therefore be undertaken on the basis that a number of standard measures are assumed to be in place during construction and therefore are considered to be 'embedded mitigation'. These measures include the use of appropriate drainage design, the use of runoff and sediment control measures where necessary and through the implementation of good working practice and adherence to a Construction Environmental Management Plan (CEMP), an outline of which will be provided in the EIA Report. Where potentially significant impacts are identified despite the adherence to these measures, appropriate mitigation will be identified to ensure that any potential impacts are minimised.

6.42 The infrastructure layout will be designed to minimise the disturbance of peat within the proposed development site boundary. The use of appropriate peat management measures should reduce the potential impacts on site and the surrounding environment of the proposed development.

6.43 Disturbance of peat may result in carbon losses; therefore, the payback period for the proposed wind farm development will be assessed using the latest Scottish Government Windfarm Carbon Calculator Web Tool. The tool will be used at the beginning of the development process in order to guide and advise the design process to ensure minimal effects on the existing peat and reduce the carbon payback period and maximise carbon benefits. The proposed

development will be designed to minimise, and where possible avoid, soil disturbance when building and maintaining access roads, turbine bases and required infrastructure.

6.44 A Draft Peat Management Plan (PMP) will be developed to mitigate the potential impacts upon peat and peatland habitats. The key aim of this plan is to first minimise peat excavation and disturbance, then to review options for reuse. The minimisation of peat excavation will be informed by the Phase 1 peat survey. The draft PMP will detail the likely volumes of peat that will be generated and the principles of how the peat will be reused or disposed of.

6.45 The EIA will expand upon the hydrology, hydrogeology, geology and peat potential impacts identified within this scoping report to identify what receptors are likely to be affected by the proposed development and other cumulative schemes in the area and to what extent.

6.46 The cumulative effects of development within the local area will be assessed on a catchment basis. The size of the draining catchments and the proximity to current or proposed development will be assessed to determine the likely cumulative impacts on the local environment.

Consultation Proposals

6.47 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- SEPA;
- SNH;
- Marine Scotland;
- The Highland Council; and
- Moray Council.

Questions for Consultees

Q6.1: Do the consultees agree on the scope for the EIA Report?

Q6.2: Do the consultees agree with the approach to embedding good practice measures into the assessment of potential impacts?

Chapter 7

Ecology

Introduction

7.1 This chapter sets out the proposed approach to the assessment of potential effects on ecology during construction and operation of the proposed development. Potential effects on birds are considered separately in **Chapter 8: Ornithology**.

Existing Conditions

7.2 There are no statutory designations with ecological features within the site. There are two Special Area of Conservation (SACs) and two Sites of Special Scientific Interest (SSSIs) within 5km of the site that contain ecological features. These are listed in **Table 7.1** and shown on **Figure 7.1**.

7.3 Sites designated for ornithological interests and any ornithological qualifying features are discussed in **Chapter 8: Ornithology**.

Table 7.1: Designated Sites with Ecological Features within 5km of the Site

Designated Site	Qualifying Ecological Features	Condition	Distance from Site ¹²
Lower Findhorn Woods SSSI	Upland mixed ash woodland, bryophyte assemblage, lichen assemblage, and Oligotrophic river/stream	Mixed woodland – Unfavourable Declining (25/09/2012) Bryophyte assemblage – Favourable Maintained (19/09/2010) Lichen assemblage - Unfavourable No Change (17/09/2009) Oligotrophic river/stream - Favourable Maintained (09/07/2003)	2.8km

¹² Distances are measured from the red line application boundary of the site.

Designated Site	Qualifying Ecological Features	Condition	Distance from Site ¹²
Lower Findhorn Woods SAC	Mixed woodland on base-rich soils associated with rocky slopes	Unfavourable Declining (24/09/2012)	2.8km
Moidach More SSSI/SAC	Blanket bog	Unfavourable Recovering (24/09/2008)	3.5km

7.4 The closest designated site is the Lower Findhorn Woods SSSI and SAC, at 2.8km from the site. Based on the distance and the designated qualifying features (detailed in

7.5 Table 7.1), connectivity with the site is considered to be unlikely. Consequently, no likely significant effects are predicted, and these designations will be scoped out from the ecological impact assessment.

7.6 Moidach More SSSI and SAC is designated for its blanket bog habitat. At 3.5km from the site, direct and indirect impacts are considered unlikely due to lack of connectivity and hydrological separation from the site. Consequently, no likely significant effects are predicted, and these designations will be scoped out from the ecological impact assessment.

7.7 There are no areas of ancient woodland within the site (as detailed within the Ancient Woodland Inventory (AWI)), although several areas of ancient woodland are located close to the site (**Figure 7.1**). Although there is no legislation specifically protecting ancient woodland, Scottish planning policy identifies it as an important national resource that should be protected and enhanced. No woodland removal resulting from the proposed development is expected in areas of ancient woodland. Also, no impairment of woodland habitat connectivity is expected to result from the construction and operation of the proposed development. Consequently, potential effects on ancient woodland will be scoped out from the ecological impact assessment.

Field Surveys

7.8 The extensive information available from the baseline surveys and assessments completed as part of the EIA for the consented Cairn Duhie Wind Farm has been used to inform the scope of the survey and assessment work required for the proposed development. Field surveys undertaken in 2011 and 2012 for the consented site are detailed below:

- Extended Phase 1 habitat survey (across the site);

- National Vegetation Classification (NVC) survey (across the site);
- Peat / Blanket Mire Assessment (across the site);
- badger survey (across the site and immediately outwith the site where suitable habitat exists);
- bat habitat assessment and activity surveys (including walked transect and static (anabat) surveys) (targeted survey across the site; tree survey across the site and affected areas along the access route);
- otter and water vole survey (across the site);
- pine marten, red squirrel and wildcat survey, including incidental records of reptiles, across the site; and
- fisheries assessment and electrofishing (across the site and within the wider catchment downstream of the site).

7.9 The site comprises typical upland habitats, with a peat-based substrate dominating which is vegetated with a mixture of typical and common heath and bog communities. Plantation forestry is present to the north of the site, with an oligotrophic loch present to the immediate south. Topographically, the site rises from all sides towards the peak of Cairn Duhie in the central portion of the site. There are several minor watercourses on the site which sit within the River Findhorn catchment.

7.10 No evidence of otter, water vole, red squirrel, pine marten or wildcat was identified during protected species surveys undertaken in 2012.

7.11 No conclusive badger evidence was identified during 2012 surveys. Two burrow complexes which, whilst not in current use by badger, may have been historically occupied, or if in use, only been periodically used as outlier setts.

7.12 No bat roosts were identified during surveys. Bat activity was found to be low across the site, with common pipistrelle, soprano pipistrelle and Daubenton's bat recorded in low numbers. In total, 1435 bat passes were recorded from 1134.17 hours of static anabat surveying monthly from April to October 2012 across the site. The vast majority of all the bat passes recorded were soprano pipistrelle (879 passes in total), with common pipistrelle (382 passes) the second most abundant; Daubenton's bat accounted for 174 passes. Walked transect surveys revealed a similar picture, with 83 bat passes recorded in over 53 hours of surveys undertaken monthly (82 pipistrelle species records and one *Myotis* species record).

7.13 Incidental records of common lizard and adder were identified during 2012 surveys.

7.14 Atlantic salmon and brown trout fry and parr were identified during 2012 electrofishing surveys. The Dorback

Burn and the tributaries around Cairn Duhie were found to support good populations of salmon and trout.

7.15 Results of the above surveys undertaken for the consented Cairn Duhie Wind Farm will be included as part of the desk study data and considered in the assessment for the proposed development.

7.16 Field surveys have been undertaken and updated for the following in 2019:

- National Vegetation Classification (NVC) refresh and update survey (across the site);
- badger, otter, water vole, red squirrel, pine marten survey (across the site);
- great crested newt (Habitat Suitability Index (HSI))¹³; and
- bat habitat assessment (targeted survey across the site).

7.17 The results of the 2019 surveys indicated that habitats were found to be comparable with those identified in 2012, and no evidence of protected species was identified across the site.

Design Considerations

7.18 The following design considerations will be taken into account during the finalisation of the layout of the proposed development:

- avoiding deeper peatland (>1 m) for the location of turbines and other infrastructure as far as practicable;
- ensuring that watercourses are buffered by at least 50m from all proposed turbine and infrastructure locations, except where a minimum number of watercourse crossings may be required; and
- ensuring an appropriate buffer from turbines to woodland edge habitats to maintain a stand-off distance that ensures a minimum 50m buffer from turbine blade tip to feature height for all turbines, as recommended by SNH *et al.*, 2019¹⁴ to reduce the risk of bat collisions.

Survey and Assessment Methodology

7.19 The assessment will be undertaken in line with current legislation, policies and good practice.

Desk Study

7.20 A desk-based study will be completed to provide any historic ecological data within the site and surrounding area, which will be considered in the assessment.

7.21 The following data sources will be consulted as part of the assessment:

- Highland Biological Recording Group (HBRG);
- Findhorn, Nairn and Lossie (FNL) Fisheries Trust;
- The NBN Atlas [<https://nbnatlas.org/>];
- The Ancient Woodland Inventory (Scotland);
- The Scottish Leisler's Project;
- The SNHi Information Service [<https://sitelink.nature.scot/>] for designated sites;
- The Deer Distribution Survey (2016) results by the British Deer Society;
- The Carbon and Peatland Map 2016;
- The consented Cairn Duhie Wind Farm ES and technical appendices; and
- Any ES/EIA reports or technical reports from other developments or proposed developments in the local area.

Data Analysis

7.22 Bat activity surveys across the site in 2012 recorded only common pipistrelle, soprano pipistrelle and Daubenton's bat, with low levels of bat activity recorded. The assessment for the consented Cairn Duhie Wind Farm concluded a negligible effect on bats. There has been no major habitat or land use change on the site since the previous assessment that would alter bat use or activity levels over the site, and furthermore the design considerations noted in paragraph 7.18 will allow for the avoidance and protection of linear habitat features. It is therefore proposed that no further bat activity surveys are undertaken and a technical note was sent to SNH on the 13th February 2020 to confirm this approach.

7.23 Based on revised guidance (SNH *et al.*, 2019¹⁴) that has been released since the original surveys were undertaken, the bat data will be re-analysed using the EcoBat¹⁵ tool to allow for an objective measure of relative bat activity to be undertaken with comparable sites and weather conditions. This tool will allow for a site risk assessment to be undertaken

¹³ ARG UK (2010). Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom.

¹⁴ SNH, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & Bat Conservation

Trust (BCT) (2019) Bats and Onshore Wind Turbines: Survey Assessment and Mitigation.

¹⁵ <http://www.mammal.org.uk/science-research/ecostat/>

and a refinement of potential effects and mitigation measures, which will be included in the ecological impact assessment.

Assessment Method

7.24 The EIA Report will include an Ecological Impact Assessment (EclA). This will consider the potential direct, indirect and cumulative effects that the construction and operation of the proposed development could have on important ecological features (IEFs). It will also consider the potential effects on statutory designated sites. The EclA will be supported by technical appendices covering; protected species, bats, habitats (NVC) and an Outline Habitat Management Plan (OHMP).

7.25 The ways in which ecological features may be affected (directly or indirectly) by the construction and operation of the proposed development are:

- direct and indirect habitat loss;
- disturbance to/loss of breeding sites, resting places, roosts etc. for protected species;
- direct/indirect loss of foraging resource for protected species;
- displacement/disruption to movement of animals within/through the site;
- direct effects upon protected fauna, i.e. road traffic accidents;
- environmental effects, i.e. pollution of watercourses, etc.; and
- changes to habitat composition or quality through land-use change, increased human presence, etc.

7.26 A groundwater dependent terrestrial ecosystem (GWDTE) assessment will be completed as part of **Chapter 6: Hydrology, Hydrogeology, Geology, and Peat** of the EIA report.

Method for Assessing Ecological Features

7.27 Effects on habitats will be assessed in relation to the feature's extent, distribution and quality in relation to regional or national references. For protected species, its ecology, reference population, range and distribution will be considered. The assessment of potential effects will follow CIEEM (2018)¹⁶ guidelines and be undertaken in line with European and national legislation, policy and guidance.

7.28 The assessment of ecological features involves the following process:

- identifying the potential effects of the proposed development;
- considering the likelihood of occurrence of potential effects where appropriate;
- defining the Nature Conservation Value and Conservation Status of the ecological features present to determine a level of sensitivity;
- establishing the magnitude of the Likely Effect (both spatial and temporal);
- based on the above information, making a judgement as to whether or not the identified effect is significant with respect to the EIA Regulations;
- if a potential effect is determined to be significant, suggesting measures to mitigate or compensate the effect where required;
- considering opportunities for enhancement where appropriate; and
- reporting residual effects after mitigation, compensation or enhancement.

7.29 Nature Conservation Value is defined on the basis of the geographic scale, and it is also necessary to consider each feature's conservation status, its distribution and its population trend based on available historic records, to give an overall level of sensitivity.

7.30 The significance of potential effects is determined by integrating the assessments of sensitivity and magnitude in a reasoned way.

7.31 A set of pre-defined significance criteria will be used in assessing the potential effects of the proposed development. It is necessary to establish whether there will be any effects which will be sufficient to adversely affect the feature to the extent that its conservation status deteriorates above and beyond that which would be expected should baseline conditions remain (i.e. the 'do nothing' scenario). Furthermore, these predictions will be given with a level of confidence relative to the effect being assessed where required (in line with CIEEM, 2018)¹⁶.

Cumulative Effects

7.32 An assessment of cumulative effects will be undertaken following published guidance (SNH, 2012)¹⁷. Cumulative effects on each feature relevant to the proposed development

¹⁶ 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.

¹⁷ SNH. (2012). Assessing the Cumulative Impacts of Onshore Wind Energy Developments.

will be assessed in relation to other projects and activities subject to the EIA process within a relevant search area, and their effects on a relevant reference population; for example, at a watercourse, watershed or Natural Heritage Zone (NHZ) level.

Potential Effects

7.33 The assessment will consider the potential effects associated with construction and operation of the proposed development as detailed below.

Potential Effects Scoped in to the Assessment

7.34 Based on the available information from the consented Cairn Duhie Wind Farm ES, preliminary results from the desk-based study, and the further survey work undertaken in 2019 as detailed above, the following construction and operational effects are likely to be assessed. It may be possible to scope some of these receptors out within the ecological impact assessment where evidence or standard mitigation allows:

- direct and indirect loss of habitats of conservation value (blanket bog, wet modified bog, wet heath and dry heath) and impacts on priority peatland habitats;
- collision risk, disturbance or displacement to foraging or commuting bats, recorded during baseline surveys; and
- effects on wild deer.

Potential Effects Scoped Out of Detailed Assessment

7.35 On the basis of policy, guidance and standards, common and widely distributed habitats or species (i.e. those of low conservation value) that are outwith the categories detailed below will be scoped out of the assessment as it is very unlikely that any potential significant effects on such features would occur due to the proposed development:

- Habitats on Annex I to the Habitats Directive or Scottish Biodiversity Priority Habitat list;
- Species on Annex II to the Habitats Directive; and
- Habitats or species protected by other legislation such as the Wildlife and Countryside Act 1981 (as amended), the Nature Conservation (Scotland) Act 2004 (as amended) or the Protection of Badgers Act 1992.

7.36 Based on the distances and the designated qualifying features at the designated sites Moidach More SSSI/SAC and Lower Findhorn Woods SSSI/SAC listed in **Table 7.1** and as discussed above, connectivity with the site is considered to be unlikely. Consequently, no likely significant effects are predicted, and these designations will be scoped out from the ecological impact assessment.

7.37 Ancient woodland is scoped out from the ecological impact assessment as it is unlikely that any potential significant effects on these would occur due to the lack of connectivity with the proposed development and lack of direct or indirect effects (see paragraph 7.7).

7.38 Given the results of the protected species surveys in 2012 and 2019 (paragraphs 7.10 to 7.13), the preliminary desk-study results, and the approach to mitigation (as per below, in particular paragraph 7.40) there are unlikely to be any direct or indirect effects on protected species (not including bats), i.e. otter, badger, water vole, red squirrel, pine marten, wildcat, reptiles and amphibians. Consequently, no significant effects are predicted for these species and it is proposed that they be scoped out of the ecological impact assessment.

Approach to Mitigation

7.39 Significant effects upon ecology will be avoided/minimised where possible within the design process as outlined above.

7.40 Good practice during construction and operation of the proposed development will be implemented as standard, including the provision of a suitable Species Protection Plan (SPP) and Construction Environmental Management Plan (CEMP) as well as the presence of an Ecological Clerk of Works (ECOW) during the construction period. The assessment will be undertaken on the basis that these measures will be in place.

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

Consultation Proposals

7.42 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- SNH;
- Scottish Environment Protection Agency (SEPA);
- The Highland Council;
- Marine Scotland; and
- Findhorn, Nairn and Lossie Fisheries Trust.

Questions for Consultees

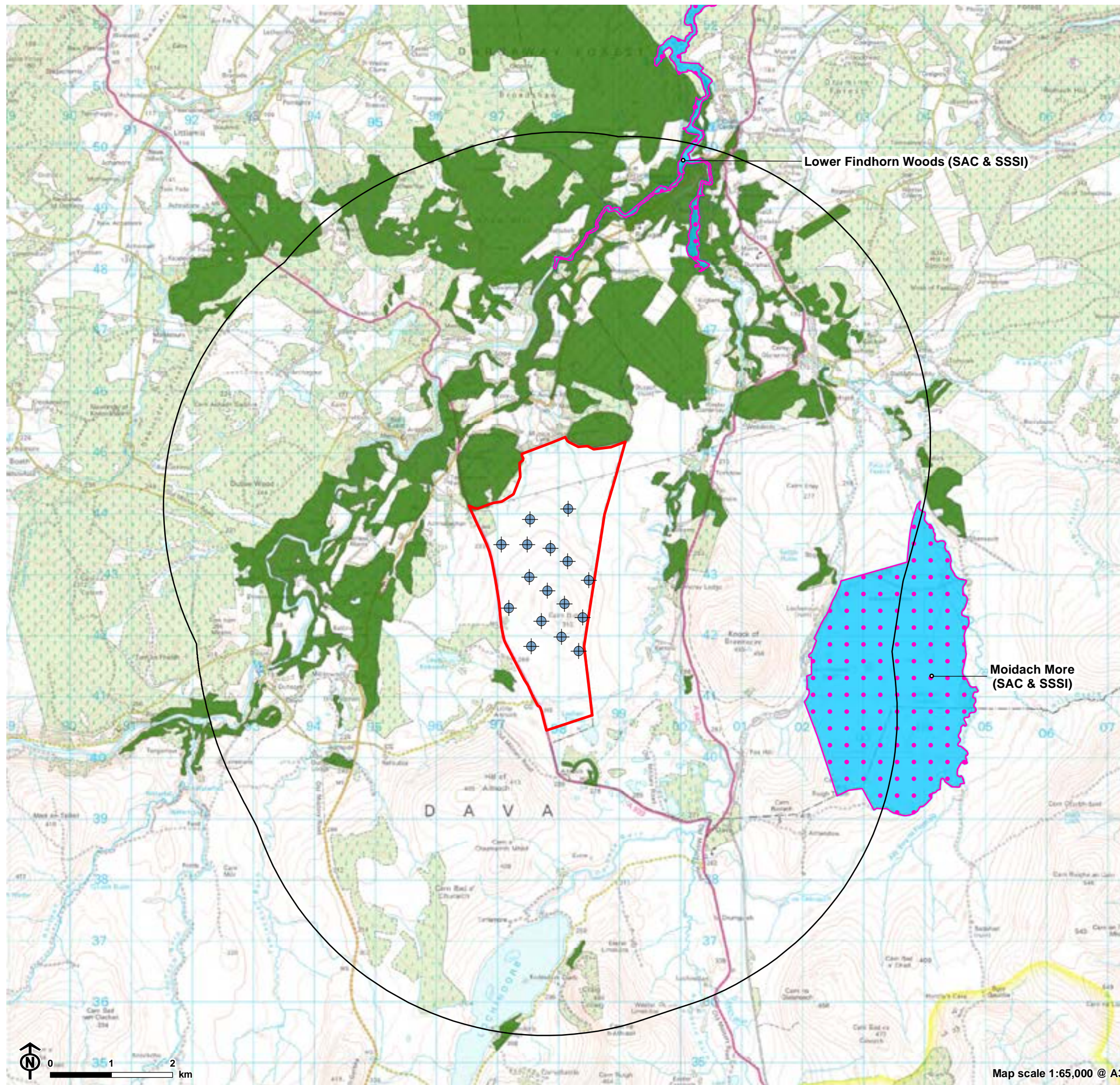
Q7.1: Do consultees agree that the range of surveys carried out/proposed is sufficient and appropriate to conduct a robust impact assessment?

Q7.2: Are there any other relevant consultees who should be contacted, or other sources of information that should be referenced with respect to the ecology assessment?

Q7.3: Do consultees believe that there are further species or designated sites which need to be considered in the assessment?

Q7.4: Confirmation that the proposed designated sites, habitats and species can be scoped out of the assessment.

Figure 7.1: Ecological Designated Sites within 5km



- Site boundary
- Turbine
- 5km distance band
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Ancient Woodland



Map scale 1:65,000 @ A3

Chapter 8

Ornithology

Introduction

8.1 This Scoping Report sets out the proposed approach to the assessment of potential effects on ornithology, during construction and operation of the proposed development.

Existing Conditions

Designated Sites

8.2 There are no statutory designations with ornithological features within the site. The proposed development is within 20km of seven statutory designations that include ornithological features (**Figure 8.1**):

- Darnaway and Lethen Forest SPA, approximately 4.4km to the north of the proposed development;
- Anagach Woods SPA, approximately 14.5km to the south-west of the proposed development;
- Moray and Nairn Coast Special Protection Area (SPA) and associated Moray and Nairn Coast Ramsar, approximately 15.5km to the north of the proposed development;
- Loch Flemington SPA, approximately 18km to the north-west of the proposed development;
- Craigmore Wood SPA, approximately 18km to the south of the proposed development; and
- Inner Moray Firth SPA and associated Inner Moray Firth Ramsar and Whiteness Head Site of Special Scientific Interest (SSSI), approximately 18.5km to the north-west of the proposed development.

8.3 The only statutory designation which is considered to be potentially connected to the proposed development is the Moray and Nairn SPA and associated Ramsar. In the EIA for the consented development, all qualifying species apart from greylag goose and pink-footed goose designated under the Moray and Nairn Coast SPA were scoped out due to distance.

8.4 The site is approximately 15.5km from the Moray and Nairn Coast SPA and is therefore within the maximum SPA connectivity distance for greylag goose and pink-footed goose (core range 15-20km, SNH 2016¹⁸). When considering greylag

¹⁸ SNH (2016) Assessing connectivity with Special Protection Areas (SPAs)

goose and pink-footed goose in the assessment, any potential effects upon these species in the context of the Moray and Nairn SPA populations will also be considered under the Habitats Regulations Appraisal (HRA) process.

8.5 Due to distance and the qualifying species present, it is considered that there is no connectivity between the proposed development and Darnaway and Lethen Forest SPA, Anagach Woods SPA, Loch Flemington SPA, Craigmore Wood SPA, Inner Moray Firth SPA (and associated Ramsar) and Whiteness Head SSSI.

Field Surveys

8.6 The following baseline surveys were undertaken for the consented development between April 2011 and August 2012. The area surveyed in 2011 and 2012 covered the area now considered by the proposed development. The surveys were undertaken in line with the appropriate guidance available at the time of the surveys SNH 2010¹⁹, Brown and Shepherd 1993²⁰, Gilbert *et al.* 1998²¹, Hardey *et al.* 2009²² and 2013²³ and survey areas²⁴ are detailed on **Figures 8.2** and **8.3**.

- Flight activity surveys, three Vantage Point (VP) locations – September 2011 to August 2012 (one non-breeding season and one breeding season).
- Scarce breeding bird²⁵ surveys (including barn owl), 2km survey area – March to August 2012 (one breeding season).
- Breeding diver surveys, 1km survey area and monitoring of a known black-throated diver nest within 3km of the site – July and August 2011 and March to August 2012 (two breeding seasons).
- Black grouse surveys, 1.5km survey area – April and May 2012 (one breeding season).
- Upland breeding bird surveys, 500m survey area – April to June 2011 (one breeding season).
- Winter walkover surveys, 500m survey area – November 2011 to January 2012 (one non-breeding season).

8.7 Further baseline surveys are being completed between December 2019 and March 2020 for the proposed

development in line with the appropriate guidance (SNH 2017):

- Winter walkover surveys, 500m survey area – December 2019 to March 2020 (one non-breeding season).

Ornithological Activity

8.8 This section provides an overview of the results collected during the baseline surveys undertaken for the consented development²⁶.

8.9 Surveys revealed an assemblage of species typical of upland and forested habitats in northern Scotland. The site is dominated by a mixture of degraded bog and heath habitats with localised wooded areas and scattered mature trees. The site is managed for grazing and there is evidence for localised peat-cutting, burning and systematic drainage channels.

8.10 Ten Annex 1/Schedule 1 species were recorded during the baseline surveys (black-throated diver, golden plover, hen harrier, merlin, goshawk, osprey, peregrine falcon, red-throated diver, short-eared owl and whooper swan). Goshawk were recorded breeding within the 2km survey area (approximately 200m from the site boundary) and a pair of breeding black-throated divers were recorded approximately 3.5km from the site; for all other species no evidence of breeding was recorded.

8.11 In addition, four Birds of Conservation Concern (BoCC, Eaton *et al.* 2015) Red listed species (black grouse, curlew, herring gull and lapwing) and two BoCC Amber listed species (greylag goose and pink-footed goose) commonly considered as target species were recorded.

8.12 One lek was identified outside of the site boundary, but within the survey area in 2012, with a peak count of six lekking males recorded. Solitary females were occasionally recorded across the site.

8.13 Goshawk were the only target raptor/owl species confirmed to be breeding within the survey area with a pair successfully fledging three chicks in 2012. Short-eared owl were recorded during flight activity and scarce breeding bird surveys and although no evidence of breeding activity was recorded, it was considered likely that this species was breeding in the wider area. Hen harrier, merlin, peregrine

¹⁹ SNH (2005 – revised December 2010) Survey Methods for Use in Assessing the Impacts of Onshore Windfarms on Bird Communities.

²⁰ Brown, A. F. & Shepherd, K. B. (1993) *A method for censusing upland breeding waders*. *Bird Study*, 40: 189-195

²¹ Gilbert, G., Gibbons, D. W. and Evans, J. (1998) *Bird Monitoring Methods*. RSPB, Sandy.

²² Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2009) *Raptors: a field guide for surveys and monitoring* (2nd edition). The Stationery Office, Edinburgh

²³ Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013) *Raptors: a field guide for surveys and monitoring* (3rd edition). The Stationery Office, Edinburgh

²⁴ Please note 'survey area' is defined as the area covered by each survey type at the time of survey whereas 'study area' is defined as the area of consideration of effects on each species at the time of assessment.

²⁵ Scarce breeding birds are those listed on Annex 1 of the EU Birds Directive or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and in the case of the Development consists of any raptor and owl species listed on either Annex 1 or Schedule 1.

²⁶ All details relating to the consented development are set out in the Cairn Duhie Wind Farm ES (2013) and accompanying Ornithology Technical Appendix 9.1.

falcon and osprey were all occasionally recorded hunting/ flying across the survey area, however there was no evidence of breeding.

8.14 Wader activity was recorded within the 500m survey area with breeding behaviour recorded for curlew, golden plover, lapwing, common sandpiper and snipe.

8.15 A total of 1,110 greylag geese and 470 pink-footed geese were recorded during flight activity surveys (**Table 8.1**). The majority of geese were recorded during the 2011/12 non-breeding season, although nine greylag goose flightlines were recorded in May and June 2011. Greylag geese are both resident and migratory in Scotland, large flocks may represent migratory birds whilst the other observations represent resident (breeding) birds.

8.16 Flight activity surveys recorded ten target species collectively accounting for 110 flightlines, of which 77 flightlines were recorded at Potential Collision Height (PCH) and may therefore be included in any collision risk modelling, depending on their location in relation to the final turbine layout. **Table 8.1** details the species recorded.

Table 8.1: Summary of Target Species Recorded During Flight Activity Surveys (September 2011 to August 2012).

Species	Total Number of Flightlines Recorded	Total Number of Birds Recorded	Total Bird Seconds Recorded	Total Bird Seconds Recorded at PCH
Curlew	27	30	1,169	835
Goshawk	2	2	169	124
Greylag goose	57	1,110	108,479	106,770
Hen harrier	5	5	618	0
Merlin	1	1	62	30
Osprey	3	3	704	698
Pink-footed goose	6	470	56,075	56,075
Red-throated diver	1	2	90	90
Short-eared owl	6	6	614	500
Whooper swan	1	3	216	0

8.17 Surveys undertaken in December 2019 and January 2020 have recorded limited bird activity (almost exclusively species of common/low conservation value) with the site considered to be of low ornithological value. Furthermore, repeat habitat surveys in 2019 have indicated that the habitats on site are comparable with those identified in 2012 (Chapter 7: Ecology paragraph 7.16 of the ES for the consented development) and considering the unchanged habitats and continuation of similar land management practices, the baseline data already gathered for the proposed development is considered to be representative of bird activity at the site. It is therefore proposed that no further baseline ornithological surveys are undertaken and a technical note was sent to SNH on the 13th February 2020 to confirm this approach.

Design Considerations

8.18 Breeding locations and key foraging locations of target species were taken into consideration from the early stages of the proposed development design process to minimise the risk of disturbance, displacement and collision effects. This included the results of baseline surveys as well as longer-term datasets gathered from other sources.

8.19 In summary, the following steps are being taken in the design process to minimise the risk of significant effects on Important Ornithological Features (IOFs):

- Avoidance of active nesting locations of goshawk by at least 500m.
- Avoidance of turbines and all possible new infrastructure by at least 500m of black grouse leks.
- Consideration of larger turbine types with greater airspace between ground level and lower rotor top height, to minimise collision risks.

Survey and Assessment Methodology

Legislation, Policy and Guidance

8.20 The assessment will be undertaken in line with the current legislation and guidance.

Proposed Study Area

8.21 The EIA Report will consider the following Study Areas²⁴:

- Designated sites: 20km Study Area (SNH 2016);
- Collision modelling: the results of the flight activity surveys will be used to inform collision modelling. A Collision Risk Analysis Area (CRAA) will be created

using GIS Delaunay triangulation²⁷ to create a wind farm area which will then be buffered by 500m (as per SNH 2017);

- Scarce breeding birds: 2km Study Area (SNH 2017);
- Breeding divers: 1km Study Area (SNH 2017);
- Black grouse: 1.5km Study Area (SNH 2017);
- Breeding upland waders and wintering waders, raptors, owls and wildfowl: 500m Study Area (SNH 2017);
- Cumulative assessment: as per SNH (2018b), the Natural Heritage Zone (NHZ) level is considered practical and appropriate for breeding species of wider countryside interest; and
- In-combination assessment: required as part of the HRA process, SNH (2016) guidance on SPA connectivity will be consulted to identify an appropriate study area per SPA species scoped into the assessment.

Desk Study

8.22 The following data sources will be consulted as part of the assessment:

- The Highland Raptor Study Group (HRSG) – provision of historic raptor nests;
- The SNHi Information Service [<https://sitelink.nature.scot/>] for designated sites;
- The Cairn Duhie ES (2013); and
- Any other relevant ES/EIA reports or technical reports from other developments or proposed developments in the local area.

Methodology for Assessing Ornithological Features

8.23 The EIA Report will include an Ornithological Impact Assessment (OIA). This will consider the potential direct, indirect and cumulative effects that the construction and operation of the proposed development could have on IOFs. The OIA will be supported by a technical appendix that will include details of survey methodologies, all survey data and outputs from any collision modelling.

8.24 Effects on IOFs will be assessed in relation to the species' reference population, conservation status, range and distribution. The assessment of potential effects will follow guidelines published by CIEEM (2018) and SNH (2017, 2018a).

8.25 The assessment involves the following process:

- identifying potential effects of the proposed development;
- considering the likelihood of occurrence of potential effects where appropriate;
- defining the Nature Conservation Importance (NCI) and conservation status of the bird populations present to determine overall sensitivity;
- establishing the magnitude of the likely effect (both spatial and temporal);
- based on the above information, making a judgement as to whether or not the identified effect is significant with respect to the EIA Regulations;
- if a potential effect is determined to be significant, suggesting measures to mitigate or compensate the effect where required;
- considering opportunities for enhancement where appropriate; and
- reporting residual effects after mitigation, compensation or enhancement.

8.26 NCI is defined on the basis of the geographic scale, and it is necessary to consider alongside each IOF's conservation status, its distribution and its population trend based on available historic records, to provide an overall level of sensitivity.

8.27 The significance of potential effects is determined by integrating the sensitivity and magnitude in a reasoned way.

8.28 A set of pre-defined significance criteria will be used in assessing the potential effects of the proposed development. It is necessary to establish whether there will be any effects which will be sufficient to adversely affect the feature to the extent that its conservation status deteriorates above and beyond that which would be expected should baseline conditions remain (i.e. the 'do nothing' scenario). Furthermore, these predictions will be given with a level of confidence relative to the effect being assessed where required (in line with CIEEM 2018).

Methodology for Assessing Likely Significant Effects on a SPA

8.29 As detailed above, the proposed development is within the 15-20km winter foraging range for greylag goose and pink-footed goose listed on the Moray and Nairn SPA and there is therefore potential for connectivity to exist.

²⁷ Delaunay triangulation is a form of mathematical/computational geometry where a given set of points (in this case the turbine locations) are all joined to

create discrete triangles. Further information is available here: <https://uk.mathworks.com/help/matlab/math/delaunay-triangulation.html>

8.30 The method for assessing the significance of a likely effect on an SPA is different from that employed for wider-countryside ornithological interests (detailed above). The Habitats Directive is transposed into domestic legislation by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland). Regulation 48 includes a number of steps to be taken by the competent authority before granting consent (these are referred to here as a Habitats Regulations Appraisal, HRA). In order of application, the first four are:

- **Step 1:** consider whether the proposal is directly connected to or necessary for the management of the SPA (Regulation 48(1)(b)).
- If not, **Step 2:** consider whether the proposal, alone or in combination, is likely to have a significant effect on the SPA (Regulation 48(1)(a)).
- If so, **Step 3:** make an Appropriate Assessment of the implications for the SPA in view of that SPA's conservation objectives (Regulation 48(1)(a)).
- **Step 4:** consider whether it can be ascertained that the proposal will not adversely affect the integrity of the SPA ("Integrity Test") having regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the consent, permission or other authorisation should be given (Regulation 48(5) and 48(6)).

8.31 The assessment on the integrity of the SPA in relation to the proposed development will be presented in ornithology chapter of the EIA Report and the results of baseline surveys and scientific conclusions presented in the chapter will be used to inform the appraisal process, and potentially for the competent authority to conduct an Appropriate Assessment, if required.

Cumulative Effects

8.32 An assessment of cumulative effects will be undertaken following published guidance (SNH 2018b). Cumulative effects on each IOF relevant to this proposed development will be assessed in relation to other projects and activities subject to the EIA process within a relevant search area and their effects on a relevant reference population; for example, at Natural Heritage Zone (NHZ) level.

Potential Effects

8.33 The assessment will consider the potential effects associated with construction and operation of the proposed development as detailed below.

Potential Effects Scoped into the Assessment

8.34 The Moray and Nairn SPA and associated Ramsar was scoped into the Cairn Duhie Wind Farm ES (2013) due to potential connectivity for greylag goose and pink-footed goose and the SPA will be included in the current assessment with in-combination effects also considered.

Construction Effects

8.35 Based on the available information to date from baseline surveys and the preliminary results from the desk-based study, it is proposed that the following construction effects are assessed:

- habitat loss/alteration/fragmentation associated with the proposed development, including loss of nesting habitat for target species (e.g. for raptors, owls, black grouse and waders); and
- disturbance to target species (breeding raptors, owls, divers, black grouse, waders) associated with construction/decommissioning activities.

Operational Effects

8.36 Based on the available information to date from baseline surveys and the preliminary results from the desk-based study, it is proposed that the following operational effects are assessed:

- displacement of target species (breeding raptors, owls, divers, black grouse, waders) around operational turbines; and
- potential collision risks associated with operational turbines for target species (most likely to be wildfowl, raptors and waders).

Potential Effects Scoped Out of Detailed Assessment

8.37 On the basis of experience from other relevant projects and policy guidance or standards (e.g. SNH 2018a), the following species are proposed to be 'scoped out' of detailed assessment as it is considered that significant effects are unlikely to occur:

- effects on common and/or low conservation species not recognised in statute as requiring special conservation measures (i.e. not listed as Annex 1/Schedule 1 species);
- effects on common and/or low conservation species not included in non-statutory lists (i.e. not listed as Amber or Red-listed BoCC species), showing birds whose populations are at some risk either generally or in parts of their range;

- effects on passerine species not generally considered to be at risk from wind farm developments (SNH 2016, 2017), unless being particularly rare or vulnerable at a national level; and
- with the exception of the Moray and Nairn SPA, all designated sites within 20km of the proposed development (due to lack of connectivity).

Approach to Mitigation

8.38 Significant effects on birds will be avoided/minimised where possible within the design layout process. Good practice during construction and operation of the proposed development will also be implemented.

8.39 Where likely significant effects on IOFs are identified, measures to prevent, reduce and where possible offset these adverse effects will be proposed.

8.40 Standard good practice (SNH 2019) measures will be applied to minimise any potential effects on any breeding black grouse within up to 750m of the proposed development and/or any breeding Schedule 1/Annex 1 raptors, owls and divers within up to 800m of the proposed development, including appropriate mitigation/monitoring and license application/consultation with SNH. This would include (but is not limited to):

- Breeding waders, black grouse and Schedule 1/Annex 1 raptors, owls and divers:
 - Checks for breeding waders (out to 500m) and black grouse, raptors, owls and divers (out to 800m) by a suitably qualified ornithologist prior to works undertaken between March and July;
 - Appropriate buffers applied to any breeding attempts/leks located; and
 - Additional mitigation measures dependent on the outcomes of a risk assessment and site-specific conditions e.g. reduced speed limits and personnel to remain in vehicles along identified sections of tracks.

8.41 A Breeding Bird Protection Plan (BBPP) would be produced to ensure that all reasonable precautions are taken to ensure the relevant wildlife legislation is adhered to.

8.42 As for the consented development, a Habitat Management Plan (HMP) would be developed alongside the Ecology Chapter to enhance habitat for black grouse, waders (e.g. golden plover), raptor species (e.g. short-eared owl), and to provide wider biodiversity improvements.

Consultation Proposals

8.43 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- The Highland Council;
- SNH; and
- Royal Society for the Protection of Birds (RSPB).

Questions for Consultees

Q8.1: Confirmation that the baseline ornithology data available for the proposed development (September 2011 to August 2012, December 2019 to March 2020) are sufficient to conduct a robust impact assessment.

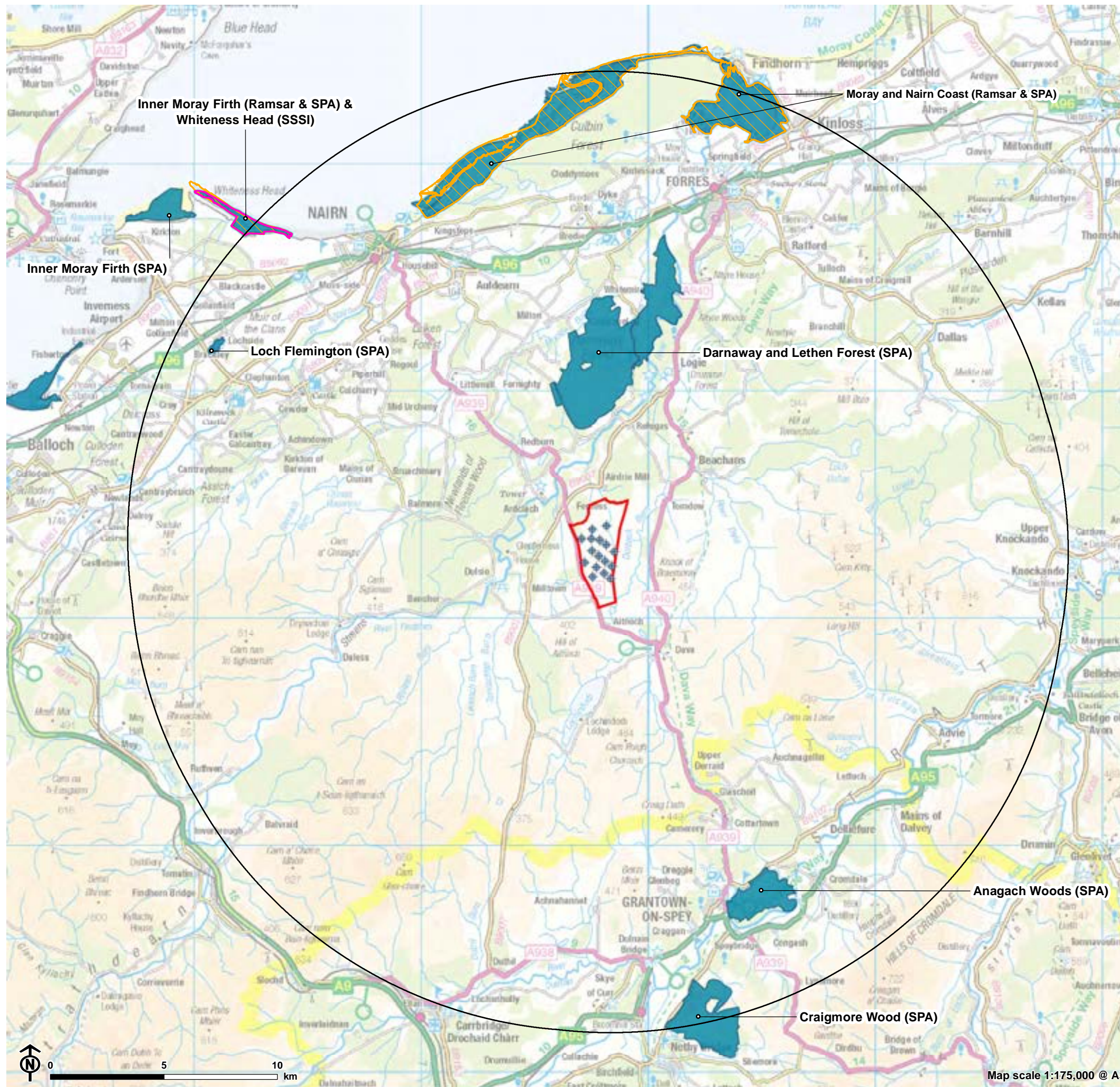
Q8.2: Do consultees agree that except for the Moray and Nairn SPA, there is no potential for connectivity between the proposed development and the designated sites detailed above and that consequently effects related to these designated sites can be scoped out of the assessment?

Q8.3: Are there any other relevant consultees who should be contacted, or other information sources referenced, with respect to the ornithology assessment?

Q8.4: Confirmation that the low conservation value species can be scoped out of the assessment is requested.

Q8.5: Confirmation of the approach to the ornithological assessment is requested. Do consultees believe that there are further species or designated sites which need to be considered in the assessment?

Figure 8.1: Ornithological Designated Sites within 20km

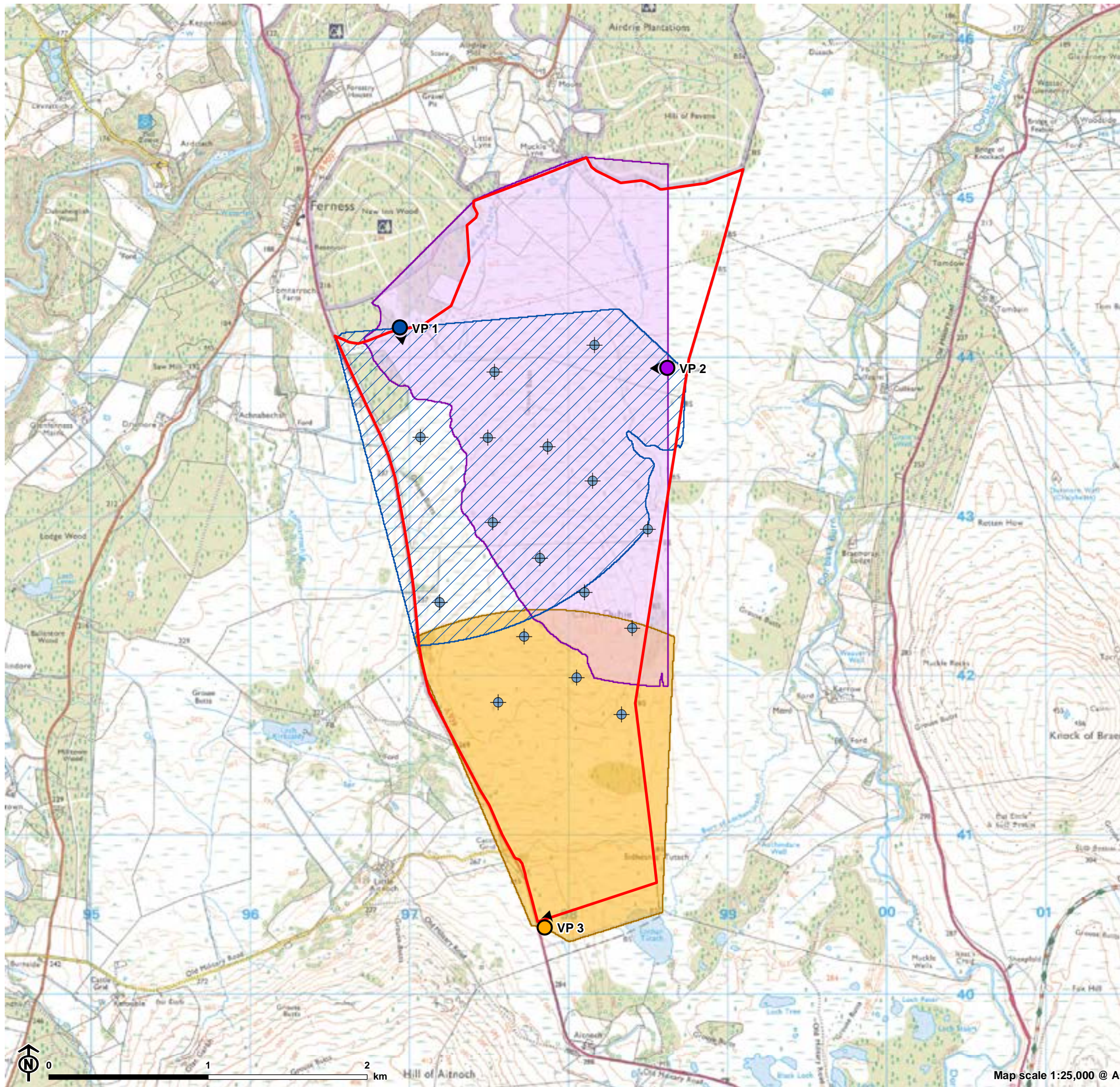


- Site boundary
- Turbine
- 20km distance band
- Ramsar Site
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)



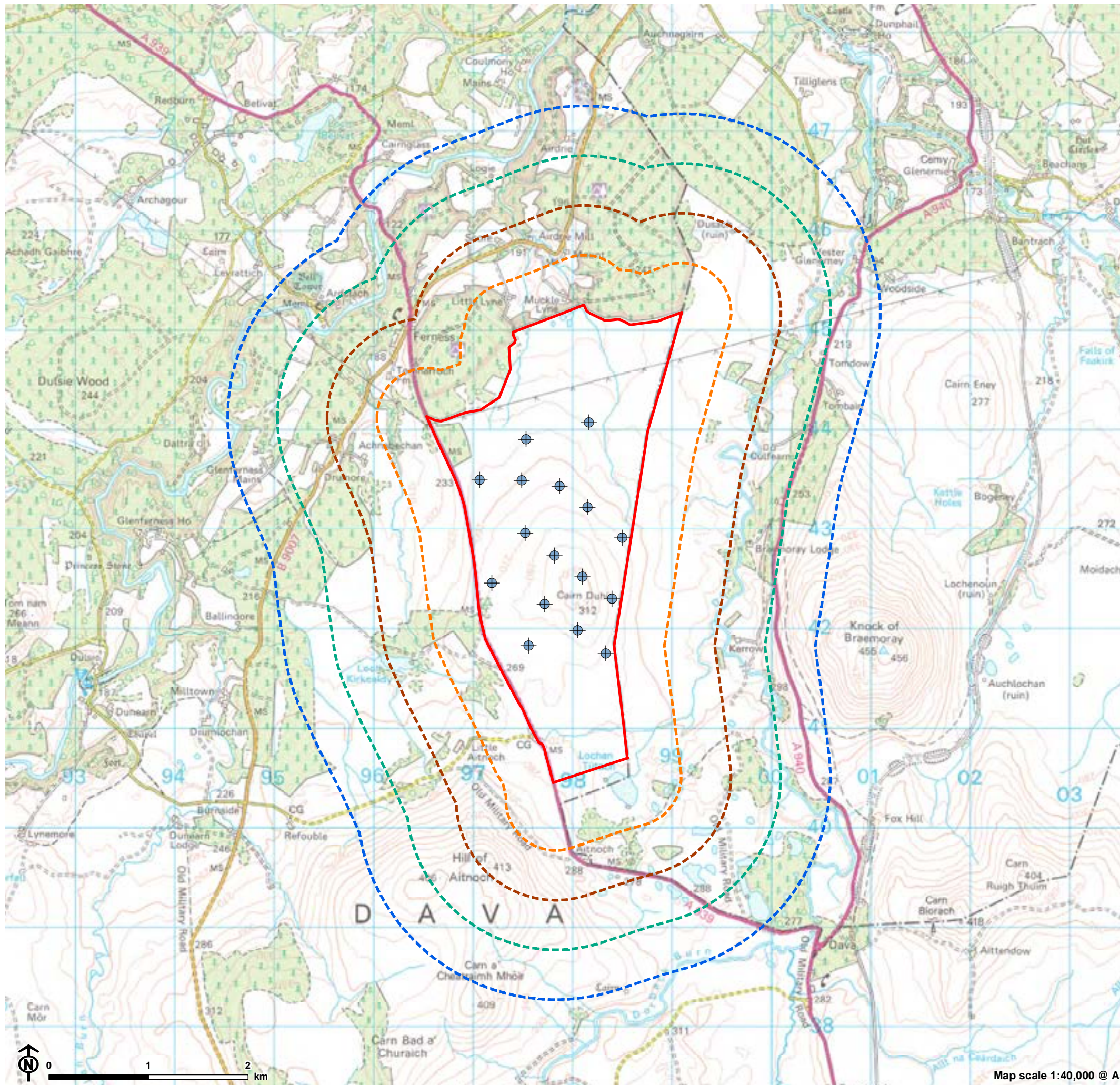
Map scale 1:175,000 @ A3

Figure 8.2: Vantage Points and Viewsheds



- Site boundary
- Turbine
- Vantage point (VP)**
 - VP 1
 - VP 2
 - VP 3
- Viewshed**
 - Area visible from VP 1
 - Area visible from VP 2
 - Area visible from VP 3

Figure 8.3: Site Boundary, Survey and Study Areas



- Site boundary
- Turbine
- Survey and study areas**
- Breeding bird survey area (500m)
- Breeding diver survey area (1km)
- Black grouse survey area (1.5km)
- Scarce breeding bird survey area (2km)

Chapter 9

Cultural Heritage

Introduction

9.1 This chapter sets out the proposed approach to the assessment of potential effects of the proposed development on cultural heritage during the construction and operation of the proposed development.

9.2 The ‘cultural heritage’ of an area comprises archaeological sites, Listed Buildings, Inventoried Gardens and Designed Landscapes (GDLs), Scheduled Monuments, Inventoried Battlefields and other historic environment features. It also includes features or places in the landscape that have the capacity to provide information about past human activity, or ‘intangible’ aspects which have cultural significance due to associations with, for example, literary or artistic works, folklore or historic events. The ‘setting’ of a heritage asset within the wider landscape may contribute to its cultural heritage significance.

9.3 The cultural heritage impact assessment will identify designated heritage assets that may be subject to significant effects, both within the limits of the proposed development and within 5km of the proposed turbines; establish the potential for currently unknown heritage assets that lie within the site; assess the predicted effects on these heritage assets and propose a programme of mitigation where appropriate. It will consider direct effects (such as physical disturbance), indirect effects (such as change within the settings of heritage assets), and cumulative effects (where changes to a heritage asset’s setting resulting from the proposed development are also affected by other developments).

Existing Conditions

9.4 The baseline conditions presented below are drawn from publicly available information on designated heritage assets available from Historic Environment Scotland (HES) and for undesignated sites from a search on Past Map (an online Web Mapping Services of the historic environment provided by HES), as well as the data obtained during the survey work undertaken for the consented development.

Heritage Assets Within the Site (the Inner Study Area)

9.5 The Inner Study Area comprises the land within the site boundary; there are no designated heritage assets including Scheduled Monuments; Inventoried GDLs; Inventoried

Battlefields; World Heritage Sites; or Listed Buildings within the Inner Study Area.

9.6 A search of Past Map indicates that the HES Canmore database and Dumfries and Galloways Historic Environment Record, as well as CFA Archaeological walk over survey, indicates that there are 28 Historic Environment Record sites within the site boundary. These include abandoned settlements and field systems as well as trackways and quarries.

Heritage Assets Outside the Site

9.7 The Outer Study Area comprises the land beyond the Inner Study Area and up to 5km from the proposed turbines.

9.8 Within 5km of the proposed development, there are five Scheduled Monuments, one Category A Listed Building, 24 Category B Listed Buildings and one Inventoried Garden and Designed Landscape. These are illustrated on **Figure 9.1**.

Design Considerations

9.9 The design process will seek to avoid buried archaeological remains within the site. The design process will also seek to avoid adverse effects on the setting and understanding of monuments within the Outer Study Area, where possible.

Survey and Assessment Methodology

9.10 Relevant legislation and policy documents include:

- The Ancient Monuments and Archaeological Areas Act 1979;
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997;
- The Historic Environment (Amendment) (Scotland) Act 2011 (this includes amendments to the above);
- Planning Advice Note Planning and Archaeology PAN 2/2011;
- Scottish Planning Policy 2014 (Scottish Government 2014);
- Historic Environment Policy for Scotland (HEPS 2019);
- Historic Environment Circular 1, HES 2016; and
- The Highland-Wide Local Development Plan (2012).

9.11 A number of relevant pieces of guidance have been published by the national heritage agency, HES, and the professional archaeological body, the Chartered Institute for Archaeologists (ClfA). These publications are:

- HES's Managing Change in the Historic Environment: Setting (HES 2016).
- ClfA's Standard and Guidance for Historic Environment Desk Based Assessment (ClfA 2014a), which gives best practice for the execution of desk-based assessments.

9.12 The assessment will apply the relevant guidance for the historic environment provided by the Environmental Impact Assessment Handbook (SNH and HES 2018).

Methodology

9.13 There is no guidance from HES which defines a required study area for the archaeological and cultural heritage assessment of wind farms. As noted above, two study areas are proposed (the Inner Study Area which extends to the site boundary and the Outer Study Area which extends to 5km beyond the outermost turbines).

9.14 Within the Inner Study Area, all known heritage assets would be assessed for their significance and potential to be affected by direct impacts from construction. The recorded historic environment within, and up to 2km beyond, the Inner Study Area, would be analysed to inform a predictive model of the probability for potential buried archaeological remains to exist, but not be previously identified, which might be directly affected by construction within the Inner Study Area. All regionally and nationally important heritage assets within the Inner Study Area will be considered for operational impacts upon their setting. Heritage assets of regional importance are understood to be: Category B Listed Buildings and Conservation Areas. Nationally important heritage assets are defined below.

9.15 Within the Outer Study Area, all nationally important designated heritage assets will be considered for operational impacts upon their setting where they are predicted to have visibility of the proposed development. Nationally important heritage assets include: World Heritage Sites; Scheduled Monuments; Category A Listed Buildings; Inventoried GDLs; and Inventoried Battlefields. This assessment will take into account particular sensitivity to long-distance visual impact, such as designed views, prospect towers and hill-top sites.

Desk Study

9.16 A Cultural Heritage chapter was produced for the proposed development area by CFA Archaeology on behalf of RES in 2015. An updated baseline assessment, drawing on this, would provide a synthesis of the historic environment based on layering of the data into a GIS and sorting information into chronological periods. This approach would identify any cultural heritage issues within the study areas using the following sources:

- Consultation with the Historic Environment Record (HER) of the Highland Council (THC) and Aberdeenshire Council Archaeological Service (ACAS) on behalf of Moray Council, for the Inner and Outer Study Areas, for site-specific information;
- Consultation with HES as appropriate for designated heritage assets;
- Consultation of web-based facilities for other information;
- Map regression using historic mapping sources to identify changes and development of the historic landscape;
- A review of available Historic Landscape Characterisation for the Inner Study Area;
- A review of aerial photographs of the Inner Study Area (National Collection of Aerial Photography, Edinburgh);
- A review of any appropriate geotechnical data including peat probing and sampling data;
- A review of relevant heritage assessments for any nearby developments;
- Synthesis of published sources to establish historic landscape and archaeological context and any cultural heritage associations, including data from Canmore (the HES database);
- A review of on-line data on designated heritage assets including Scheduled Monuments, Listed Buildings and Inventoried Gardens and Designed Landscapes; and
- Place-name analysis and assessment of the intangible cultural heritage of the Study Area.

Survey

9.17 A walk over survey of the Inner Study Area will not be undertaken due to the extensive survey by CFA Archaeology Ltd in 2014.

9.18 Heritage asset mapping would be compared with ZTV and satellite imagery to identify designated heritage assets for which the proposed development might cause indirect impacts on setting. This would be followed by a detailed analysis of those sites identified as potentially sensitive to impacts from setting change, including targeted field inspection.

Potential Effects

9.19 The assessment will consider the potential effects associated with construction and operation of the proposed development as detailed below.

Potential Effects Scoped Out of Detailed Assessment

9.20 On the basis of the work undertaken to date, the professional judgement of the cultural heritage team, and experience from other similar projects, it is considered that indirect and cumulative impacts of the proposed development on Category C Listed Buildings can be scoped out. Scotland's Listed Buildings by HES (2016), described Category C Listed Buildings as of local rather than national or regional importance.

9.21 Indirect and cumulative effects upon heritage assets out of the ZTV that also have no viewpoint that is significant to the understanding or interpretation of the heritage asset that includes both the heritage asset and the proposed development will also be scoped out.

Potential Construction Effects

9.22 There is potential for direct effects on heritage assets, through partial or total removal during ground breaking operations, on known or currently undiscovered buried remains of archaeological interest. A mitigation strategy will be established as part of the impact assessment, including input into the design process and/or a suggested programme of archaeological work.

Potential Operational Effects

9.23 Operational effects are likely to derive principally from visual impact upon the setting of heritage assets. The EIA Report will establish the heritage significance of the assets likely to be affected by the operation of the proposed development, and the contribution of setting to the understanding and appreciation of the heritage asset. It will assess the impact upon settings of statutorily designated heritage assets and / or other features that fulfil criteria for regional or national importance. Criteria such as period, topographic location, function, design, conceptual frameworks, and group and community value would be employed to understand the heritage significance of the assets, and this would then be applied to identify the key contributions of setting to that heritage significance.

9.24 Initial discussions with HES have taken place and the following sites have been requested for consideration in the assessment of effects on setting. All are within the Outer Study Area other than three which are marked with*:

- Lochindorb Castle (SM 1231)*;
- Levrattich, cairn 340m W of (SM 90020);
- Aitnoch, cairn, hut circle and field system 1400m SSE of (SM 4362);
- Dunearn, fort 510m S of (SM 2470);

- Ardclach Bell Tower (LB 551);
- Glenferness House (LB 560);
- Dunphail House (LB 2171);
- Darnaway Castle (LB 2283)*;
- Relugas (GDL 00325); and
- Darnaway Castle (GDL 00133)*.

9.25 The final list of assets which will be assessed will be refined as the design of the proposed development evolves and in consultation with the relevant consultees. The assessment will detail whether effects upon heritage assets are considered temporary, short term, long term or permanent.

Potential Cumulative Effects

9.26 A cumulative effect is considered to occur when there is a combination of:

- an above negligible effect on a heritage asset or group of heritage assets due to changes which would be caused by the main development under assessment; and
- an effect on the same heritage asset or groups of heritage assets which would be caused by another development or developments.

Approach to Mitigation

9.27 Where adverse effects on cultural heritage are identified, measures to prevent, reduce, and / or where possible offset these effects, will be proposed. Measures which may be adopted include:

- the micro-siting of proposed development infrastructure away from sensitive locations;
- the fencing off or marking out of heritage assets or features in proximity to construction activity in order to avoid disturbance where possible;
- a programme of archaeological work where required, such as an archaeological monitoring and recording during construction activities in or in proximity to areas of particular concern, or excavation and recording where damage is unavoidable; and
- a working protocol to be implemented should unrecorded archaeological features be discovered.

Consultation Proposals

9.28 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- HES;

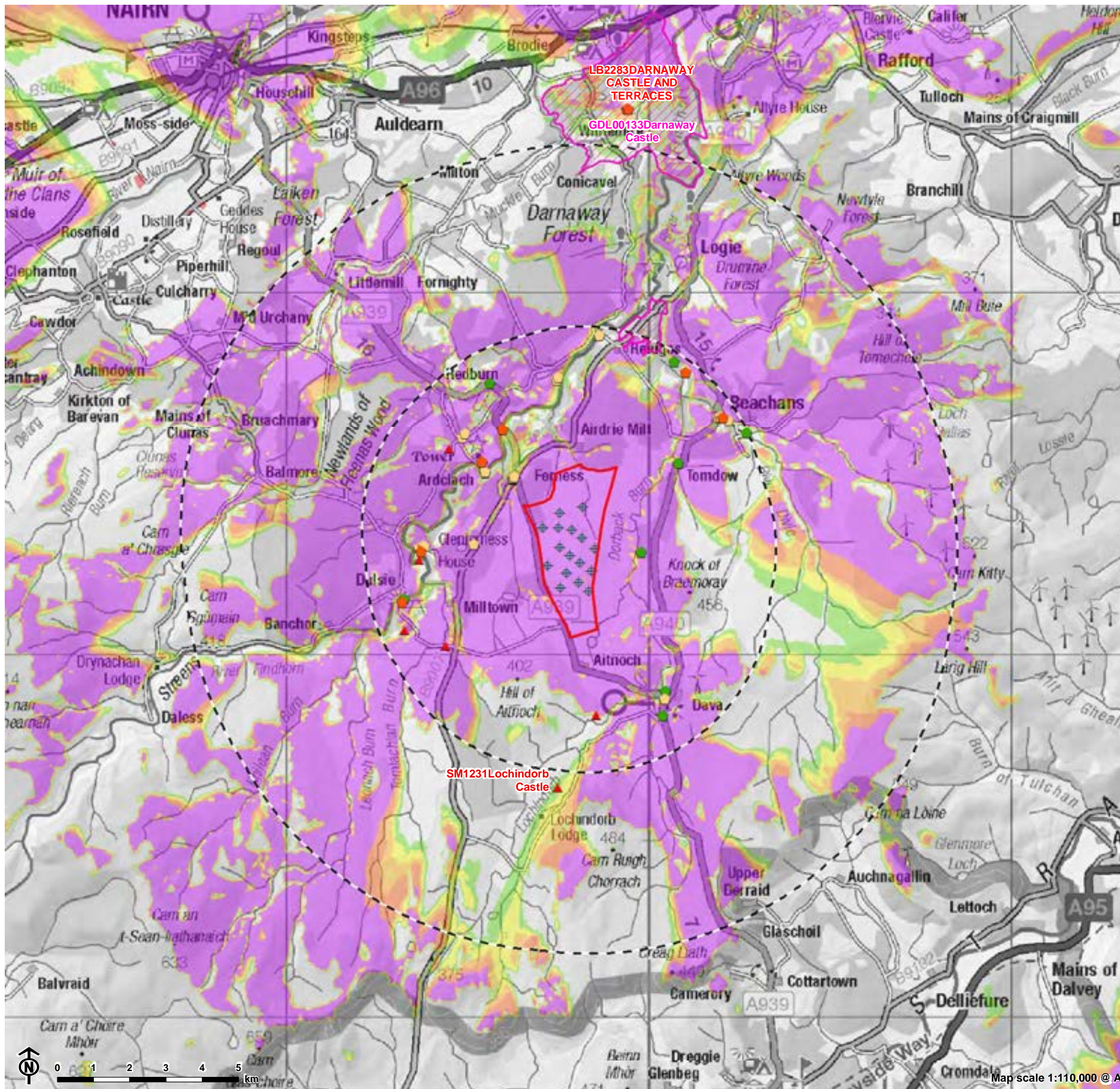
- The Highland Council; and
- Aberdeenshire Council Archaeological Service (ACAS) who act on behalf of Moray Council.

Questions for Consultees

Q.9.1: Can the consultees confirm that the proposed study areas and methodology are appropriate?

Q.9.2: Further consultation would seek to agree those heritage assets that do not require further assessment; those that are potentially sensitive heritage assets; and where heritage assets may be grouped in the assessment.

Figure 9.1: Cultural-Heritage Designations and ZTV



Legend

- Site Boundary
- 5km & 10km Buffer from Turbines
- Turbine Location

Cultural Heritage Designations

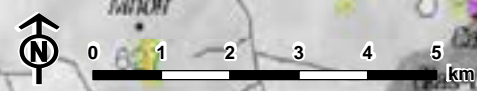
- Scheduled Monument (Area)
- ▲ Scheduled Monument (Point)
- Gardens and Designed Landscape

Listed Buildings (Category)

- ◆ A
- ◆ B
- ◆ C

Potential turbine visibility to tip height (149.9m)

- 1 - 3 turbines visible
- 4 - 6 turbines visible
- 7 - 9 turbines visible
- 10 - 12 turbines visible
- 13 - 16 turbines visible



Map scale 1:110,000 @ A3

Chapter 10

Noise

Introduction

10.1 This chapter sets out the proposed approach to the assessment of potential effects of the proposed development in relation to noise during construction and operation of the proposed development.

Existing Conditions

10.2 The noise character of the area is typical of a rural environment and consists of wind generated noise along with noise from traffic, farm machinery, birds and the occasional overhead aircraft.

Design Considerations

10.3 The potential noise effects on nearby residential receptors is being considered in the layout design process by the application of appropriate buffers within which turbines should not be placed.

10.4 The baseline noise monitoring results obtained in surveys undertaken in 2004 and 2013 (see below) will also feed into the layout design with greater separation distances potentially being required for locations with lower background noise levels and corresponding lower noise limits.

Survey and Assessment Methodology

10.5 Two previous background noise monitoring surveys have been carried out in the vicinity of the proposed development.

10.6 Baseline conditions were measured at three locations in a survey which took place in 2004 and at a further three locations in 2013. Taken together, the results of these surveys provide a comprehensive description of the existing baseline conditions.

10.7 The results of the two measurement surveys were not significantly different over the time that had lapsed between 2004 and 2013. As there have been no changes in the area since 2013 that are expected to have altered the noise environment significantly, it is not proposed to obtain a third set of measurements.

10.8 Operational noise will be assessed in accordance with ETSU-R-97, 'The Assessment and Rating of Noise from Wind Farms', and the Good Practice Guide to its application issued by the Institute of Acoustics.

10.9 Construction noise will be assessed in accordance with the procedures recommended by BS 5228-1: 2009, 'Code of practice for noise and vibration control on construction and open sites - Part 1: Noise'.

10.10 Vibration levels due to blasting shall be predicted in accordance with BS 5228-2:2009 'Code of practice for noise and vibration control on construction and open sites - Part 2: Vibration' and assessed in accordance with BS 6472-2: 2008 'Guide to evaluation of human exposure to vibration in buildings - Part 2: Blast-induced vibration'.

10.11 The proposed methodology is consistent with previous assessments of the consented development which were undertaken in consultation with The Highland Council and Moray Council.

Potential Effects

10.12 The assessment will consider the potential effects associated with construction and operation of the proposed development as detailed below.

Potential Effects Scoped into the Assessment

10.13 An assessment of the potential effects of operational wind farm noise at the nearest residential properties will be undertaken.

10.14 An assessment of the potential effects due to construction noise, including associated traffic, at the nearest residential properties will also be undertaken.

10.15 Vibration levels at the nearest residential properties shall be assessed should blasting be required to extract material from any proposed borrow pits.

Potential Effects Scoped Out of Detailed Assessment

10.16 The operational noise assessment will be carried out on the basis of the broadband noise level with penalties applied for tonality if applicable. It is not proposed to carry out an assessment of the potential effects of noise at specific frequencies, e.g. low frequency noise, or the potential effects of other characteristics of the noise e.g. amplitude modulation. Further reasoning for the scoping out of these potential effects will be provided as part of the EIA.

Approach to Mitigation

10.17 Modern wind turbines can be operated in reduced noise mode should this be necessary to meet noise limits derived according to ETSU-R-97.

10.18 Standard good practice measures to reduce noise during construction will be implemented in line with the concept of 'best practicable means' defined by the Control of

Pollution Act 1974. Additional mitigation measures could include a reduction in construction activities or traffic during certain periods if appropriate.

Consultation Proposals

10.19 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- The Highland Council; and
- Moray Council.

Questions for Consultees

Q10.1: Do the consultees agree with the proposed assessment methodology?

Q10.2: Do the consultees agree with the use of baseline noise data that has already been gathered in 2004 and 2013, and that it is not necessary to undertake further survey?

Chapter 11

Access, Traffic and Transport

Introduction

11.1 This chapter sets out the proposed approach to the assessment of potential effects of the proposed development in relation to access, traffic and transport during construction and operation of the proposed development.

Existing Conditions

11.2 The proposed development will be accessed in a similar manner as will be the previous application. The main difference will be the use of larger turbine components and the need for these to access the site from the south.

11.3 Turbine loads will arrive at Inverness Harbour by ship and would be transported to site via the A9, A95, A938, B9007 and A939 as described in **Chapter 3** above. The majority of the proposed turbine delivery route has recently been successfully used as part of the Tom nan Clach wind farm project.

11.4 The remaining access arrangements for construction traffic would be similar to those previously assessed for the consented development and as detailed in **Chapter 3**.

Survey and Assessment Methodology

11.5 The Guidelines for the Environmental Assessment of Road Traffic (IEMA 1993) sets out a methodology for assessing potentially significant environmental effects. In accordance with this guidance, the scope of assessment will focus on:

- potential impacts (of changes in traffic flows) on local roads and the users of those roads; and
- potential impacts (of changes in traffic flows) on land uses and environmental resources fronting these roads, including the relevant occupiers and users.

11.6 The main transport impacts will be associated with the movement of general HGV traffic travelling to and from the site during the construction phase of the development.

11.7 The following rules taken from the IEMA guidance would be used as a screening process to define the scale and extent of the assessment:

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the

number of HGVs is predicted to increase by more than 30%); and

- Rule 2: Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

11.8 Increases below these thresholds are generally considered to be insignificant given that daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flow below this level predicted as a consequence of the proposed development will therefore be assumed to result in no discernible impact and as such no further consideration will be given to the associated environment effects.

11.9 The estimated traffic generation of the proposed wind farm development will be compared with baseline traffic flows, obtained from existing traffic survey data, to determine the percentage increase in traffic.

11.10 Potentially significant environmental effects will then be assessed where the thresholds as defined above are exceeded. Suitable mitigation measures will be proposed, where appropriate.

11.11 It is not anticipated that a formal Transport Assessment will be required as these are not generally considered necessary for temporary construction works.

11.12 Traffic survey data for use in the assessment would be obtained from new Automatic Traffic Count (ATC) surveys. These will be undertaken for a seven-day period on the relevant links to provide classified, directional traffic volume and speed data. This would be undertaken outwith the school holiday periods to ensure that neutral traffic flow data was obtained for the assessment.

11.13 The proposed locations for the ATC surveys are:

- The A96 in Nairn (to the west of the A939 junction);
- The A939 in Nairn (to the south of the A96 junction);
- The A939 at the proposed site access junction location;
- The B9007 to the south of Ferness;
- The A938 at Dulnain Bridge; and
- The A95 to the south of Dulnain Bridge.

11.14 In addition to the ATC data, Department for Transport traffic flow data for the A9 will also be obtained.

11.15 Further traffic data would be obtained from Crashmap UK for the A938, B9007 and A939 to inform the accident review for the immediate road Study Area.

11.16 Each turbine is likely to require between 11 and 13 abnormal loads to deliver the components to site. The components will be delivered on extendable trailers which will

then be retracted to the size of a standard HGV for the return journey.

11.17 Detailed swept path analysis will be undertaken for the main constraint points on the route from the port of entry through to the site access junction to demonstrate that the turbine components can be delivered to site and to identify any temporary road works which may be necessary.

Potential Effects Scoped into the Assessment

11.18 The key issues for consideration as part of the assessment will be:

- the temporary change in traffic flows and the resultant, temporary effects on the study network during the construction phase;
- the physical mitigation associated with the delivery of abnormal loads;
- the design of new access infrastructure; and
- the consideration of appropriate and practical mitigation measures to offset any temporary effects.

Potential Effects Scoped Out of Detailed Assessment

11.19 Once operational, it is envisaged that the level of traffic associated with the proposed wind farm would be minimal. Regular monthly or weekly visits would be made to the wind farm for maintenance checks. The vehicles used for these visits are likely to be 4x4 vehicles and there may also be the occasional need for an HGV to access the wind farm for specific maintenance and/or repairs. It is considered that the effects of operational traffic would be negligible and therefore no detailed assessment of the operational phase of the development is proposed.

Approach to Mitigation

11.20 Standard mitigation measures that are likely to be included in the assessment are:

- production of a Construction Traffic Management Plan;
- the design of suitable access arrangements with full consideration given to the road safety of all road users;
- a Staff Sustainable Access Plan; and
- a Framework Abnormal Load Transport Management Plan.

Consultation Proposals

11.21 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- The Highland Council;

- Transport Scotland and their network agents; and
- Network Rail.

Questions for Consultees

Q11.1: Do the consultees agree that the proposed methodology is acceptable?

Q11.2: Do the consultees agree that the traffic survey locations are acceptable?

Q11.3: Do the consultees agree that the use of Low National Road Traffic Forecasts (NRTF) is acceptable for the whole of the study?

Q11.4: Can the consultees confirm which developments should be included as committed developments within the baseline traffic flows in the assessment, noting that these should have planning consent at the time of scoping?

Q11.5: Can the consultees confirm details of any upgrades or network changes that may be undertaken to the study area network within the next five years?

Chapter 12

Socio-economics

Introduction

12.1 This chapter will consider the likely impacts of the proposal on the socio-economic profile of the area, including short term job opportunities. This will involve the identification of the existing socio-economic, tourism and recreation baseline conditions in the site and surrounding area, and consideration of potential direct and indirect effects on employment and economic benefits (including community benefit), recreation and tourism activity through both quantitative and qualitative assessment.

Existing Conditions

12.2 The study area used for the identification and evaluation of baseline conditions and potential impacts with regard to socio-economic factors is defined as the THC and Moray Council local authority areas which are also considered representative of conditions within the Cairngorm National Park.

Design Considerations

12.3 Consideration has been given to the potential effects on viewpoints that are considered important for recreation through the LVIA.

Survey and Assessment Methodology

12.4 There is no established guidance for conducting a socio-economic assessment as part of the EIA process. It is therefore proposed that the assessment uses desk-based information sources to assess the likely scale of effects, supplemented by consultation with local stakeholders.

12.5 Cross-reference would be made to other technical assessments to consider potential effects on recreational assets and other leisure and tourism attractions in the surrounding area, for example due to visual impact, traffic, and noise.

Potential Effects

12.6 Socio-economic impacts associated with wind farm developments primarily relate to job creation, use of local services and income spent in the locality of a project. These impacts can have short and long term, direct beneficial effects for surrounding local communities.

Potential Effects Scoped into the Assessment

12.7 The EIA will consider the effects of the proposed development on employment and the economy. This will include the employment opportunities for local suppliers with relevant construction and maintenance experience during the construction and operational phases of the development. The EIA Report will focus on short and long term employment opportunities and input from the proposed development into the local economy (expenditure in shops / local services etc.).

12.8 Potential effects upon tourism and recreation would be considered as would potential effects on land management practices

Potential Effects Scoped Out of Detailed Assessment

12.9 It is not considered that there will be any effects on formal recreational activities as these do not currently take place within the site.

Approach to Mitigation

12.10 RES is committed to implementing accepted good practice measures during construction and operation of the proposed development, thereby ensuring that many potential adverse social and economic effects can be avoided or reduced.

12.11 Possible mitigation and enhancement measures may include the following:

- The programming of the transportation of abnormal loads wherever practicable to avoid peak visitor, or other busy periods to mitigate the effect of the proposed development on particularly sensitive locations, tourist/visitor viewpoints, and road corridors.
- Local sourcing of construction materials where possible to reduce the importation or exportation of materials, limiting traffic movements on the surrounding road network and hence minimising related adverse effects upon visitors.

12.12 It is considered that there are opportunities to enhance positive effects resulting from the proposed development, including:

- Local promotion of contract and supply chain opportunities in the construction and operation phases to maximise the use of local business and labour resources.
- Skills development and training programmes to increase local take up of training, apprenticeship and employment opportunities associated with the proposed development.

- Establishing effective linkages with local job centres, employability programmes and partners.
- Promotion of the wider area and its opportunities as part of the marketing of the proposed development.

Consultation Proposals

12.13 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- The Highland Council (Access Team and Economic Forum);
- Visit Scotland (as national tourism lead body);
- The Scottish Rights of Way and Access Society (ScotWays);
- The Mountaineering Council of Scotland;
- The John Muir Trust; and
- Any local recreation and tourism groups.

Questions for Consultees

Q12.1: Are there any other relevant consultees who should be consulted with respect to the assessment of effects on socio-economics?

Chapter 13

Other Issues

Introduction

13.1 A single EIA Report chapter will be prepared to draw together the assessments of the proposed development on other topics that are not dealt with within the other technical chapters of the EIA Report. It is anticipated that this chapter would include a discussion of the following issues:

- Aviation;
- Communications and Telecommunications;
- Shadow Flicker;
- Climate Change including Carbon Balance;
- Population and Human Health (including dust); and
- Major Accidents and Disasters

13.2 Predicted effects for these topics will be determined through a standard method of assessment based on professional judgement. Where a 'significant effect' is identified, this will be considered as significant in the context of the EIA regulations.

Aviation

13.3 The EIA Report will include a description of military and civilian aeronautical and radar issues relating to the proposed development. Consultation will be undertaken once the locations of the turbines have been finalised with appropriate interested parties. The EIA Report will present the findings of these consultations and all responses received, as well as any predicted impacts on aviation and mitigation required.

13.4 There are a number of aviation interests in the area which could potentially be affected by the proposed development. In particular, NATS En Route Ltd (NERL) operates a network of long-range Air Traffic Control (ATC) radars throughout the United Kingdom. Preliminary online data from NATS shows that the proposed development would not be visible to Primary Source Radar (PSR). The site is situated approximately 21km south-east from Inverness airport and approximately 36km south-west of RAF Lossiemouth. As such, an assessment of potential civil and military aviation issues will be undertaken and will include consultation with the relevant organisations.

13.5 Radar systems can be susceptible to interference from wind turbines as the blade movement can cause intermittent

detection by radars within their operating radius. This is particularly relevant where there is a line of sight between the radar and the wind turbine development. Due to their height, wind turbines can also impact upon airports and airfields if they protrude into the safeguarding distance above and around them.

13.6 The UK Air Navigation Order (ANO) 2016, Article 222, sets out the statutory requirement for the lighting on en-route obstacles, which applies to structures 150m or more above ground level. As the proposed turbines are below 150m, visible aviation lighting may not be required. However, the Ministry of Defence (MOD) is likely to request an infra-red lighting scheme for low flying military aircraft in the area. This will be agreed through consultation with the MOD.

Communications and Telecommunications

13.7 Wind turbines can cause electromagnetic interference through physical and electrical interference. Physical interference can cut across electromagnetic signals resulting in a 'ghosting' effect which largely affects television signals and radar. Electrical interference arises as a result of the operation of the generator within the nacelle of the turbine and can also affect communication equipment in proximity to the turbines. Where possible, any potential effects on radio-communication links and television will be mitigated at the turbine layout design stage by the use of exclusion zones around any link paths.

13.8 The Office of Communications (Ofcom) is responsible for the licensing of two-way radio transmitters. It holds a register of most microwave links and will therefore be consulted in order to establish baseline conditions. However, because not all microwave links are published, system operators will also be individually consulted on the proposed development's potential to cause electromagnetic interference. The outcome of this consultation process, including any mitigation actions taken, will be detailed in the EIA Report.

Shadow Flicker

13.9 Shadow flicker is a phenomenon where, 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. When the blades rotate, the shadow flicks on and off. It only occurs inside buildings where the flicker appears through a narrow window opening.

13.10 A shadow flicker assessment is generally required if any properties lie within 10x rotor diameter of the wind farm. This is in line with Scottish Government online renewables planning advice on 'onshore wind turbines' which states that "*where separation is provided between wind turbines and nearby dwellings (as a general rule 10 rotor diameters), 'shadow*

flicker' should not be a problem." However, in 'Spatial Planning for Onshore Wind Energy in Highland' (2015) and the associated Onshore Wind Energy Supplementary Guidance, this distance has been increased to 11x rotor diameter. This is to account for the northern latitudes of the Highlands and is in line with the conclusions of the DECC Update of the UK Shadow Flicker Evidence Base, 2011.

13.11 The first stage of the assessment is to produce a basic map that highlights properties that have the potential to be affected by shadow flicker. If any properties lie within this mapped area, a full assessment would be undertaken for each of these. Whilst unlikely to be required, potential mitigation measures include screening or the use of shadow flicker modules in the wind turbines which automatically cause them to stop operating under the conditions that would give rise to shadow flicker at a sensitive receptor.

Climate Change, including Carbon Balance

13.12 By its very nature, the proposed development will reduce demand for fossil fuel electricity generation and therefore contribute to the Scottish Government's carbon reduction targets.

13.13 A carbon balance assessment for the proposed development will be undertaken using Scottish Government guidance produced by Aberdeen University and the Macaulay Land Use Research Institute and the latest version of the carbon calculator spreadsheet produced by the Scottish Government (currently version 1.4.0).

13.14 The main aims of the calculation are: to quantify sources of carbon emissions associated with the proposed development (i.e. from construction, operation and transportation of materials, as well as loss of peat); to quantify the carbon emissions which will be saved by operating the proposed development; and to calculate the length of time for the project to become a 'net avoider', rather than a 'net emitter' of carbon dioxide emissions.

13.15 With respect to climate adaptation, consideration will be given to the resilience of the wind farm to projected climate change and to the likely consequences of climate change for baseline conditions/assessment findings, and the resilience of proposed mitigation measures to any projected changes. The latest climate change projections (UKCP18) will be used, which allow climate changes to be projected at the regional level; in this case, the north of Scotland.

Population and Human Health (including dust)

13.16 The assessment of potential health effects will be undertaken in the context of noise, socio-economics and recreation and shadow flicker where scoped into the EIA. The assessment will also consider the health effects of dust emissions of construction activities on nearby receptors. The Design Manual for Roads and Bridges (DMRB), Volume 11 Environmental Assessment Techniques, Part 1, Air Quality states that dust generated during construction should be mitigated and that the locations of 'sensitive receptors' within 200m of construction activities should be identified and mitigation measures to reduce dust effects be applied. As such, all receptors within 200m of potential dust sources will be considered as potential receptors.

13.17 Where no significant effects are likely in relation to the aforementioned topics, these will be scoped out of the health assessment.

13.18 Particular attention will need to be paid to any vulnerable populations or individuals who could be susceptible to potential health effects.

Major Accidents and Disasters

13.19 The proposed development is not located in an area with a history of natural disasters such as extreme weather events, and the construction and operation of the proposed Development would be managed within the requirements of a number of health and safety related Regulations, including the Construction (Design and Management) Regulations 2015 and the Health and Safety at Work etc. Act 1974.

13.20 As the development is not considered vulnerable to any major accidents or disasters that could result in likely significant environmental effects, it is proposed that this topic is scoped out from further assessment within the EIA Report.

Consultation Proposals

13.21 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- NATS En Route Ltd;
- MOD;
- The JRC; and
- Ofcom.

Questions for Consultees

Q12.1: Are there any other relevant consultees who should be consulted with respect to the 'Other Issues' assessments?

Appendix A

Consultee List

A.1 The consultees listed below are proposed to be consulted as part of the EIA process:

- The Highland Council (and relevant internal teams);
- Moray Council; (and relevant internal teams)
- SNH;
- CNPA;
- SEPA;
- HES;
- Scottish Forestry
- Marine Scotland;
- Transport Scotland and their network agents;
- Scottish Water;
- East Nairnshire Community Council;
- Grantown-on-Spey and Vicinity Community Council;
- Finnerne Community Council;
- Fisheries Management Scotland;
- Findhorn, Nairn and Lossie Fisheries Trust;
- RSPB;
- Aberdeenshire Council Archaeological Service (ACAS) who act on behalf of Moray Council;
- National Trust for Scotland
- Visit Scotland (as national tourism lead body);
- Scottish Wildlife Trust
- The Scottish Rights of Way and Access Society (ScotWays);
- Mountaineering Scotland;
- Scottish Wild Land Group
- Association for the Protection of Rural Scotland (APRS)
- The John Muir Trust;
- The Coal Authority
- Crown Estate Scotland
- NATS Safeguarding

Appendix A
Consultee List
Cairn Duhie Wind Farm
February 2020

- BT
- Civil Aviation Authority (CAA)
- Defence Infrastructure Organisation (DIO);
- JRC; and
- Ofcom.

Appendix B

Questions for Consultees

B.1 Comments from consultees are invited in relation to the following key questions as detailed within the EIA Scoping Report.

Landscape and Visual

Q5.1: Can consultees confirm that GLVIA3 is an appropriate methodological starting point for the LVIA assessment? Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, including cumulative effects?

Q5.2: Are there other sources of information which should inform the baseline and assessment of potential effects on landscape character and designated landscapes?

Q5.3: Are there any comments on the proposed list of assessment viewpoint locations listed in **Table 5.2**?

Q5.4: Are there any further wind farms, in addition to those shown on **Figure 5.4**, to consider as part of the cumulative assessment?

Q5.5: Are there any further landscape or visual receptors to be considered within the assessment (i.e. where it is expected that significant effects may occur)?

Hydrology, Hydrogeology, Geology and Peat

Q6.1: Do the consultees agree on the scope for the EIA Report?

Q6.2: Do the consultees agree with the approach to embedding good practice measures into the assessment of potential impacts?

Ecology

Q7.1: Do consultees agree that the range of surveys carried out/proposed is sufficient and appropriate to conduct a robust impact assessment?

Q7.2: Are there any other relevant consultees who should be contacted, or other sources of information that should be referenced with respect to the ecology assessment?

Q7.3: Do consultees believe that there are further species or designated sites which need to be considered in the assessment?

Q7.4: Confirmation that the proposed designated sites, habitats and species can be scoped out of the assessment.

Ornithology

Q8.1: Confirmation that the baseline ornithology data available for the proposed development (September 2011 to August 2012, December 2019 to March 2020) are sufficient to conduct a robust impact assessment.

Q8.2: Do consultees agree that except for the Moray and Nairn SPA, there is no potential for connectivity between the proposed development and the designated sites detailed above and that consequently effects related to these designated sites can be scoped out of the assessment?

Q8.3: Are there any other relevant consultees who should be contacted, or other information sources referenced, with respect to the ornithology assessment?

Q8.4: Confirmation that the low conservation value species can be scoped out of the assessment is requested.

Q8.5: Confirmation of the approach to the ornithological assessment is requested. Do consultees believe that there are further species or designated sites which need to be considered in the assessment?

Cultural Heritage

Q9.1: Can the consultees confirm that the proposed study areas and methodology are appropriate?

Q9.2: Further consultation would seek to agree those heritage assets that do not require further assessment; those that are potentially sensitive heritage assets; and where heritage assets may be grouped in the assessment.

Noise

Q10.1: Do the consultees agree with the proposed assessment methodology?

Q10.2: Do the consultees agree with the use of baseline noise data that has already been gathered in 2004 and 2013, and that it is not necessary to undertake further survey?

Access, Traffic and Transport

Q11.1: Do the consultees agree that the proposed methodology is acceptable?

Q11.2: Do the consultees agree that the traffic survey locations are acceptable?

Q11.3: Do the consultees agree that the use of Low National Road Traffic Forecasts (NRTF) is acceptable for the whole of the study?

Q11.4: Can the consultees confirm which developments should be included as committed developments within the baseline traffic flows in the assessment, noting that these should have planning consent at the time of scoping?

Q11.5: Can the consultees confirm details of any upgrades or network changes that may be undertaken to the study area network within the next five years?

Socio-Economics

Q12.1: Are there any other relevant consultees who should be consulted with respect to the assessment of effects on socioeconomics?

Other Issues

Q12.1: Are there any other relevant consultees who should be consulted with respect to the 'Other Issues' assessments?