ScottishPower Renewables

Hare Hill Repower

Scoping Report

11/3/23

Onshore Development

Index

Abbreviations

AA	Appropriate Assessment
ASA	Archaeologically Sensitive Areas
ASML	Above Mean Sea Level
AD	Air Defence
AIL	Abnormal Indivisible Loads
AIP	Aeronautical Information Publication
AM	Amplitude Modulation
AOD	Above Ordnance Datum
ATC	Air Traffic Control
ATS	Air Traffic Services
BBPP	Breeding Bird Protection Plan
CAA	Civil Aviation Authority
CCC	Committee on Climate Change
CIEEM	Chartered Institute of Ecology and Environmental Management
CIfA	Chartered Institute for Archaeology
CIRIA	Construction Industry Research and Information Association
CEMP	Construction Environmental Management Plan
CIA	Climate Impact Assessment
CMS	Construction Method Statement
CNS	Communication, Navigation and Surveillance
CWB	Community Wealth Building
DAS	Design and Access Statement
dB	Decibel
DECC	Department for Energy and Climate Change
DEFRA	Department for Environment Food and Rural Affairs
DGC	Dumfries and Galloway Council
DGCAS	Dumfries and Galloway Archaeology Service
DGLDP2	Dumfries and Galloway Local Development Plan 2
EAC	East Ayrshire Council
EALDP	East Ayrshire Local Development Plan
EALDPSG	East Ayrshire Local Development Plan Supplementary Guidance
EEC	European Economic Community
EcIA	Ecological Impacts Assessment
ECoW	Ecological Clerk of Works
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report

ESDAL	Electronic Service Delivery for Abnormal Loads
FL	Flight level
ft	Feet
GDL	Gardens and Designed Landscapes
GHG	Green House Gases
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GPP	Guidance for Pollution Prevention
GPS	Global Positioning System
GW	Gigawatt
GWDTE	Groundwater dependent terrestrial ecosystems
HER	Historic Environment Records
HES	Historic Environment Scotland
HEPS	Historic Environment Policy for Scotland
HGV	Heavy Goods Vehicle
HLAmap	Historic Land-Use Assessment Data for Scotland
HMA	Habitat Management Area
HMP	Habitat Management Plan
HRA	Habitats Regulations Appraisal
IEF	Important Ecological Feature
IEMA	Institute of Environmental Management and Assessment
IFP	Instrument Flight Procedures
IOF	Important Ornithological Features
JNCC	Joint Nature Conservation Committee
km	Kilometre
kV	Kilovolt
LCT	Landscape Character Types
LDPs	Local Development Plans
LGV	Large Good Vehicle
LSE	Likely Significant Effect'
LVIA	Landscape and Visual Impact Assessment
MOD	Ministry of Defence
MW	Megawatts
NATS	National Air Traffic Services
NCAP	National Collection of Aerial Photography
NRHE	National Record of the Historic Environment
NIDL	Non-Inventory Designed Landscapes
nm	Nautical Miles
NPF3	National Planning Framework 3
NPF4	National Planning Framework 4

NRHE	National Record of the Historic Environment
NSR	Non-Statutory Register
NTS	Non-Technical Summary
NVC	National Vegetation Classification
NWSS	Native Woodland Survey of Scotland
OWPS	Onshore Wind Policy Statement
PAC	Pre-Application Consultation Report
PAN	Planning Advice Note
PPG	Pollution Prevention Guidelines
PSR	Primary Surveillance Radars
RAF	Royal Air Force
RLoS	Radar Line of Sight
RVAA	Residential Visual Amenity Assessment
SAC	Special Areas of Conservation
SEPA	Scottish Environment Protection Agency
SES	Scottish Energy Strategy
SESPS	Scotland's Energy Strategy Position Statement
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SPP	Scottish Planning Policy
SPP	Species Protection Plans
SPR	ScottishPower Renewables (UK)Limited
SSR	Secondary Surveillance Radar
SSSI	Sites of Special Scientific Interest
SUW	Southern Upland Way
TCP	Town and Country Planning
TIA	Traffic Impact Assessment
TMA	Terminal Manoeuvring Area
TMP	Traffic Management Plan
WoSAS	West of Scotland Archaeology Service
ZTV	Zone of Theoretical Visibility

1. Introduction

1.1. Background and Context

This Scoping Report has been prepared by Natural Power Consultants Limited (Natural Power) on behalf of ScottishPower Renewables (UK) Limited (SPR) in anticipation of an application under Section 36 of the Electricity Act 1989 for Hare Hill Repower (herein referred to as the Proposed Development), a windfarm development located between the towns of Kirkconnel in Dumfries and Galloway and New Cumnock in East Ayrshire.

The operational Hare Hill Windfarm straddles the administrative boundaries of East Ayrshire Council (EAC) and Dumfries and Galloway Council (DGC). Hare Hill Windfarm comprises of the existing Hare Hill Windfarm and Hare Hill Windfarm Extension sites. The original Hare Hill Windfarm comprises 20 turbines and the Hare Hill Extension comprises 35 turbines. Under the provisions set out in the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations), it is proposed that any such application is accompanied by an Environmental Impact Assessment Report (EIAR). Under regulation 12 of the EIA Regulations, a formal opinion of the information to be included within the scope of the EIAR is sought from the Scottish Ministers. In addition to the EIAR a statement on preservation of amenity and fisheries in accordance with Schedule 9 of the Electricity Act 1989 will accompany the Section 36 application. The statement will set out how SPR will carry out its duties under paragraphs 1(1) and 1(3) of Schedule 9 of the Electricity Act 1989, as amended by the Utilities Act 2000.

The purpose of this Scoping Report is to provide information to the Scottish Ministers and statutory consultees for determining the scope of the Environmental Impact Assessment (EIA) and EIAR. Where SPR (herein referred to as the Applicant) is proposing to 'scope out' particular elements from the EIAR, sufficient information and justification has been provided within this Scoping Report. The intention is to ensure the focus within the EIAR is on any receptors impacted by the proposed Development that may experience significant effects.

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

The current indicative design of the proposed Development is a result of maximising the potential wind resource on site whilst recognising site-specific and broader constraints, as they are understood at the date of submitting this Scoping Report. The layout of the proposed Development presented in the Scoping Report is expected to be further refined during the EIA process and through further consultation with consultees and stakeholders. Should any changes occur that are likely to result in a significant or unknown effect on an important feature or impact previously scoped out, then this will be scoped back into the EIA process and the appropriate scope agreed with the ECU and relevant statutory consultees.

1.2. Purpose of this Scoping Report

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

For this application, it is proposed to begin stakeholder consultation at the scoping stage, in order to provide information on the baseline conditions of the Site and the possible impacts from the proposed Development. Therefore, this Scoping Report utilises the existing available information in respect of the Site and data gathered to date in relation to the operational Hare Hill windfarm, to focus on key areas and likely significant effects in agreement with consultees. Potential minor and non-significant issues are proposed to be scoped out.

As a consequence of the extensive existing data available for the Site, this Scoping Report provides an in-depth understanding of the baseline position and provides evidence to enable consultees to focus on key areas, likely significant effects and to 'scope out' minor and not significant issues.

Whilst this Scoping Report will inevitably require more engagement from key consultees at an early stage, the eventual EIAR submitted should be more streamlined and focus on only likely significant effects.

This approach is supported by the EIA Regulations and by the Energy Consents Unit (ECU). The Applicant will ensure that regular and continued liaisons with key stakeholders (including the community) are carried out and documented to agree the assessment baseline, methodology and therefore ensuring the EIA process and final EIAR documents will be more efficient and streamlined.

2. The Applicant

ScottishPower Renewables (UK) Limited (the Applicant) is part of the ScottishPower group of companies operating in the UK under the Iberdrola Group, one of the world's largest integrated utility companies and a world leader in wind energy. ScottishPower now only produces 100% green electricity – focusing on wind energy, smart grids and driving the change to a cleaner, electric future. The company has committed to investing over £8 million every working day to make this happen and is committed to speeding up the transition to cleaner electric transport and improving air quality to deliver a better future, quicker for everyone.

The Applicant is at the forefront of the development of the renewables industry through pioneering ideas, forward thinking and outstanding innovation. Its ambitious growth plans include expansion of its existing onshore wind portfolio, investment in new large-scale solar deployment and innovative grid storage systems including batteries. The company is also delivering the Iberdrola Group's offshore windfarms in the Southern North Sea off East Anglia.

With over 40 operational onshore windfarms, ScottishPower Renewables manages all its sites through its world leading Control Centre at Whitelee Windfarm, near Glasgow.

3. The Proposed Development

3.1. Site Description

The proposed Development Site is situated between the towns of Kirkconnel in Dumfries and Galloway and New Cumnock in East Ayrshire. The proposed Development Site straddles the administrative boundaries of EAC and DGC.

The proposed Development Site comprises the existing Hare Hill Windfarm and Hare Hill Windfarm Extension sites. The original Hare Hill Windfarm, consented in 1997 and built in 2000, comprises of 20 turbines with 65 m tip heights and 47 m rotor diameters. It was consented under the Town and Country Planning (Scotland) Act 1972 (TCP(S)A 1972). The Hare Hill Extension project was consented in 2015 under the Town and County Planning (Scotland)Act 1997 (TCP(S)A) 1997) as amended. It was built in 2016 and comprises 35 turbines of varying tip heights between 70 m and 91 m with 52 m rotor diameters. The consent for the original Hare Hill Windfarm was revised on the 1st March 2022 via an application under Section 42 of the TCP(S)A 1997. This resulted in the operational lifetime of that project being extended to 2041 to align with the operational lifetime of the windfarm extension project.

The site boundary has been drawn to allow flexibility in the location of the access track between the public road (A76) and the proposed turbines as well as proposed habitat management and biodiversity enhancement as described in full in section 10.6. It is expected that the turbine layout will change post scoping as a result of design iteration. However, it is not expected that the general turbine area will change, for the avoidance of doubt it is expected that the proposed turbines will be located on the higher ground.

Figure 3.1 shows the location of the proposed Development. Figure 3.2 illustrates the proposed layout for the repowering of the windfarm, including indicative turbine positions. Figure 3.3 shows the regional context of the proposed Development.

3.2. The Proposed Development

The proposed Development has already been through a number of design iterations and will continue to evolve as the EIA progresses.

At time of writing, the proposed Development comprises:

- Up to 27 turbines with a variation in turbine tip heights across the site in the region of 175 m up to 250 m, with a generating capacity of circa 5.5 Megawatts (MW) (current candidate turbine model specifications have rotor diameters of 136 m up to 175 m);
- Turbine foundations and hardstandings;
- External transformer housing;
- Crane pads;
- Access tracks;
- Underground electricity cables;
- Battery storage;

- Permanent anemometry mast;
- Temporary borrow pits;
- Temporary construction and storage compounds and ancillary infrastructure;
- Site signage and snow poles;
- Onsite substation, storage building and control building; and
- Waste water and drainage attenuation measures (as required).

It is expected that the existing access junction for Hare Hill Windfarm that adjoins the public road (A76), will be used to access the proposed Development Site. It is anticipated that much of the existing access tracks will be used to access the turbines themselves, however the exact route of the tracks is to be confirmed.

The proposed Development location has a good wind resource and consequently the proposed repowering project will significantly contribute to the UK and the Scottish Government's renewable energy targets. Windfarm design with turbines up to 250 m tip height is considered reflective of Scottish Government aspirations for demonstrably better energy yields from sites optimised with higher tip heights. As far as possible, the proposed Development will also utilise and upgrade existing tracks where possible which will further minimise potential effects on the local environment.

3.1.1 Proposed Turbine Coordinates

TURBINE	EASTING	NORTHING
1	266238	610827
2	267031	610916
3	264454	609884
4	264980	610420
5	265910	610048
6	266737	609943
7	267564	610239
8	265273	609462
9	266284	609310
10	267311	609430
11	265324	608233
12	266129	608524
13	267219	608602
14	265931	607586
15	266782	607884

16	266311	606886
17	266042	606095
18	265565	605350
19	266807	606281
20	267450	607305
21	268102	607835
22	270116	609044
23	270889	609053
24	271429	609653
25	272203	609327
26	265372	606740
27	264721	608740

Source: Natural Power

The lifespan of the proposed Development is proposed to be 50 years, following which decommissioning would be undertaken. It is anticipated that the proposed Development will have a combined total installed capacity of around 150 MW.

3.3. Project Design

During the design review process for the proposed Development Site, further assessments have been carried out on the wind resource at the Site and the key landscape and visual constraints. Key considerations to the scheme are as follows:

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

Numerous iterations of the design were considered, consisting of a range of turbine heights. The layout presented for scoping is considered, at this point, to be the most optimal following an iterative design process which has taken all known constraints (at the time of preparing the Scoping Report) and wind yield analysis into consideration, see Figure 3.2. The layout design will continue to evolve throughout the EIA process.

A micro siting allowance of 50 m is proposed which would allow maximum flexibility to deploy the most efficient layout possible and to minimise environmental effects.

3.4. Wind Turbines, Foundations, Transformers And Crane Pads

It is anticipated that there will be a variation in turbine tip heights across the site in the region of 175 m up to 250 m, with a generating capacity of circa 5.5 Megawatts (MW) (current candidate turbine model specifications have rotor diameters of 136 m up to 175 m);

However, the specific turbine model has not yet been selected but it is expected to be a horizontal axis machine with three rotor blades. Current models have approximately 5.5 MW generating capacity and by the time the project is constructed, such wind turbine models may be capable of generating more. Any turbines selected are also likely to have external transformers placed adjacent to each turbine. A relevant candidate turbine model will be selected for assessment.

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

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

3.5. Access Tracks

As a repowering of an existing windfarm site, it is considered that the requirement for new site tracks will be greatly reduced, however some additional upgrades of site tracks may be required to transport the new larger turbines to the existing site.

The routes for the tracks will be chosen to minimise potential impacts on the environment, while taking account of other site-specific constraints. The EIAR will include a rationale for their final location.

The construction of the site tracks falls under two main categories, as follows:

'Cut' track – superficial layers are removed, along with soft subsoils until reaching a competent bearing layer, which can be used as a formation level using methods including blasting of rock.

'Floating' track – superficial layers and subsoils are left in-situ with the track built off the existing ground level, utilising geotextiles, and geogrids to reinforce the track materials. This technique is generally used where there are deep soft underlying materials e.g. peat or soft clays.

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

3.6. Substation, External Transformer & Grid Connection

The wind turbines would produce electricity at 660 – 1,000 Volts. The electricity would then be transformed to 33,000 Volts (33 Kilovolts (kV)) via a transformer which is likely to be immediately adjacent to the tower of each turbine. The transformers would be linked to an onsite substation via high voltage underground cables placed in trenches which would generally follow the route of the onsite tracks (dimensions to be determined by the ground conditions but typically 0.5 m x 1 m deep). Consideration will be given to utilising the existing substation. Where trenching alongside onsite tracks is not feasible, the transformers would connect to the substation via underground cables across open ground with electrical marker posts used to identify their locations.

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

The underground 33 kV cables routed from the turbines would be brought together via the existing substation at a location still to be determined. The detailed construction methods, layout of cables and contents of the onsite substation compound would be provided within the outline Construction Environmental Management Plan (CEMP) which would form part of the EIAR.

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

3.7. Borrow Pits

The proposed Development would require crushed stone to construct the new tracks, improve the existing tracks, if necessary, create hard standing areas for the cranes and lay the foundations. It is the intention that suitable stone and aggregate would be sourced from onsite borrow pits. Borrow pits on site may be used to reduce the potential effects on the environment and transport network, associated with transporting stone to the site. Borrow pit areas of search will be identified within the EIAR. These will be temporary in nature and restored following use.

3.8. Temporary Construction and Storage Compounds, and Ancillary Infrastructure

To provide a secure area for site office facilities and storage of materials and components, temporary compounds may be required and would be located strategically across the site, likely adjacent to the site access track. They would be surrounded by a security fence and locked gates which would be removed at the end of the construction phase with the hardcore base retained but allowed to re-vegetate.

Infrastructure ancillary to the construction and operation of the proposed Development will be required. These would be constructed in accordance with best practice and relevant guidelines, to minimise environmental impact.

3.9. Outline Construction Environmental Management Plan

An outline Construction Environmental Management Plan (CEMP) would be prepared as part of the EIAR. It is expected that should consent be granted, a suspensive condition would be attached to the consent requiring the submission of a final CEMP and that this would be agreed with Local Planning Authorities (EAC and DGC), prior to construction commencing. The outline CEMP would set out the method statements for constructing site infrastructure, measures that would be undertaken by contractors to ensure good site practice with regards to construction practices and environmental management. Such measures would include for example, the transport and storage of potentially polluting substances such as oils and lubricants as well as waste management.

It is expected that no development would commence until the role, responsibilities, and operations to be overseen by an appropriately competent Ecological Clerk of Works (ECoW) have been submitted to, and approved in writing by, the Local Planning Authority. The appointed person would undertake all activities, and works shall be carried out, in

accordance with the approved management plans. The ECoW will ensure that during construction impacts to ecological features are minimised through best practice, including ensuring water quality is maintained and the potential for disturbance or risk of injury/death is minimised for protected species which may be using the site on an occasional basis.

3.10. Scoping Question to Consultees

The following question is directed to consultees:

- Question 1: Do consultees agree a micrositing allowance of 50 m to allow flexibility within the project design?

4. Approach to Environmental Impact Assessment

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

As the process has numerous steps, as set out below, it allows for the opportunity to 'design out' or avoid significant adverse environmental effects through the design evolution of the proposed Development.

An iterative design approach is already being undertaken for the proposed Development and will continue to be adopted throughout the EIA process. The iterative design approach will allow the proposed Development to adopt a design that works well for both the local environment and environmental resources within the area, as well as being an economically viable scheme, with the ability to deliver on Scottish, UK and international renewable energy targets.

The collection of the baseline data for much of the Site has been completed as a result of the prior construction monitoring and surveys that have been undertaken in relation to the existing wind turbines that have been operational on the Site over the last 25 years. The Applicant has a comprehensive understanding of the Site and the local vicinity. This has allowed for the design identified within the Scoping Report to have 'designed out' some impacts to the environment already.

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

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

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

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

4.1. What will the EIA Assess?

The EIA will address the construction phase of the windfarm and battery storage, the operational phase which would last approximately 50 years, and the decommissioning phase. The geographical coverage of the EIA will take account of the following:

- The physical extent of the proposed works;

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

4.2. Gathering Baseline Information

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

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

4.3. Prediction of Impacts and Evaluation of Effects

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

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

There is no statutory definition of what constitutes a significant effect, although each EIA discipline aims to provide its own guidance. A significant effect may be broadly defined as an effect which, either in isolation or combination with others, should be taken into account in the decision-making process. This general definition will be used as the basis against which

the significance criteria for environmental disciplines will be developed. The threshold of significance of effects tends to vary between the environmental topics. The assessment team will ensure that the approach taken for each discipline is clearly explained.

4.4. Mitigation of Environmental Effects

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

Where practical, the implementation of mitigation measures will be set out as commitments. Where the effects of the impact are found to be significant, and where there is uncertainty in the mitigation proposed, monitoring may be proposed to ensure that the mitigation is both required and effective. Monitoring will allow for adaptation of the mitigation measures to ensure that they are fit for purpose. Monitoring will be proportionate to the level of significance experienced.

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

Table 4.1 Magnitude of Change

MAGNITUDE	DESCRIPTION
High	Total loss or major alteration to key elements/features of the baseline conditions
Medium	Partial loss or alteration to one or more key elements/features of the baseline conditions
Low	Minor shift away from the baseline conditions
Negligible	Barely discernible change from baseline conditions

Source: Natural Power

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

Table 4.2 Significance of Effect

SENSITIVITY OF RESOURCE/	LOW	MEDIUM	HIGH

RECEPTOR			
Magnitude of Impact			
High	Moderate	Moderate / Major	Major
Medium	Low / Moderate	Moderate	Moderate / Major
Low	Low	Low / Moderate	Moderate
Negligible	Negligible / Low	Low	Low / Moderate

Source: Natural Power

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

It is intended that the EIAR will focus on significant effects and will therefore seek agreement that non-significant effects can be scoped out.

4.5. Securing Commitments and Mitigation Through Planning Conditions

Commitments to deliver mitigation proposed within the EIAR will be secured, if the proposal receives consent, through conditions attached to the consent granted under Section 36 of the Electricity Act 1989.

4.6. Scoping Question to Consultees

The following question is directed to consultees:

- Question 2: Do consultees agree with the approach to the EIA?

5. Consultation

5.1. Community Consultation

The Applicant consider consultation with the community to be a crucial part of the development design process and will engage with the local community throughout the application process. As this is a Section 36 application, there is no formal requirement to follow the pre-application consultation procedures for major developments under the Town and Country Planning (Scotland) Act 1997, as amended, however this application will follow the processes and standards set by the legislation and best practice guidelines (PAN 3/2010 - Community Engagement)[1]. A Pre-Application Consultation Report (PAC Report) will be submitted with the application.

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

Liaison with key stakeholders and local communities will be sought at appropriate milestones throughout the EIA process. It is anticipated that the liaison strategy will embrace a range of methods of communication and feedback that may include online feedback, face to face meetings, newsletters and press releases.

5.2. Other Stakeholder Consultation

The Applicant consider consultation with statutory and non-statutory consultees (e.g. NatureScot, Historic Environment Scotland (HES), Scottish Environment Protection Agency (SEPA), EAC, DGC, Community Councils, etc.) as an integral part of the iterative EIA process and recognises the benefits in carrying out early consultation with all relevant parties. The consultation will progress with the circulation of this Scoping Report and will continue for the duration of the EIA process.

1 Scottish Government (2010) Planning Advice Note (PAN) 3/2010 on community engagement [Online] Available at: Planning Advice Note 3/2010: community engagement - gov.scot (www.gov.scot). [Accessed 20/05/2022]

6. Policy and Climate Change Context

6.1. Introduction

This section presents a summary of relevant policies that will be taken into consideration to help inform the design of the proposed Development.

The EIAR will set out the relevant policies that have been considered as part of the assessments undertaken throughout the EIA. A separate Planning Statement will provide a detailed appraisal of the proposed Development against the Development Plan policies, and other material considerations. The EIAR will also concisely reference climate change policy and the contribution of the proposed Development to the UK and Scottish Government's climate change goals and policy targets.

Relevant to the consideration of the application for the proposed Development will be renewable energy policies and the legally binding targets for the reduction of Green House Gases (GHG). The key documents are summarised in the following text.

6.2. Uk and Scottish Renewable Energy Targets

6.2.1. The Climate Change Act 2008 as amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019

The Climate Change Act 2008 (the 2008 Act)[2] became law on 26 November 2008. Scotland is a partner in delivering the UK emissions reduction target set out in the 2008 Act. The 2008 Act was amended in 2019 by the Climate Change Act 2008 (2050 Target Amendment) Order 2019[3] to include revised targets. These included an at least 100 % reduction in GHGs from 1990 levels by 2050. The key aims were not altered.

6.2.2. The Climate Change (Emissions Reduction Targets) Scotland Act 2019

The Climate Change (Emissions Reduction Targets) Scotland Act 2019[4] was passed by the Scottish Parliament in 2019. It amended the Climate Change (Scotland) Act 2009[5] and set targets to reduce Scotland's emissions of all greenhouse gases to Net Zero by 2045 at the latest, with interim targets for reductions of at least 56 % by 2020, 75 % by 2030, 90 % by 2040. There are annual targets which increase each year up to the baseline to help ensure the delivery of the long-term interim targets[6].

2 UK Parliament (2008) Climate Change Act 2008 [Online] Available at: Climate Change Act 2008 (legislation.gov.uk)

3 UK Parliament (2019) Climate Change Act 2008 (2050 Target Amendment) Order 2019 [Online] Available at: The Climate Change Act 2008 (2050 Target Amendment) Order 2019 (legislation.gov.uk)

4 Scottish Parliament (2019) Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 [Online] Available at: Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 (legislation.gov.uk)

5 Scottish Parliament (2009) Climate Change (Scotland) Act 2009 [Online] Available at: Climate Change (Scotland) Act 2009 (legislation.gov.uk)

6 Scottish Government (2020) Reducing greenhouse gas emissions [Online] Available at: https://www.gov.scot/policies/climate-change/reducing-emissions/

The target of Net Zero emissions by 2045, five years ahead of the UK, is, the Scottish Government state, firmly based on what the independent Committee on Climate Change (CCC) advise is the limit of what can currently be achieved. Progress towards the targets is measured against 1990 levels of carbon dioxide, methane, and nitrous oxide and 1995 levels of hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride.

6.3. Scottish Renewable Energy Policy

The Scottish Government have been clear in their policy support, for the deployment of renewable energy generally and onshore wind particularly to combat global warming, diversify the mix of energy sources, achieve greater security of supply, and to attain legally binding renewable energy and emission reduction targets.

The following Scottish policy documents are the most relevant to the consideration of an application for the proposed Development:

- The Scottish Energy Strategy 2017[7];
- Scottish Energy Strategy Position Statement (March 2021)[8];
- The Scottish Onshore Wind Energy Policy Statement 2022; and
- Draft Energy Strategy and Just Transition Plan 2023[9].

The following text briefly sets key themes of these documents.

6.3.1. Scottish Energy Strategy (2017)

The SES 2017 advises that for Scotland to meet the domestic and international climate change targets, the Scottish Government will set 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.

Renewable and low carbon solutions are identified as one of six energy priorities around which the 2050 vision is built.

6.3.2. Scotland's Energy Strategy Position Statement (SEPS)

SEPS makes reference to Scotland's ambitious legislative framework for emissions reduction in the world and *"a particularly challenging interim target for 2030"*. This is the ambitious target of achieving a 75% reduction in greenhouse gas emissions by 2030 in advance of Net Zero by 2045.

7 Scottish Government (2017) The future of energy in Scotland: Scottish energy strategy [Online] Available at: The future of energy in Scotland: Scottish energy strategy - gov.scot (www.gov.scot)

8 Scottish Government (2021) Scotland's Energy Strategy Position Statement [Online] Available at: Scotland's Energy Strategy - Energy strategy: position statement - gov.scot (www.gov.scot)

9 Scottish Government (2023) Draft Energy Strategy and Just Transition Plan [Online] Available at: Draft Energy Strategy and Just Transition Plan (www.gov.scot)

6.3.3. Onshore Wind Policy Statement (2022)

The OWPS 2022 sets out a clear ambition for onshore wind in Scotland and for the first time sets an ambition that Scotland deploys a minimum of 20 Gigawatt (GW) of onshore wind energy by 2-30.

The OWPS is clear that in delivering 20 GW of onshore wind Scotland by 2030 would play a significant role in meeting the requirement of 25- 30 GW of installed capacity across the UK identified by the Climate Change Committee.

There is clear recognition within OWPS 2022 that no single technology can meet the net zero target and that a balanced implementation of established and emerging technologies is required to reach the net zero target. The OWPS 2022 recognises that a balance to the energy demand and a resilience to the energy distribution network can be achieved when wind farms and storage technologies are co-located.

The OWPS 2022 makes clear that *"no single technology or approach will allow us to meet our challenging deployment ambitions. We must achieve a balance to ensure that we maximise both the environmental and economic benefits to Scotland."* Potential benefits to rural areas, such as provision of jobs and opportunities to restore and protect natural habitats, are also highlighted. Specifically mentioned is a potential need for onshore wind energy developments on peat. Development on this habitat can be considered acceptable with appropriate consideration on design, mitigation and enhancement to reconcile the impacts of development.

The OWPS 2022 contains several direct synergies with National Planning Framework 4 (NPF4). The aims and ambitions of OWPS 2022 are crystalised in the land use policy direction within NPF4 and provides clarification on how the targets within OWPS 2022 can be achieved.

6.4. National Planning Policy

6.4.1. National Planning Framework 4 (2023)

NPF4 was adopted on 13th February 2023. NPF4 superseded both National Planning Framework 3 (NPF3) and Scottish Planning Policy (SPP) and now forms a part of the statutory Development Plan.

NPF4[10] is a long-term plan looking to 2045, that provides guidance on spatial development, sets out national planning policies, designates national developments and highlights regional spatial priorities.

The National Planning Policies contained within NPF4 are intended to provide a policy direction when determining all development requiring planning consent. From 13 February 2023 NPF4 is a component of the Development Plan system and in accordance with Section 25 (1) of the Town and Country Planning (Scotland) Act 1997 as amended which states:

10 National Planning Framework 4 (www.gov.scot) (accessed 8/3/23)

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

The key policy for onshore wind is Policy 11 Energy. The policies considered applicable to applications for renewable energy and electricity infrastructure development are summarised in Table 6.1:

Table 6.1 Significance of Effect

DEVELOPMENT PLAN	POLICY NUMBER AND SUMMARY
National Planning Framework 4 (2023)	Policy 1: Tackling the Climate and Nature Crisis Policy 3: Biodiversity Policy 4: Natural Places Policy 5: Soils Policy 6: Forestry, Woodland and Trees Policy 7: Historic assets and places Policy 11: Energy Policy 25: Community wealth building Policy 33: Minerals

Source: NPF4 2023

Policy 1 – Tackling the Climate and Nature Crisis states that significant weight will be given to the global climate and nature crisis when considering development with encouragement, promotion and facilitation given to development that addresses the global climate emergency and nature crisis.

Policy 3 – Biodiversity seeks to conserve, restore and enhance biodiversity on all major development requiring an EIA. Full cognisance of the inherent ecological conditions, assessment of the anticipated impacts of the development and a full mitigation/restoration and enhancement strategy will be considered through the EIA process.

Policy 4 - Natural Places sets out that development proposals for onshore wind energy, by virtue of type, location or scale that have an unacceptable impact on the natural environment will not be supported. A full assessment of the impact of the proposed Development will be included in the supporting information as part of the application.

Policy 5 – Soils seeks to minimise the impact of development upon soils, including peat, unless there is a specific locational need. Full cognisance of the inherent soil conditions, assessment of the anticipated impacts of the proposed Development and a full mitigation/restoration strategy will be considered through the EIA process.

Policy 6 – Forestry, Woodland and Trees seeks to protect established woodland/hedgerows and general woodland removal will only be supported where public benefit can be established. Full cognisance of the inherent tree coverage, its conditions, assessment of the

anticipated impacts of the proposed Development and a full mitigation/restoration strategy will be considered through the EIA process.

Policy 7 – Historic assets and places seeks to protect the fabric and setting of identified historical assets. Full cognisance of the onsite historic assets and the visual setting upon distant historic assets and a full mitigation strategy will be considered through the EIA process.

Policy 11 - Energy supports all forms of proposals for renewable, low-carbon and zero emission technologies including wind farms and states that significant weight will be placed on the contribution of the proposal to renewable energy generation targets and on greenhouse gas emissions reduction targets.

However, any project identified as a National Development also requires consideration at a project level to ensure all levels of planning policy direction are considered, as set out in Annex A of the NPF4. The weight to be given to the adoption status, individual policy, strategy and supplementary guidance will be a matter for the decision maker.

Policy 11a) identifies a range of renewable and low carbon technologies. The current proposal will fall within the categories identified.

Policy 11b) relates to National Parks and National Scenic Areas. Since the proposed Development is located out with both the stated designations, this element of Policy 11 is not applicable.

Policy 11c) highlights that development proposals for wind farms should only be supported where they maximise net economic impact. Examples of net economic impact are given as local and community socio-economic benefits such as employment, associated business and supply chain opportunities. The net economic benefits of the proposed Development will be supplied in supporting documentation with the application.

Policy 11e) identifies a range of effects, including cumulative impacts, that must be suitably considered, addressed and mitigated against. The cumulative impacts will be considered in the EIA process and addressed with in each of the appropriate chapters of the EIAR.

Policy 25 – Community wealth building requires that full cognisance of the community benefits which can be accrued are identified. This information will form a component of the information submitted with the application.

Policy 33 – Minerals is of limited value in terms of policy direction. However, the support for development related borrow pits and the restoration/mitigation requirements are noted.

6.5. The Local Development Plans

The Site is situated within the administrative boundaries of EAC and DGC Developable areas A and C (Figure 10.1) both straddle the EAC and DGC administrative boundaries. Area B lies fully within the DGC administrative boundary. The Development Plan for the Site comprises:

- East Ayrshire
  - East Ayrshire Local Development Plan 2017
  - East Ayrshire Planning for Wind Energy Supplementary Guidance 2017
- Dumfries and Galloway

- Dumfries and Galloway Local Development Plan 2 2019
- Dumfries and Galloway LDP2 Supplementary Guidance – Part 1 Wind Energy Development: Development Management Considerations

The following text sets out the key policy considerations contained in the relevant Development Plans.

6.5.1. East Ayrshire

6.5.1.1. East Ayrshire Local Development Plan 2017

The East Ayrshire Local Development Plan (EALDP)[11] was adopted in April 2017. The EALDP provides guidance on how EAC wants to develop East Ayrshire over the 10-20 years and indicates where future development should and should not occur.

Table 6.2 sets out the policies in the EALDP which will require consideration during the EIA process.

Table 6.2 Significance of Effect

DEVELOPMENT PLAN	POLICY NUMBER AND SUMMARY
East Ayrshire Local Development Plan 2017	OP1: Overarching Policy RE: Renewable Energy Developments RE3: Wind Energy Proposals over 50 Metres in Height RE5: Financial Guarantees T1: Transportation Requirements for New Development ENV2: Scheduled Monuments and Archaeological Resources ENV6: Nature Conservation ENV7: Wild Land and Sensitive Landscape Areas ENV8: Protecting and Enhancing the Landscape ENV9: Trees, Woodland and Forestry ENV10: Carbon Rich Soils ENV11: Flood Prevention ENV12: Water, air and light and noise pollution

11 East Ayrshire Council (2017) East Ayrshire Local Development Plan [Online] Available at: Local development plan 2017 · East Ayrshire Council (east-ayrshire.gov.uk)

Source: East Ayrshire LDP

6.5.1.2. East Ayrshire Local Development Planning for Wind Energy Supplementary Guidance 2017

The East Ayrshire Local Development Plan Supplementary Guidance: Planning for Wind Energy[12] (EALDPSG) was adopted in 2017 and sets out the Council's spatial approach to wind energy development and continues to build on the EALDP renewable energy policy criteria whilst also offering guidance on numerous environmental and technical matters.

6.5.2. Dumfries and Galloway

6.5.2.1. Dumfries and Galloway Local Development Plan 2 (DGLDP2) 2019

The Dumfries and Galloway Local Development Plan[13] (DGLDP2) was adopted on 3 October 2019 and provides a planning framework for the future developments within Dumfries and Galloway. The framework gives guidance for future developments within Dumfries and Galloway over the next ten years while outlining the potential development opportunities available.

The Councils states that *"the overarching principle of this Plan is that all development proposals should support sustainable development, including the reduction of carbon and other greenhouse gas emissions."*

The DGLDP2 recognises that action is needed to address the pressures of climate change and therefore has outlined polices specific to renewable energy developments. The LDP2 has included a spatial framework specifically for development of wind energy and provides two policies that directly support the Proposed Developable Area. Policies IN1: Renewable Energy and IN2: Wind Energy.

Table 6.3 sets out the policies of the DGLDP2 which will require consideration.

Table 6.3 Adopted relevant Local Development Plan Policies Dumfries and Galloway

DEVELOPMENT PLAN	POLICY NUMBER AND SUMMARY
Dumfries and Galloway Local Development Plan 2 (LDP2) 2019	OP1: Development Considerations OP2: Design Quality and Placemaking OP3: Developer Contributions ED9: Tourism HE4: Archaeologically Sensitive Areas

12 East Ayrshire Council (2017) East Ayrshire Local Development Plan Supplementary Guidance [Online] Available at: Planning SG Planning for Wind Energy (east-ayrshire.gov.uk)
13 Dumfries and Galloway Council (2019) Dumfries and Galloway Local Development Plan 2 [Online] Available at: Local Development Plan (LDP2) - Dumfries and Galloway Council (dumgal.gov.uk)

	NE6: Forestry and Woodland
	NE7: Trees and Development
	T1: Transport Infrastructure
	IN1: Renewable Energy
	IN2: Wind Energy

Source: Dumfries and Galloway LDP 2

6.5.2.2. Dumfries and Galloway Wind Energy Development: Development Management Considerations Supplementary Guidance February 2020

The purpose of the Dumfries and Galloway Wind Energy Development: Development Management Considerations Supplementary Guidance February 2020[14] is to assist developers in locating appropriate areas for potential development and to support planners when assessing proposed windfarms. It provides additional guidance on specific impacts that are associated with windfarms and the development management considerations in relation to Policy IN2: Wind Energy, which the proposed Development will be assessed against.

6.5.3. The Emerging Local Development Plan

6.5.3.1. Emerging East Ayrshire Local Development Plan 2

EAC is currently preparing its Local Development Plan 2 (LDP2). At the time of writing this report the Examination of the conformity with the planning authority's participation statement has now concluded and the Examination for the Proposed LDP2 draft (May 2022) commenced on the 11th May 2023. The Scottish Government Department of Planning and Environmental Appeals (DPEA) has set a target date of the 30th December 2023 for completion of the Examination process.

Table 6.4 sets out the policies of the emerging East Ayrshire Local Development Plan 2 which will require consideration once adopted.

Table 6.4 Emerging East Ayrshire Local Development Plan 2

DEVELOPMENT PLAN	POLICY NUMBER AND SUMMARY
Emerging East Ayrshire Local Development Plan 2	SS1: Climate Change
	SS2: Overarching Policy
	SS11: Skills & Employment
	DES1: Development Design

14 Dumfries and Galloway Council (2020) Dumfries and Galloway Wind Energy Development: Development Management Considerations [Online] Available at: Wind_Energy_SG_Final_PDF_February_2020_Version.pdf (dumgal.gov.uk)

HE3: Scheduled Monuments, Historic Battlefields and other Archaeological and Historic Environment assets

NE1: Protecting and Enhancing Landscape and features

NE2: Development Impacts on Areas of Wild Land

NE3: Local Landscape Area

NE8: Trees, Woodland, Forestry and Hedgerows

NE11: Soils

NE12: Water, air, light and noise pollution

TOUR1: Tourism Development

INF1: Infrastructure First

INF4: Developer Contributions

T1: Transport requirements in new development

RE1: Renewable Energy

MIN7: Borrow pits

FIN1: Financial Guarantees

Source: Emerging East Ayrshire LDP 2

6.6. Conclusion

The EIAR will summarise the renewable energy and planning policy framework. Section 7 of this Scoping Report identifies the discrete Chapter topics which will make up the final EIAR.

Within Chapters 6 to 16 relevant renewable energy and planning policies will be identified which are applicable to the Chapter topic and, as a component of the assessment, a topic specific criterion applied to determine the acceptability of the development. The criteria applied in the policy assessment of each Chapter will only relate to the relevance of the topic and its role in the determination of the application.

A detailed policy appraisal will also be provided in a supporting Planning Statement and Renewable Energy Policy Statement which will make reference to key policy documents including NPF4 and the OWPS.

7. Environmental Impact Assessment Report (EIAR)

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

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

Where features are considered, the assessment methodology, results, effects, impacts and mitigation proposed (if any) will be included.

The EIAR will include a Non-Technical Summary (NTS) and Technical Appendices.

The EIAR is likely to follow the structure below:

Chapter 1: Introduction

Chapter 2: Legal and Policy Context

Chapter 3: Approach to EIA

Chapter 4: Site Selection and Design Evolution

Chapter 5: Project Description

Chapter 6: Landscape and Visual

Chapter 7: Ecology

Chapter 8: Ornithology

Chapter 9: Hydrology, Geology and Hydrogeology

Chapter 10: Cultural Heritage

Chapter 11: Traffic and Transport

Chapter 12: Aviation and Existing Infrastructure

Chapter 13: Noise

Chapter 14: Forestry

Chapter 15: Socioeconomics

Chapter 16: Other Issues

Chapter 17: Residual, Synergist Effects & Mitigation and Conclusions

The EIAR will be produced both in a hard copy print and electronically. For the majority of consultees, unless otherwise requested, the EIAR will be provided electronically. Upon

submission of the application, these documents will be made available for public inspection at appropriate locations to be agreed with EAC, DGC and the ECU, and will be distributed to the relevant consultees. An NTS will be submitted alongside the EIAR, which will provide a summary of the main findings and will be written in a non-technical language to help enable clear understanding and overview of the assessments.

A PAC Report, Planning and Renewable Energy Policy Statement and a Design and Access Statement (DAS) will also be submitted along with the EIAR as a part of the full planning application.

7.1. Scoping Question to Consultees

The following question is directed to consultees:

- Question 3: Do consultees agree with the proposed chapters to be included in the EIAR?

8. Embedded Mitigation and Further Layout Iterations

The design of the proposed Development to date has been an iterative process, and the layout of which has avoided environmental and physical constraints as far as possible (embedded mitigation). These will be refined as the EIA progresses.

The layout and design of the development will continue to evolve, until the design will be 'frozen' to allow final assessment. As stated previously the layout and design provided at scoping are considered to be the optimum from an energy generation perspective.

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

9. Landscape and Visual

9.1. Introduction

The purpose of the Landscape and Visual Impact Assessment (LVIA) is to identify, predict and evaluate potential landscape and visual effects arising from the proposed Development. These include potential effects on landscape character and quality, visual amenity (including visual amenity of local residents), and cumulative effects (including sequential views from key routes). The elements of the proposed Development that could affect the landscape fabric and character of the site and wider study area include the turbines and anemometer masts; battery storage facilities, access tracks; borrow pits and substation. The LVIA will address effects on the site itself and potential effects on receptors within the study area.

9.2. Existing Conditions

9.2.1. The Proposed Development Site

The site of the proposed Development (Figure 3.1) is located on rolling moorland hills which are part of the Southern Uplands hill range that crosses southern Scotland. The site lies to the south of upper Nithsdale, approximately 3 km south-east of New Cumnock, on the boundary between East Ayrshire and Dumfries and Galloway.

The Southern Upland hills tend to be of broad rounded tops with incised valleys. Nithsdale is a broad U-shaped valley, the upper reaches of which are to the north of the Site. The Site lies to the east of Glen Afton, and north of the upper Kello Water valley which are V shaped valleys with steep sides and narrow valley floors. The existing turbines of Hare Hill and Hare Hill Extension are spread over the broad top of Hare Hill (601 m Above Ordnance Datum AOD) and McCrierick's Cairn (556 m AOD), and extend over three parallel ridges to the south, west of Laglass Hill. The site is of open moorland, with existing turbines and tracks.

The proposed turbine area (shown on Figure 3.2) includes the whole of the existing windfarm site, plus additional areas to the south, to the east of Blackcraig Hill (700 m AOD) and on the eastern side of the Kello Water Valley below Magheuchan Rig (559 m AOD); and to the north-east, including a forest area below McCrierick's Cairn, and parts of the northern side of the Kello Water Valley to Corserig.

There are several existing and consented windfarms around the Hare Hill site, as listed below and in Figure 3.3. The closest to the site are Sanquhar, Sanquhar 2 and Sandy Knowe, with Afton and Windy Standard phases 1 and 2 to the south-west.

Table 9.1 Existing Windfarms in the cluster around Hare Hill (within 10 km)

WINDFARM	NUMBER OF TURBINES	MAX TIP HEIGHT
Afton	25	120 m
Sanquhar	9	130 m
Sandy Knowe	24	125 m
Sunnyside	2	62 m

Whiteside	10	121.2 m
Windy Standard phase 1	36	57.5 m
Windy Standard phase 1	30	120 m

Source: ECU, East Ayrshire and Dumfries and Galloway planning portals

Table 9.2 Consented Windfarms in the cluster around Hare Hill (within 10 km)

WINDFARM	NUMBER OF TURBINES	MAX TIP HEIGHT
Enoch Hill Variation	16	149.9 m
Glenmuckloch	8	149.9 m
Lethans WF (2019)	22	200 m
Pencloe Variation	19	149.9 m
Sanquhar 2	44	200 m
Sanquhar Six	6	130 m
Shepards Rig	17	149.9 m
Windy Standard Phase 3	20	177.5 m

Source: ECU, East Ayrshire and Dumfries and Galloway planning portals

9.2.2. Visual Amenity

9.2.2.1. Zone of Theoretical Visibility (ZTV)

The Zone of Theoretical Visibility (ZTV) shown on Figure 9.1 indicates the maximum theoretical visibility of the turbines of the proposed Development to blade tip height. It is calculated using a bare-ground model that does not take into account local screening by vegetation, buildings or forest. In addition, the ZTV does not indicate how much of any turbine may be seen, i.e. whether visibility at any given point is of blade tips only or full turbines. Despite these caveats, ZTVs are a useful tool to identify areas from which the proposed Development may be visible.

The Zone of Theoretical Visibility (ZTV) analysis on Figure 9.1 and 9.4 indicates that the proposed Development will theoretically be visible from:

- All parts of the site;
- Nithsdale between Mennock and Waterhead;
- Surrounding hills but few incised valleys except for Afton Water and Euchan Water valleys;
- Parts of the Ayrshire lowlands around Cumnock, Auchinleck and Mauchline;
- More distant hills and higher slopes that face towards the site.

It is noted that the existing Hare Hill and Hare Hill Extension windfarms are set amongst other existing windfarms, which will form the context for the proposed Development. Analysis of combined visibility of the proposed Development with existing windfarms will be carried out in the LVIA to investigate increased visibility of turbines across the study area as a result of the proposed Development.

9.2.2.2. Visual Receptors

Visual effects occur when the introduction of the proposed Development changes or influences the visual amenity and views experienced by people in the area. Visual receptors include:

- Residents in individual dwellings and settlements;
- Visitors to the local and wider area;
- Road and railway users; and
- Recreational receptors including walkers on recreational routes and core paths, and visitors to outdoor tourist destinations where the visitor experience incorporates a focus on the surrounding landscape.

9.2.2.3. Residents

The ZTV shown in Figures 9.1 and 9.4 illustrates theoretical visibility at a number of settlements surrounding the site. These include New Cumnock, Kirkconnel, Kelloholm and Sanquhar within approximately 10 km; with more distant views from Cumnock and Auchinleck and other settlements to the north-west. Other settlements set within valleys of the Southern Uplands including Thornhill, Dalmellington and Muirkirk will not have views of the proposed Development.

Residential properties within 2-2.5 km of the site are along the A76, within Kirkconnel and along Glen Afton; with three properties closest to the site: Corserig within the eastern part of the site; Glengape to the east of the Site across the Kello Water Valley; and Hillend within the upper reaches of the Kello Water valley.

9.2.2.4. Road and Rail Users

Transport routes within the study area tend to keep to valleys or lower slopes.

The A76 runs through Nithsdale from Cumnock, through New Cumnock, Kirkconnel, Sanquhar to Mennock and onwards to Thornhill. A railway line also follows Nithsdale, but for the section between new Cumnock and Kirkconnel it is to the north of the river. A minor road runs from the A76 west of Kikconnel along the south flank of Nithsdale to Blackaddie Bridge by Sanquhar, and onwards towards Mennock. Minor roads to the north of upper Nithsdale include the road from New Cumnock to Merkland and spurs up to remote farms. There are public roads up Glen Afton and the Euchan Water valley to the south of Nithsdale, and from Sanquar to Wanlockhead to the north-east. To the north-west the landscape is lower and there is more of a network of roads around New Cumnock to Cumnock.

Routes from where theoretical visibility is identified (see Figure 9.1) include:

- Routes within Nithsdale including the A76, the railway line, and minor roads along the north and south sides of the valley;
- The minor roads up Glen Afton and the Euchan Water valley;
- Routes west of New Cumnock including the B741 and minor roads; and
- Some of the network of roads further north-west around Cumnock, Auchinleck and Mauchline.

9.2.2.5. Recreational Routes

There are various public footpaths, including Core Paths, Rights of Way and long distance paths, within the study area as well as established routes to popular hill summits.

The Southern Upland Way (SUW) runs to the south and east of the proposed Development Site, from the south along the Scaur Water valley, crossing the hills at Whing Head south of Sanquhar (east of the proposed Development Site) and ascending to the north-east towards Conrig Hill and Wanlockhead. The ZTV on Figure 9.1 indicates that the proposed Development will be visible from the SUW as it crosses Nithsdale and over high tops at various stages along the route.

Within approximately 5 km, there are Core Paths that have theoretical visibility of the proposed Development.

- Along Glen Afton to Jedburgh Knees west of Afton Reservoir;
- Along the lower Afton Water in and around New Cumnock including around Knockshinnoch Lagoons and around Bankglen and Lanemark (south-west of New Cumnock);
- In and around Kirkconnel and Sanquhar;
- From Kirkconnel to Corserig and Hillend; and
- From Hillend south to the Euchan Water valley and Polskeoch.

9.2.3. Designated Landscapes

An East Ayrshire Sensitive Landscape Area covers part of the proposed Development Site and several upland Landscape Character Types (LCTs) in this part of East Ayrshire. It includes areas with turbines. The areas immediately over the border into Dumfries and Galloway are not designated. Other designated landscapes within approximately 25 km include:

- Another East Ayrshire Sensitive Landscape Area – approximately 13 km to the west at its closest point;
- Thornhill Uplands Regional Scenic Area – approximately 5 km south-east; and
- Galloway Hills RSA – approximately 7 km to the south-west.

The ZTV analysis on Figure 9.2 indicates that the proposed Development will be visible from the Ayrshire Sensitive Landscape Area within which it will partly be located. It will also be visible from other designated landscapes within 25 km listed above.

There are no National Scenic Areas within 25 km of the proposed Development.

There are no Wild Land Areas within 25 km of the proposed Development.

9.2.4. Landscape Character

The landscape character of the site and the study area are described in the 2019 NatureScot review of the landscape character of Scotland[15].

The proposed Development Site is of open moorland with the existing windfarms and some coniferous plantations, and is covered by LCTs that are typical of the Southern Uplands as, including:

- Southern Uplands – Ayrshire (LCT 81) over the western part of the site;
- Southern Uplands with Forest – Dumfries and Galloway (LCT 178) over the central part of the site;
- Upper Dale – Dumfries and Galloway (LCT 165) over the slopes into upper Nithsdale, in the northern and eastern parts of the site; and
- Southern Uplands – Dumfries and Galloway (LCT 177) a very small part of the eastern site;

Other LCTs that cover the study area are shown on Figure 9.3. Upland and valley LCTs interlink along the Southern Uplands Hill range, with lower plateaux and lowlands further to the north-west.

9.3. Proposed Survey and Assessment Methodologies

9.3.1. Guidance

The LVIA will be carried out in accordance with current guidance, i.e. the Guidelines for Landscape and Visual Impact Assessment (GLVIA3[16]). Maps and visualisations will be produced in accordance with NatureScot guidance.

9.3.2. Proposed Study Area

The most widely visible elements of the proposed Development will be the wind turbines. Much of the LVIA will therefore, necessarily, consider primarily the visibility and effects of the turbines. However, the assessment of effects will consider other elements of the proposed Development throughout.

15 SNH National Landscape Character Assessment (2019) Landscape Character Type

16 Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition.

The initial study area for the LVIA of the proposed wind turbines will be up to 45 km from the outermost turbines of the proposed Development, as advised by NatureScot guidance[17], but the assessment will focus on potential and likely significant effects which may occur within a more contained area. Whilst the extents of detailed studies will be determined during the assessment, it is judged likely that the assessment will focus on (but not be limited to) effects within approximately 15 km radius for the detailed assessment of likely significant effects on landscape character; 20-25 km radius for considering landscape designations; and approximately 25 km for assessment of likely significant visual effects. These distance ranges are also likely to be appropriate for the cumulative assessment.

The assessment of ground level elements of the proposed Development (infrastructure, battery units) will be focussed on an area within approximately 5 km of the proposed Development, with nearby viewpoints selected to have views across the site for this purpose.

9.3.3. Assessment Baseline

As a repowering scheme, the baseline for the assessment of landscape and visual effects will be considered carefully, in order to identify the effects of the proposed Development in comparison with the existing situation. Baseline scenarios for the assessment will be identified with consultation. It is noted that recent NatureScot General Pre-Application and Scoping Advice for Onshore Windfarms[18] states that visualisations should show:

- Existing photographs (i.e. with the existing windfarm that is to be repowered);
- Wirelines with the existing windfarm and the proposed Development shown together (distinguished by different colours) amongst cumulative schemes;
- Wirelines with the proposed Development but not the existing windfarm (also without cumulative schemes);
- Photomontage of the proposed Development with the existing windfarm removed.

Additional baseline scenarios and visualisations will be agreed with consultees should phasing of development be used.

9.3.4. Desk Studies and Field Surveys

Desk studies will be carried out to identify key landscape and visual receptors, and to identify the likely visibility of the proposed Development based on ZTV mapping. Computer generated 3D models will be used to prepare draft wireline images to illustrate theoretical visibility, and to enable the selection and analysis of viewpoints for fieldwork and for detailed visualisation modelling through the production of photomontages.

Fieldwork will be carried out including visits to the site, all viewpoints, and the wider area more generally to assess potential effects on landscape character areas and designated landscapes. Photography will be undertaken for viewpoint locations, including photography

17 Scottish Natural Heritage (2017) Visual Representation of Windfarms Guidance Version 2.2, February 2017.

18 NatureScot (2022) General Pre-Application and Scoping Advice for Onshore Windfarms.

at dusk for locations for which night-time photomontages are required to illustrate the effects of aviation lighting[19].

9.3.5. Assessment Method

9.3.5.1. Landscape Effects

Effects on landscape character will be considered for LCTs out to approximately 15 km from the site, with ZTV mapping used as a means of identifying which LCTs require more detailed assessment. Predicted changes in both the physical landscape and landscape character will be identified. The assessment will identify the magnitude and type of change to the landscape, with reference to its key characteristics as set out in the NatureScot LCT descriptions[20]. The sensitivity of the landscape will also be taken into account, acknowledging value placed on the landscape through designation as well as the presence of other consented and operational windfarms. The magnitude of the effect will be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect. These aspects will all be considered, to form a judgement regarding the overall effect and whether this is judged to be significant.

Significance of landscape effects, considering receptor sensitivity and the magnitude of change as set out above, will identify the level of effect using four categories: major, moderate, minor, and negligible. Major and moderate effects will be considered to be significant in the context of the EIA Regulations.

9.3.5.2. Visual Effects

Visual effects are experienced by people at different locations around the study area, at static locations (for example from settlements or from selected viewpoints) and sequentially when travelling along routes. It is usually considered that grouping people related to 'status' (e.g. residents, visitors/tourists/motorists) or the 'activity' they are engaged in (sport, informal recreation, commuting) will help the assessment and lead to findings which can be considered representative. Detailed assessment of the visual effects of the proposed Development on receptors up to approximately 25 km from the site will be based on analysis of the ZTVs, field studies and assessment of representative viewpoints.

GLVIA3[21] 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 magnitude of the effect will be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect. These aspects will all be considered in forming a judgement regarding the overall effect and whether this is judged to be significant.

Significance of visual effects, considering receptor sensitivity and the magnitude of change as set out above, will identify the level of effect using four categories: major, moderate,

19 Dusk photography will be taken for roadside or near-road locations where health and safety considerations permit.

20 SNH National Landscape Character Assessment (2019) Landscape Character Type Descriptions

21 Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition.

minor, and negligible. Major and moderate effects will be considered to be significant in the context of the EIA Regulations.

9.3.6. Proposed Viewpoints for Assessment

A list of potential viewpoints is included in the table below and shown on Figure 9.4. The viewpoints used for the assessment of visual effects of the existing Hare Hill and Hare Hill Extension were used as a starting point for viewpoint selection, with additional viewpoints selected to represent other parts of the ZTV for the proposed Development, based on initial modelling analysis and fieldwork. All viewpoints have been selected as they are publicly accessible locations, and all can be used for the cumulative assessment.

Table 9.3 Proposed Viewpoints

VIEWPOINT LOCATION	GRID REFERENCE		DISTANCE FROM PROPOSED DEVELOPMENT (KM)	REASON FOR SELECTION[22]
Blackcraig Hill	264735	606450	Adjacent	Nearest hilltop with overview of site. Representative and specific, for walkers.
Glen Afton	263220	606820	2.2	Within adjacent glen that does not have visibility of existing Hare Hill and Hare Hill Extension windfarms. Representative, for road users and walkers.
Kelloholm	273820	611000	2.3	On minor road along south side of Nithsdale. Representative and sequential, for local residents and road users.
Crawick Multiverse Park	277640	611780	5.9	At high point within recreational park. Specific, representative, cumulative, for recreational visitors. Also representing views from Sanquyar and sections of the A76 nearby.

22 All viewpoints have been selected on the basis of being publicly accessible, representative of views from their local area, and suitable for the cumulative assessment. The reasons for selection state the location and its immediate setting; whether the viewpoint is representative, specific to the location and/or is part of a sequential experience; and the likely key receptors of the view.

A76 Kirkconnel	272270	612440	2.9	On the A76 to the west of Kirkconnel. Representative and sequential for road users and local residents.
Merkland	265250	614580	3.9	On minor road along north side of Nithsdale. Representative and sequential, for local residents and road users.
New Cumnock Rail Station	261950	614200	4.8	On the A76 in the middle of New Cumnock as it passes over the rail line. Representative and sequential for road and rail users and local residents.
Glaisnock Road	258150	615500	8.4	At a junction of minor roads to the west of New Cumnock. Representative and sequential, for road users and local residents.
B741 Knockburnie	255750	610500	8.7	On the B741 to the south-west of New Cumnock as it passes into Nithsdale. Representative and sequential for road and local residents.
Auchinleck Main Street	255240	621610	14.8	On the Main Street within Auchinleck (B7083). Representative and sequential for road users and local residents.
SUW above Brandleys Cottage	282100	612070	10.3	On the SUW north-east of Sanquhar, overlooking and representing the first views of Nithsdale for south-bound walkers. Representative and sequential for recreational walkers.

SUW Whing Head	275050	605600	4.7	On the SUW south of Sanquhar, overlooking and representing the first views of Nithsdale for north-bound walkers. Representative and sequential for recreational walkers.
SUW Benbrack	268050	597100	8.6	On the SUW as it passes the summit of Benbrack. Representative, specific and sequential for recreational walkers.
Cairnsmore of Carsphairn	259470	598000	9.5	At the top of Cairnsmore of Carsphairn. Representative and specific, for walkers.
Cairnkinna Hill	279130	601875	10.2	At the top of Cairnkinna Hill. Representative and specific, for walkers.
Lowther Hill	289000	610600	16.8	On the SUW as it passes the top of Lowther Hill (south of the radar station). Representative, specific and sequential for recreational walkers.
Cairn Table	272420	624220	14.4	At the top of Cairn Table. Representative and specific, for walkers.
B743 Limmerhaugh Muir	260760	627120	17.2	On the B743 north of River Ayr. Representative and sequential, for road users in the Ayrshire lowlands at a distance from the proposed Development.

9.3.7. Night-Time Visual Assessment

In the interests of aviation safety, Civil Aviation Authority (CAA) guidance[23] states that turbines over 150 m to tip height are required to incorporate visible lighting. Consequently, an assessment of the effects of aviation lighting on the proposed wind turbines will be carried out as part of the LVIA and included within the assessment.

Night-time photomontages, using photographs taken shortly after dusk (with due consideration of safety of photographers), will be produced for 3-4 viewpoints (to be agreed with NatureScot) to illustrate the potential appearance of aviation lights on turbines relative to the existing night-time baseline. The baseline night-time context at viewpoint 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 visual amenity at viewpoints will be drawn on to provide general comment on the likely effects across the wider study area.

9.3.8. Residential Visual Amenity Assessment

It is considered that a Residential Visual Amenity Assessment (RVAA) will be required as there are a number of residential properties within approximately 2-2.5 km of the proposed Development.The RVAA will be carried out in accordance with the Landscape Institute guidance on RVAAs[24].

9.3.9. Visualisations

Visualisations used to support the assessment will include:

- ZTV maps analysing visibility of the proposed wind turbines to tip and hub heights as well as combined ZTV maps with other windfarms;
- Photographs of existing views;
- Wireline images to illustrate theoretical visibility of the proposed Development from viewpoints compared with the existing Hare Hill and Hare Hill Extension windfarms as per NatureScot guidance;
- Photomontages to illustrate the predicted changes to views from viewpoints; and
- Night-time photomontages for 3-4 viewpoints to illustrate the appearance of aviation lighting after dark[25].

Visualisations will include cumulative schemes and will be produced in accordance with NatureScot guidance.

23 Civil Aviation Authority (2017) Policy Statement Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150m Above Ground Level.

24 Landscape Institute (2019) Residential Visual Amenity Assessment (RVAA). Technical Guidance Note 2/19.

25 Dusk photography will be taken for roadside or near-road locations where health and safety considerations permit.

9.3.10. Cumulative Effects

The LVIA will consider operational windfarms, and those under construction as part of the existing baseline.

9.3.10.1. Cumulative assessment scope

The cumulative assessment will consider the pattern of proposed windfarms across the landscape and will focus on the relationship that the proposed Development will have with them.

The LVIA will assess the combined visual effects of the proposed Development with other existing or reasonably foreseeable windfarms within the study area. The cumulative LVIA will consider operational and consented schemes, and those which have undetermined applications or appeals, within a 45 km radius search area.

Within the 45 km search area, the cumulative LVIA will focus detailed assessment on schemes with which the proposed Development is most likely to have significant cumulative effects, primarily those within 15-20 km of the proposed Development.

The cumulative list will be compiled with information from the local authority planning portals (for East Ayrshire, Dumfries and Galloway and South Lanarkshire) and Energy Consents Unit website. The scope of assessment and 'cumulative cut-off date' will be agreed with statutory consultees prior to submission to ensure the most up to date information available is included.

Schemes at scoping stage will be included if they relate to clusters of developments in accordance with NatureScot guidance[26], and if sufficient information is available to make an informed assessment. Turbines below 50 m to blade tip height will not be included in the assessment.

9.3.10.2. Cumulative assessment methodology

The cumulative landscape and visual assessment will be carried out in accordance with the principles contained in NatureScot guidance on cumulative assessment[27]. This methodology assesses different future development scenarios with increasing levels of uncertainty. Cumulative scenarios will include:

- Existing Scenario: this assesses the effects with all operational developments and those under construction present in the baseline and is represented by the LVIA;
- Consented Scenario: this scenario is somewhat speculative because it assumes that consented developments are also present in the landscape;
- In-planning Scenario: this is the most speculative scenario because it assumes all undetermined applications (and potentially some scoping stage schemes), as well as all

26 NatureScot (2020) Guidance – Assessing the Cumulative Landscape and Visual Impact of onshore Wind Energy Developments.

27 Ibid,

developments included in the earlier scenarios, are present in the landscape and therefore considers the effect of adding the proposed Development into this landscape.

The intervisibility of the proposed Development with other developments in the surrounding area will be illustrated by overlaying the ZTVs of other developments with that of the proposed Development. Paired ZTVs will be prepared to illustrate the key relationships between the Development and other developments close to the site. Cumulative visual effects will be assessed through analysis of combined ZTVs, views from individual viewpoints and sequential views from routes.

The cumulative assessment will consider the additional effects of the proposed Development and in-combination effects of emerging wind energy development patterns, and how the Proposed Development relates to these patterns and trends.

9.3.11. Designated Landscapes

The LVIA will review the baseline description and citations of relevant landscape designations within the ZTV and within approximately 25 km of the proposed Development. Following the assessment of landscape and visual effects there will be a review of the identified effects for landscape and visual receptors within the designated areas, and how these will affect the key qualities, reasons for designation, and integrity of the designated areas. No separate assessment of effects on designated areas will be made, to avoid double counting.

9.4. Potential Significant Effects

9.4.1. Potential Significant Effects during Construction

The landscape and visual effects that could arise as a result of the proposed Development during construction are identified as follows:

- Temporary effects on landscape character, primarily as a result of wind turbine installation during construction, with direct effects on the fabric of the landscape and on the character of the site landscape relating to ground level structures, and indirect effects on the perceived effects on the character of the surrounding character areas; and
- Temporary visual effects on views, primarily as a result of visibility of ground level activity and structures as well as wind turbine installation during construction, experienced by people (visual receptors).

9.4.2. Potential Significant Effects during Operation

The landscape and visual effects that could arise as a result of the proposed Development during operation are identified as follows:

- Long-term effects on landscape character, as a result of ground level structures and wind turbine operation, either affecting the pattern of elements that define the character or affecting the visual/perceptual characteristics of landscape character areas;

- Long-term visual effects as a result of the proposed Development on nearby views, with effects as a result of wind turbine operation on wider views, experienced by people at places with visibility of different elements of the proposed Development. This includes effects on the visual aspects of residential amenity for residential properties close to the site;
- Cumulative effects of the proposed Development in combination with existing, consented and in-planning windfarm schemes across the wider area, including combined, successive and sequential visibility; and
- Implications of significant effects identified in or affecting designated landscapes, which may affect their special qualities, reasons for designation, and integrity.

9.4.3. Potential Significant Effects during Decommissioning

The effects of the proposed Development during decommissioning will be similar to those identified during construction.

9.4.4. Effects Scoped Out

To allow a focussed assessment, where receptors are unlikely to be affected by the proposed Development, either through having little or no theoretical visibility, or being distant from the proposed Development, those receptors will be scoped out of the detailed assessment in the LVIA.

At this stage, it is proposed that the following will not be included in the detailed assessment, on the basis of the initial desk-based work undertaken:

- LCTs beyond 15 km radius;
- Designated landscapes beyond 25 km radius;
- Settlements beyond 10 km;
- Local paths beyond 5 km;
- Scoping schemes beyond approximately 15 km; and
- Turbines below 50 m to blade tip height in the GLVIA.

These distances are, not limits, should more distant receptors emerge as being important to consider in detail. It is noted that visualisations for a few long-distance viewpoints specifically requested by consultees beyond approximately 25 km may be provided to illustrate likely visibility of the wind turbines from these locations, even though effects are unlikely to be significant.

9.5. Indicative Mitigation

The primary form of mitigation for landscape and visual effects, including cumulative effects, is through iterative design of the layout of the turbines and other elements of the proposed Development, as seen from key viewpoints and routes. The process and justification for mitigation will be set out in detail in Chapter 12: Aviation and Existing Infrastructure that will form part of the EIA Report.

9.6. References

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

Scottish Natural Heritage (2019) National Landscape Character Assessment

Scottish Natural Heritage (2017) Visual Representation of Windfarms Guidance Version 2.2, February 2017

Civil Aviation Authority (2017) Policy Statement Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150 m Above Ground Level

Landscape Institute (2019) Residential Visual Amenity Assessment (RVAA). Technical Guidance Note 2/19

NatureScot (2020) Guidance – Assessing the Cumulative Landscape and Visual Impact of onshore Wind Energy Developments

NatureScot (2022) General Pre-Application and Scoping Advice for Onshore Windfarms

9.7. Scoping Questions to Consultees

- Question 4: Are consultees content with the proposed methodology for the LVIA?
- Question 5: Are consultees content with the proposed approach to undertaking viewpoint photography and preparing visualisations?
- Question 6: Are consultees in agreement with the proposed study areas, focus, and source data for the assessment of landscape effects?
- Question 7: Are consultees in agreement with respect to the effects that are proposed to be scoped out?
- Question 8: Are consultees content that the LVIA scope has identified the most important receptors to be assessed?
- Question 9: Are consultees content with the proposed viewpoints identified, and could they advise of any additional viewpoints they consider necessary to assess the effects of the proposed Development?
- Question 10: Are consultees content with the proposed approach to the cumulative assessment and could they advise of any specific cumulative sites they consider should be included in the assessment?

10. Ecology

10.1. Introduction

This section of the scoping report sets out the proposed approach to the assessment of potential effects on important ecological features (IEFs). IEFs are species (except birds) and habitats that are protected by legislation, which are of high conservation importance or are particularly sensitive to impacts. This will allow for an EIAR that focuses on features which could be significantly affected, or for which the predicted effects are currently unknown. Important ornithological features (IOFs) are discussed separately in Section 11 Ornithology.

Baseline ecological survey work, comprising of an ecology walkover, was conducted at the proposed Development Site in September 2022 to inform this Scoping Report. This report provides details of the ecology walkover survey undertaken and the survey results, along with the proposed EIA scope and assessment methods.

This section also provides information on statutory sites of international importance, upon which the proposed Development may have a 'Likely Significant Effect' (LSE). A screening process will be undertaken alongside the EIA to determine whether the predicted impacts of the proposed Development will result in an LSE. The screening process will allow the competent authority to determine whether an Appropriate Assessment (AA) will be required.

10.1.1. Site Description

Land at the proposed Development is highly elevated, with significant undulation in some areas. The highest elevations are between 500 m and 600 m above mean sea level, on the south side of the River Nith, with the highest point on the proposed Development being Hare Hill at 601 m.

The main habitat types present at the operational Hare Hill windfarm and extension (Developable Area A, shown on Figure 10.1) consists of a mosaic of upland habitats, mainly comprising unmodified and modified blanket bog, with acid grassland and dry heathland. In Developable Area B (shown on Figure 10.1), the area comprises upland rough grazing and commercial coniferous plantation forestry, whilst Developable Area C (shown on Figure 10.1) comprises commercial coniferous plantation forestry.

There are a number of watercourses on site that feed directly into the River Nith, or to the Nith via Euchan Water, Kello Water and Afton Water.

10.2. Legislation and Guidance

The proposed ecological baseline survey and preliminary assessment presented in this Scoping Report has been carried out with reference to a number of national and international policy documents. Legislative and guidance documents with relevance to ecology are listed below:

10.2.1. Legislation

- The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations)[28], which transposes the Habitats Directive into UK law;
- Wildlife and Countryside Act (WCA) 1981 (as amended)[29];
- The Nature Conservation (Scotland) Act 2004[30];
- The Wildlife and Natural Environment (Scotland) Act 2011[31]; and
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017[32].

10.2.2. National Policy Guidance

- Planning Advice Note (PAN) 51: Planning, Environmental Protection and Regulation[33];
- PAN 60: Planning for Natural Heritage[34];
- PAN 1/2013 – Environmental Impact Assessment[35];
- National Planning Framework 4 (NPF4)[36];
- Nature Conservation: Implementation in Scotland of the Habitats and Birds Directives: Scottish Executive Circular 6/1995 as amended[37]; and

10.2.3. Other guidance

Reference has been made to guidance documents through this Scoping report where relevant:

- European Protected Species, Development Sites and the Planning System: Interim guidance for local authorities on licensing arrangements[38];
- Guidelines for Ecological Impact Assessment in the UK and Ireland[39];
- Land Use Planning System SEPA Guidance Note 4: Planning Guidance on Windfarm Developments[40];

28 Legislation.gov.uk. (2017). The Conservation of Habitats and Species Regulations 2017: https://www.legislation.gov.uk/uksi/2017/1012/contents/made.

29 Legislation.gov.uk. (2011). Wildlife and Countryside Act 1981: https://www.legislation.gov.uk/ukpga/1981/69.

30 Legislation.gov.uk. (2019). Nature Conservation (Scotland) Act 2004: https://www.legislation.gov.uk/asp/2004/6/contents.

31 Legislation.gov.uk. (2022). Wildlife and Natural Environment (Scotland) Act 2011: https://www.legislation.gov.uk/asp/2011/6/contents/enacted.

32 Legislation.gov.uk. (2017). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017: https://www.legislation.gov.uk/ssi/2017/101/contents/made.

33 Scottish Government. (2006). PAN 51: Planning, Environmental Protection and Regulation. Scottish Government, Edinburgh.

34 Scottish Government. (2000 (updated 2008)). PAN 60: Planning for Natural Heritage. Scottish Government, Edinburgh.

35 Scottish Government. (2013 (updated 2017)). PAN 1/2013 – Environmental Impact Assessment. Scottish Government, Edinburgh.

36 www.gov.scot. (n.d.). National Planning Framework 4: https://www.gov.scot/publications/national-planning-framework-4/.

37 Scottish Executive. (1995 (updated 2000)). Nature Conservation: Implementation in Scotland of the Habitats and Birds Directives. Scottish Executive, Rural Affairs Department, Edinburgh.

38 Scottish Executive. (2001 (updated 2006)). European protected species, development sites and the planning system: Interim guidance for local authorities on licensing arrangements. Scottish Executive, Edinburgh.

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

40 SEPA. (2017a). Land Use Planning System Guidance Note 4: Planning guidance on windfarm developments. Appendix 2. Issue 9: 11 September 2017.

- Land Use Planning System SEPA Guidance Note 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems[41];
- Good Practice during Windfarm Construction[42];
- Bats and Onshore Wind Turbines[43]; and
- Scottish Biodiversity List[44] (SBL)[45].

10.3. Study Area

The total study area (proposed Development Area) to be assessed is approximately 21 km^2, which will encompass all proposed infrastructure and is shown in Figure 10.1.

10.4. Baseline Description

In order to establish baseline conditions, a desk study and baseline walkover survey have been undertaken. Methodologies and results are described in the following sections.

10.4.1. Methodology

10.4.1.1. Relevant Contextual Information

In order to provide contextual data, a review has been undertaken of past ecological surveys undertaken for the construction of Hare Hill Windfarm[46], Hare Hill Windfarm Extension[47,48] and the proposed Euchanhead Renewable Energy Development (adjacent to the Hare Hill complex)[49].

10.4.1.2. Desk Based Review

A desk study was undertaken using Department for Environment Food and Rural Affairs (DEFRA) and NatureScot's online search tools[50,51] in order to assess any connectivity between ecological features recorded within the proposed Development Area with populations protected on designated sites. This included all sites with an international or national designation for ecological interests within a 10 km radius of the proposed Development (measured from site boundary of the proposed Development Area):

41 SEPA. (2017b). Land Use Planning System Guidance Note 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Version 3: 11 September 2017.

42 Scottish Renewables, SNH, SEPA, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science, AEECoW. (2019). Good practice during windfarm construction. Version 4.

43 NatureScot (2021)- Bats and onshore wind turbines - survey, assessment and mitigation: https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation.

44 NatureScot. (n.d.).Scottish Biodiversity List: https://www.nature.scot/doc/scottish-biodiversity-list.

45 The SBL forms a list of species and habitats of importance for biodiversity conservation in Scotland, produced by the Scottish Government.

46 Environmental Statement for a Windfarm at Hare Hill, new Cumnock, Ayrshire – The Natural Resource Consultancy – April 1994

47 ScottishPower Renewables - Hare Hill Windfarm Extension Environmental Statement - Chapter 7.0 Ecology and Nature Conservation – August 2007

48 ScottishPower Renewables – Hare Hill Windfarm Extension Environmental Statement – Technical Appendices - August 2007

49 ScottishPower Renewables (August 2020) Euchanhead Renewable Energy Development: Environmental Impact Assessment Report.

50 DEFRA (2019).Magic Map Application Defra.gov.uk: https://magic.defra.gov.uk/MagicMap.aspx.

51 Sitelink -NatureScot.: https://sitelink.nature.scot/home.

- Special Areas of Conservation (SACs);
- Sites of Special Scientific Interest (SSSI); and
- National Nature Reserves (within 5 km of the proposed Development Area only).

Due to the amount of contextual information available from previous reports and surveys, data has not been requested from a local records centre.

10.4.1.3. Field surveys

An ecology walkover of all three developable areas was conducted on the 28th and 29th September 2022 (shown on Figure 10.2).

The survey aimed to ground-truth existing habitat information available and conduct a brief walkover survey on all previously unsurveyed land. Aerial photographs available in the public domain[52] were also studied in order to provide an indication of likely habitat.

The survey was based on the standard habitat survey method as outlined in the Handbook for Phase 1 habitat survey[53], with the aim to generally characterise the habitats present, but detailed notes or species lists were not made at this stage.

10.4.2. Results

10.4.2.1. Relevant Contextual Information

Surveys undertaken for both Hare Hill and Hare Hill Extension, and Euchanhead identified the presence of a number of sensitive habitats and protected species. A full summary is provided in Tables C.1 within Appendix C.

Sensitive habitats present include:

- Bog (modified and blanket bog);
- Heath (dry and wet);
- Flushes and springs;
- Grassland (acid, marshy, calcareous and neutral);
- Broadleaved woodland; and
- Standing/running water.

Protected species present include:

- Bat species;
- Otter; and

52 www.bing.com

53 JNCC (2010). Handbook for Phase 1 habitat survey A technique for environmental audit: https://data.jncc.gov.uk/data/9578d07b-e018-4c66-9c1b-47110f14df2a/Handbook-Phase1-HabitatSurvey-Revised-2016.pdf

- Fish species.

Possible signs of badger, water vole, red squirrel, pine marten and reptiles/amphibians (not including great crested newt) were observed at Euchanhead only. There were no records of either great crested newt or freshwater pearl mussel at Hare Hill.

In order to discharge Planning Condition 19 of the consent for Hare Hill Windfarm Extension, a Habitat Management Plan (HMP)[54] was produced. The Habitat Management Area (HMA) is located at Dun Rig, which is within Development Area A and is immediately east of the Hare Hill extension. Management works proposed within the HMP, and that have since been undertaken include the creation and monitoring of new native woodland, removal of conifer regeneration to restore peatland and the creation of ten hibernacula for reptiles.

10.4.2.2. Desk Study

There are two designated sites that are designated for ecological features present within 10 km of the proposed Development Area. Details of the designated sites are summarised in Table 10.1.

Table 10.1 Statutory Designated Sites

SITE NAME	DISTANCE FROM DEVELOPMENT	DESIGNATION REASONS
Muirkirk Uplands SSSI	3.08 km	Mixed; upland habitat, low lying blanket bog and breeding birds
Northern Lowther Uplands SSSI	3.24 km	Mixed blanket bog, upland habitat and breeding birds

Source: Sitelink, MAGIC

10.4.2.3. Field surveys

The results of the walkover are provided on Figures 10.3, showing the layout in relation to habitats present. Additional notes from the survey are provided as Table C.1, Appendix C.

Habitats identified as present within the site boundary include:

- Bog (modified and blanket bog);
- Heath (dry and wet);
- Flushes and springs;
- Grassland (acid, marshy, calcareous and neutral);
- Continuous and scattered bracken;
- Woodland (broadleaved and coniferous plantation); and

54 ScottishPower Renewables Report - Hare Hill Windfarm Extension Habitat Management Plan - March 2022 (Version 2)

- Standing/running water.

There is potential for a number of protected species to be present within the site boundaries including; bats, otter, badger, red squirrel, pine marten, reptiles and fish species.

10.5. Surveys Proposed

Baseline ecology surveys are due to be undertaken in 2023 as follows:

1) Habitat surveys

a) Extended Phase 1 Survey

The extended Phase 1 habitat survey, following standard methodology as described in Joint Nature Conservation Committee (JNCC)[53], of the proposed Development Area and a 250 m buffer will be undertaken in 2023. The habitats present will be mapped digitally in the field.

The extended Phase 1 will help to identify signs or potential habitats which support protected species, in order to identify whether species specific surveys are required.

Data will be recorded in the field on to a tablet and downloaded at the end of each day on to a computer. Target notes of particular features of interest or species will also be recorded on the tablet. The grid references of photographs and the compass direction of the photograph will be recorded on the same tablet.

b) National Vegetation Classification (NVC) Survey

In conjunction with the Phase 1 habitat survey, NVC surveys will be undertaken in 2023. The plant communities at the proposed Development will be mapped digitally in the field.

The mapping and identification of each different plant community present largely follows the general approach described in Rodwell (2006)[55]. The NVC plant community classification of Rodwell et al. (1991a, 1991b and 1992)[56,57,58] will be used. A series of sample plots (quadrats) will be taken to characterize the main plant communities that are found within the survey area.

Groundwater dependent terrestrial ecosystems (GWDTEs) will largely be identified from the plant communities present, but also from the topography of the area being surveyed, the geological setting and the type of drainage (natural and artificial) (SEPA 2017)[59]. It is not possible to examine the soil types present, but for the most part they are likely to types of blanket bog peat.

Target notes will be taken for any other notable observations e.g., habitat patches that are botanically rich, protected or invasive plant species.

2) Bat surveys

In order to comply with guidance[43],, baseline bat surveys will be required within the proposed Development in relation to potential new turbines, as bats are considered a key potential

55 Rodwell, J.S. 2006. National Vegetation Classification. Users' handbook. Joint Nature Conservation Committee, Peterborough.

56 Rodwell, J.S. (editor) 1991a. British Plant Communities Volume 1. Woodlands and scrub. Cambridge University Press, Cambridge.

57 Rodwell, J.S. (editor) 1991b. British Plant Communities Volume 2. Mires and heaths. Cambridge University Press, Cambridge.

58 Rodwell, J.S. (editor) 1992. British Plant Communities Volume 3. Grasslands and montane communities. Cambridge University Press, Cambridge.

59 Scottish Environment Protection Agency 2017. Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Land Use Planning System SEPA Guidance Note 31.

sensitivity to wind turbine development. Standard NatureScot guidance[43] will be followed, to undertake roost and activity surveys.

a) Static bat detector deployment

Activity surveys will take place across three seasonal (spring, summer and autumn) survey sessions[60]. Static acoustic bat detectors shall be deployed across the site for three 30-day periods, over the course of the season, covering spring (April to early June), summer (late June to early August) and autumn (late August to September).

As the current layout proposes 27 turbines, surveys would require 17 detectors (this may be subject to change).

The bat detectors will be placed as close as possible to turbine locations, with a focus to cover all representative habitats in the site where turbines may be deployed. The remainder should be distributed according to a system of stratified sampling based on the availability of different habitats and topographical features on the site. Weather data including wind speed, temperature and rainfall will be recorded nightly during deployments.

b) Preliminary Roost Assessments

In addition to activity surveys, preliminary roost assessment for bats will be undertaken as part of the extended Phase 1 survey. Structures (and mature trees) within the site may provide suitable locations for roosting or hibernating bats and will require a roost assessment survey to determine their suitability and any evidence of occupation, within 200 m of turbines and infrastructure.

Surveys will follow methods set out in Collins (2016)[61], to assess structures that have potential for roosting. Preliminary roost assessments can be undertaken at any time of year, however trees are easier to assess when they have no leaves.

3) Protected Species Surveys

A suite of protected species surveys is planned for 2023, as follows:

a) Otter

Otter surveys will be carried out and will comprise walkover surveys, which shall be undertaken with a 250 m buffer around watercourses, which will follow standard methods as described in Chanin (2003)[62] and Sargent & Morris (2003)[63].

b) Water Vole

Water vole surveys will be carried out and will comprise walkover surveys, in suitable habitat within a 30 m buffer around watercourses, which will follow standard methods as described in Strachan *et al*. (2011)[64].

60 NatureScot advice states that "Splitting surveys between years is not recommended. This is to avoid adding between year and spatial variation to the data, and the risk of delays to projects": https://www.nature.scot/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation

61 Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists. Good practice Guidelines (3rd edition). The Bat Conservation Trust, London.

62 Chanin, P. (2003). Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers: Monitoring Series No. 10. English Nature, Peterborough

63 Sargent, G. & Morris, P. 2003. How to Find & Identify Mammals. The Mammal Society, London

64 Strachan, R., Moorhouse, T. & Gelling, M. (2011). The Water Vole Conservation Handbook. Third Edition, Wildlife Conservation Research Unit, University of Oxford, Abingdon

c) Badger

Surveys for badger in suitable habitat within a 150 m buffer, will be required. These will search for field signs and setts as described by Bang & Dahlstrøm (2001)[65] and Sargent *et al.* (2003)[66] .

4) Freshwater surveys

Fish habitat surveys will be required to determine habitat suitability for juvenile salmon and trout. Habitat surveys would be undertaken during the summer months and would comprise a walkover survey of all mapped watercourses within the proposed Development Area following standard methodology[67].

Additional macro-invertebrate surveys and electrofishing may be required, and early consultation will be undertaken with the Nith Fisheries Trust.

Whilst running water is present, there are no records of freshwater pearl mussel being present in previous surveys for either Hare Hill or Euchanhead, therefore no surveys for this species are proposed and they are not considered any further in the assessment.

10.6. Proposed Assessment Methodology

The approach to the Ecological Impacts Assessment (EcIA) will follow the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines[16]. It should be noted that these criteria are intended as a guide and are not definitive; professional judgement will also be applied in determining value level for IEFs. IEFs have been scoped in or out of further assessment based on these guidelines and with consideration of effects that are potentially significant as set out under the EIA Directive.

NPF4 policy 3: Biodiversity and Policy 4: Natural Places in respect of biodiversity will be addressed at the proposed Development through habitat enhancement plans being included as part of the proposed Development. The guidelines set out the EcIA process through the following stages:

- Identification of IEFs through ecological field survey and /or research;
- Determination of the geographical importance of each identified IEF;
- Assessment of impacts affecting those IEFs and/or resources, using a defined importance threshold with reference to ecological processes and functions as deemed appropriate;
- Determining the extent, magnitude, duration, timing and frequency of the impacts;
- Assessing the potential for impact reversibility;
- Determining the level of confidence in the above impact predictions;
- Identification of likely significant impacts in the absence of mitigation; and

65 Bang, P. & Dahlstrøm, P. (2001). Animal Tracks and Signs. Oxford University Press, Oxford

66 Sargent, G., Morris, P. and Troughton, G. (2003). How to Find and Identify Mammals, 3rd Edition. The Mammal Society, Southampton

67 SFCC, (2007). Habitat Surveys: Training Course Manual. Scottish Fisheries Co-ordination Centre, Pitlochry.

- The identification of residual impacts following implementation of mitigation.

10.7. Mitigation and Enhancement

10.7.1. Embedded mitigation

To ensure compliance with legislation, and to follow good practice guidance and consultation recommendations, a number of standard measures will be implemented should the application be consented. The standard measures which are relevant to avoiding and reducing impacts on IEFs include:

- A maximum of eight months prior to commencement of works, pre-construction ecology walkover surveys will be carried out, including surveys for protected species. This will enable any refinements to be made, if necessary, to mitigation, micro-siting and/or the construction programme to take account of any updated distribution or presence of protected species, with a suitable mitigation plan adopted on a case-by-case basis;
- A condition that no development shall take place (including demolition, ground works, vegetation clearance) until an outline CEMP, incorporating a Construction Method Statement (CMS), has been submitted to and approved in writing by the local planning authority. It is expected that the outline CEMP will include the following:
- Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts during construction (may be provided as a set of method statements), including a Pollution Prevention Plan outlining measures to control pollution and a Drainage Management Plan outlining measures for management of surface and groundwater;
- The location and timing of sensitive works to avoid harm to ecological features;
- The times during construction when specialist ecologists need to be present on site to oversee works;
- Species Protection Plans (SPP) outlining specific measures to avoid and reduce impacts on protected species;
- Responsible persons and lines of communication; and
- The role and responsibilities on the proposed Development of an ECoW or similarly competent person.

A condition that no development shall commence until the role and responsibilities and operations to be overseen by an appropriately competent ECoW have been submitted to and approved in writing by the local planning authority. The appointed person would be required to undertake all activities, and works shall be carried out, in accordance with the approved details. The ECoW would monitor and advise on potential effects on ecological features during construction in order that impacts are avoided or minimised through best practice. This includes maintaining water quality and minimising the potential for disturbance or risk of injury/death for protected species which may be using the proposed Development Area.

10.7.2. Enhancements

In order to meet requirements outlined in NPF4 (Policy 3. Biodiversity), enhancements to the site will be outlined within a draft Habitat Management Plan (dHMP) that will be submitted as an Appendix to the EIAR. All enhancements proposed within the HMP will be additional to any residual mitigation required for features once the impact assessment has been completed. The aim of the recommended enhancements will be to provide a net gain for biodiversity within the proposed Development area.

10.8. Potential Impacts

Potential impacts will be assessed on the basis that the standard good practice mitigation outlined above will be implemented.

10.8.1. Designated Sites

The proposed Development is not hydrologically connected to Muirkirk SSSI or Northern Lowther Uplands SSSI. These sites are designated for upland habitats and are located at a sufficient distance from the proposed Development Area that no route to impact is present. Therefore, these designated sites do not have potential to be affected, and sensitive habitats/species at the designated site will not be affected by construction.

It is therefore proposed that designated sites are scoped out of the EIAR.

10.8.2. Species and Habitats

As surveys are still ongoing it is proposed that all target species and habitats will be scoped into the EIAR except for the following species, which are proposed to be scoped out. Justification is given for those to be scoped out only.

10.8.2.1. Protected species surveys

Historic information and desk study results indicate that red squirrel, pine marten, reptiles and amphibians are known to be present in low densities at Hare Hill, Euchanhead and within the local vicinity. As such, species specific surveys are not proposed and instead the presence of a small population will be assumed at the proposed Development. Following the implementation of embedded mitigation as part of the EIA (as outlined in Section 10.7), this is considered to be sufficient and there will be no likely significant effects.

It is therefore proposed that on this basis, red squirrels, pine marten and reptiles are scoped out of the EIAR.

Whilst there are habitats present that may support amphibians, there are no records of great crested newt being present in previous surveys for either Hare Hill or Euchanhead, therefore no surveys for this species are proposed.

It is therefore proposed that on this basis, great crested newt is scoped out of the EIAR.

10.8.2.2. Aquatic species surveys

There are watercourses present within the site boundary that have the potential to support fish and other freshwater species and habitats. However, likely impacts will be limited to the construction and decommissioning phases only. Whilst there is the potential for pollution

incidents to occur during operation, embedded mitigation is considered to be sufficient to address any impacts at that stage.

It is therefore proposed that on this basis, construction and decommissioning impacts on aquatic species are scoped in to the EIAR for construction and decommissioning only and are scoped out during operation.

10.9. Receptors and Impacts Scoped In or Out of Assessment

In order to ensure that the EIAR is compliant with the EIA Directive, and to ensure that the EcIA is focussed on potentially significant effects only, it is proposed that only those IEFs and impacts identified in Table 10.2 as being scoped in are carried forward for EcIA within the relevant EIAR chapter.

Table 10.2: Important Ecological Features Proposed for Assessment in the EIA Report

RECEPTOR	SCOPED IN/OUT	DEVELOPMENT PHASE	POTENTIAL IMPACT
Designated Sites	Out	Construction and Decommissioning Operation	None None
Habitats and Vegetation	**In**	**Construction and Decommissioning** **Operation**	**Habitat loss, pollution**
Bats	**In**	**Construction and Decommissioning** **Operation**	**Habitat loss, pollution**
Otter	**In**	**Construction and Decommissioning**	**Disturbance/displacement**
Water Vole	**In**	**Construction and Decommissioning**	**Disturbance/displacement**
Badger	**In**	**Construction and Decommissioning** **Operation**	**Disturbance/displacement**
Red Squirrel	Out	Construction and Decommissioning Operation	None after embedded mitigation
Pine Martin	Out	Construction and Decommissioning Operation	None after embedded mitigation
Reptiles	Out	Construction and Decommissioning Operation	None after embedded mitigation

Amphibians	Out	Construction and Decommissioning Operation	None after embedded mitigation
Fish, macro-invertebrates and freshwater pearl mussel	**In**	**Construction and Decommissioning**	**Pollution**
Fish, macro-invertebrates and freshwater pearl mussel	Out	Operation	None after embedded mitigation

Source: Natural Power

10.10. Scoping Questions to Consultees

- Question 11: Do consultees have any comments regarding the EIA only concentrating on those receptors which may be subject to significant effects from the proposed Development (either directly or indirectly)?
- Question 12: Table 10.2 above notes the receptors and potential impact proposed to be included within the EIA. Do consultees have any comment regarding this sufficiently covering the potential impacts on features from the proposed Development and what is proposed to be scoped out?
- Question 13: Are consultees satisfied that survey effort proposed for 2023 is suitable in order to provide a robust assessment of effects?

11. Ornithology

11.1. Introduction

This Chapter sets out the proposed approach to the assessment of potential effects on features of ornithological interest, during both the construction and operation of the proposed Development.

11.2. Study Area

The Study Area comprised the Site, plus the relevant survey and designated site search areas, as detailed in this Chapter. The Site Boundary encompasses the proposed wind turbine locations and associated infrastructure as part of the proposed Development.

11.3. Desk Study and Consultation

The following data sources will be consulted as part of the Desk Study:

- NatureScot's Sitelink website[68];
- The South Strathclyde and Dumfries and Galloway Raptor Study Groups;
- Royal Society for the Protection of Birds (RSPB); and
- Any relevant Environmental Statements/EIA Reports and associated technical reports from other proposed or consented developments in the local area.

It is also proposed to consult with NatureScot on the acceptability of the scope and coverage of the ornithological surveys proposed to inform the ornithological impact assessment, further details of which are presented below.

11.3.1. Designated Sites

From initial review of relevant designated sites there is one statutory international/European designated site for ornithological features located within 20 km[69] of the Site; Muirkirk and North Lowther Uplands Special Protection Area (SPA), details of which are summarised in Table 11.1. The location of this designated site is shown in Figure 3.3.

Table 11.1 Summary of Statutory Sites Designated for Ornithological Interest Within 20 km of the Site

SITE NAME	DESIGNATION	APPROXIMATE DISTANCE AND DIRECTION FROM THE SITE*	NOTIFIED FEATURES
Muirkirk and North	SPA	3.8 km due north	This site qualifies under Article 4.1 by regularly supporting

68 NatureScot Sitelink (2022). Available at: https://sitelink.nature.scot/map

69 Freely downloadable datasets were searched for information on statutory and non-statutory designated sites within 2km of the Site. This search was extended to 10km for European sites, and to 20km for European sites designated for wintering geese, as this is the upper core range of geese species, as stated in SNH (2016) Version 3 Revised – Assessing Connectivity with Special Protection Areas.

Lowther Uplands	populations of European importance of the Annex 1 species hen harrier *Circus cyaneus,* short-eared owl *Asio flammeus,* merlin *Falco columbarius,* peregrine *Falco peregrinus,* and golden plover *Pluvialis apricaria*.

*From closest point

11.3.2. Environmental Statement Review

This section provides a summary review of the ornithological findings from the original Hare Hill Windfarm EIAR and other windfarm development EIARs within 2 km of the Site as listed below. The purpose of this is to provide context alongside the ornithological survey results to inform the ecological assessment for the proposed Development.

- Hare Hill Windfarm and Extension[70];
- Euchanhead Windfarm[71], located to the south of the Hare Hill Repowering Project Site;
- Sandy Knowe Windfarm[72], located to the north east of the Hare Hill Repowering Project Site; and
- Sanquhar 2 Community Windfarm[73], located to the south of the Hare Hill Repowering Project Site.

At the time of writing this Scoping Report, the Sanquhar Community Windfarm Environmental Statement, located to the south east of the proposed Development, was not available for review.

The following presents a high-level summary of the target species recorded at each of the cumulative sites:

- Flight activity by merlin, red kite *Milvus milvus*, peregrine and hen harrier was reported across the various ESs. Confirmed breeding for merlin and red kite was recorded at Sanquhar 2 Community Windfarm; in the case of red kite this is likely to reflect this site's location alongside more extensive areas of forestry in comparison to the Hare Hill Repowering Project Site. Peregrine breeding activity was recorded in the study areas for most sites and although exact breeding locations were not provided the survey results suggested that records related to the same territory located over 1 km south-west of the

70 Scottsh Power Renewables (2007). Hare Hill Windfarm Extension Environmental Statement; Chapter 8.0 Ornithology. Published August 2007.

71 Scottsh Power Renewables (2020). Euchanhead Renewables Energy Development; Ornithology Techinical Report. Published October 2020.

72 Scottish Power Renewables (2012). Sandy Knowe Windfarm; Chapter 8.0 Ornithology.

73 Community Windpower (2019). Sanquhar II Community Windfarm – EIA Report; Chapter 7 Ornithology. Published January 2019.

Hare Hill Repowering Project Site. There was no evidence of breeding by hen harrier at any of the sites with most activity occurring during the non-breeding season.

- Regular goshawk *Accipiter gentilis* flight activity was recorded during surveys for Euchanhead Windfarm and Sanquhar 2 Community Windfarm. A predominance of goshawk activity at these two sites reflects the presence of more extensive forestry in comparison to the Hare Hill Repowering Project Site.
- Flights by golden eagle *Aquila chrysaetos* were occasionally recorded at several sites but there was no evidence of breeding by this species.
- A small number of lekking black grouse *Lyrurus tetrix* were recorded over 1 km east and south-east of the Hare Hill Repowering Project Site. This included records of lekking birds in the same general area during surveys to inform both the Hare Hill Windfarm Extension in 2006 and the Sandy Knowe Windfarm in 2012.
- Passage and wintering flocks of golden plover were recorded at all sites. Breeding golden plovers were recorded in the Hare Hill Windfarm Extension study area in 2006 but not from any other sites.
- A breeding pair of curlews were recorded in the Hare Hill Windfarm Extension study area in 2006. Generally low, single figure numbers of territories for curlew were recorded at all sites except for in the study area at Sanquhar 2 Community Windfarm where 12 territories were recorded which probably reflects the presence of more favourable habitat for this species within this site. Many of the territories were on lower lying wet moorland over 5km from the Hare Hill Repowering Project Site.
- No evidence of important flyways for swans and geese was recorded at any of the sites.

11.4. Field Survey Methods

Ornithological surveys to inform the EIA for the proposed Development commenced in April 2022. These were based upon an initial Site Boundary encompassing the existing Hare Hill and Hare Hill Extension Windfarms and additional land to the north and south (i.e. the part of the Site Boundary encompassing all the proposed turbines.

The following ornithological surveys were undertaken between April and August 2022:

- Flight Activity Surveys (FAS), covering the initial Site Boundary plus a surrounding buffer of up to 500 m;
- Black Grouse Surveys, covering the initial Site Boundary plus a surrounding buffer of 1.5 km, where access permitted[74];
- Scarce Breeding Raptor Surveys, covering the initial Site Boundary plus a surrounding buffer of 2 km, where access permitted[76]; and

74 Due to land access restrictions, much of the land within the survey buffer was not accessible. Instead, surveys of the buffer zones were conducted through watches undertaken from the site boundary looking out.

- Moorland Breeding Bird Survey, covering the initial Site Boundary plus a surrounding buffer of 500 m, where access permitted[76].

The Flight Activity Surveys were conducted over the 2022/23 non-breeding season and are currently ongoing over the 2023 breeding season (a second breeding season's worth of survey effort) and are scheduled to conclude in August 2023. A second breeding season's worth of black grouse, scarce raptor and moorland breeding bird surveys are also taking place across the initial Site Boundary in 2023 (April-August). All field surveys are being undertaken following NatureScot (formerly Scottish Natural Heritage (SNH)) survey guidance (SNH, 2017[75]) as well as generic and species-specific guidance where required (e.g. Brown and Shepherd (1993)[76], Gilbert et al. (1998)[77] and Hardey et al. (2013)[78]).

Following the conclusion of the 2022 breeding season survey programme, the additional parts of the Site Boundary to the east and north east of the existing Hare Hill and Extension Windfarms were introduced to the survey programme (i.e. those areas comprising proposed turbines T2, T7 and T16-T26. Consequently, Flight Activity Surveys covering these areas were commenced in September 2022 and are scheduled to continue until August 2023. The breeding bird surveys referred to above and conducted across the initial Site Boundary in 2022 and 2023 will also be conducted across these additional areas and their respective survey buffers, where permitted[74], during the 2023 breeding season (April-August).

11.5. Field Survey Results

Key results from the surveys conducted over the 2022 breeding season (April to August inclusive), 2022/23 non-breeding season (September to March inclusive), and current April/May 2023 breeding season (to be concluded August 2023) are outlined in Table 11.2. Surveys to date have recorded an assemblage of birds which are typical of upland habitats in Southern Scotland, with low overall flight activity and limited use of the Site by sensitive species.

Table 11.2 Summary of Key Results During 2022 Breeding Season, 2022/23 non-breeding season, and April/May 2023 breeding season Baseline Ornithology Surveys

SURVEY	KEY RESULTS
	A total of seven target species were recorded over and around the Site Boundary. A summary of the results of the flight activity recorded for each target species is provided below.
Flight Activity Surveys	2022 breeding season (April-August) Red kite: five flights involving a total of five individuals, with activity predominantly associated with open ground along the western boundary of the Site at Laglass Hill.

75 SNH (2017). Recommended Bird Survey Methods to Inform Impact Assessment Onshore Windfarms.

76 Brown, A. F. and Shepherd, K. B. (1993) A method for censusing upland breeding waders, Bird Study, 40:3, 189-195

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

78 Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring (3rd Edition). The Stationery Office, Edinburgh.

2022/23 non-breeding season (September-March)

Red kite: six flights each involving single birds were observed over the northern and eastern parts of the Site.

2022 breeding season (April-August)

Merlin: two flights involving two individuals; one female observed chasing meadow pipits in the south-east of the Site in July and one observed in the north of the Site in August.

2022/23 non-breeding season (September-March)

Merlin: two flights both involving single female birds were observed in the west and southwest of the Site.

2022/23 non-breeding season (September-March)

Hen harrier: two flights involving two individuals were recorded over the Site; one involving a single male hen harrier in the central part of the Site, and a single flight by an immature or female bird observed over the north-eastern part of the Site.

2022 breeding season (April-August)

Golden plover: one flight by a flock of 18 birds recorded crossing the north-east of the Site in April.

2022/23 non-breeding season (September-March)

Golden plover: there was a notable arrival of golden plover over and around the Site in the autumn with flocks typically comprising between 20 and 133 birds regularly being observed between September and November (peak count 400 birds), in total 31 flights were recorded. Observations throughout the winter were scarce but increased again in March with flocks of up to 32 birds frequently being recorded. The occurrence of this species in the vicinity of the Site corresponds to birds on autumn and spring migration stopovers. The majority of flights were observed over the western and northern parts of the Site, with occasional flights over the eastern part of the Site as well.

2022/23 non-breeding season (September-March)

Lapwing: two flights by the same flock of 31 lapwing were observed over the eastern part of the Site.

2022/23 non-breeding season (September-March)

	Snipe: a single snipe was observed adjacent to the woodland in the north-eastern part of the Site. 2022/23 non-breeding season (September-March) Pink-footed geese: a single flock of pink-footed geese was observed flying due southwest over the northern part of the Site.
Black Grouse Surveys	Black grouse: There were no records of black grouse during targeted surveys for this species.
Scarce Breeding Raptor Surveys	The only confirmation of a breeding Schedule 1 raptor species within 2km of the initial Site Boundary was of an occupied barn owl *Tyto alba* nest box located immediately adjacent to the Site in July along the woodland edge south east of Dun Rig. There were a low number of additional sightings of Annex I/Schedule 1 raptors in flight within 2km of the initial Site Boundary involving the following species; 2022 breeding season (April-August) Golden eagle: a single bird over the central part of the initial Site Boundary in April 2022, 2022 breeding season (April-August) Red kite: single birds in June and July in the west and to the south of the initial Site Boundary; and, 2022 breeding season (April-August) Merlin: a single bird passing through the existing Hare Hill Windfarm site in July. In addition, there was an incidental observation of a single male in the north-east of the initial Site Boundary in April. Despite these observations there was no indication of breeding by any of these species within the scarce breeding raptor survey area.
Moorland Breeding Bird Surveys	There was no evidence that any wader territories were established within the moorland breeding bird survey area. A pair of curlews were observed on one date in May in the central eastern part of the initial Site Boundary but were not seen at this location, or elsewhere within the survey area subsequently, indicating that these birds were not breeding.

	A passage flock of 70 golden plover were observed in flight to the east of the Site in April. There was also an incidental observation of a single redshank *Tringa totanus* in flight in June in the central part of the initial Site Boundary.
	In addition to the birds recorded during the surveys discussed above, the following incidental records of target species were recorded during the following surveys season:
Incidental records	2022/23 non-breeding season (September-March) Short-eared owl: one flight involving a single bird was observed in the central part of the Site.
	2022/23 non-breeding season (September-March) Black grouse: a single male black grouse was also observed in the central part of the Site.

From the Flight Activity Surveys/vantage point surveys, scarce breeding bird surveys (raptors and waders) and black grouse surveys undertaken across the entire Site during the first two months of the 2023 breeding season (April and May 2023), to date sightings have included:

Red kite: five flights recorded over the southern and eastern parts of the Site;

Merlin: an incidental observation of an adult female bird flu in the northern part of the existing wind farm site;

Peregrine: two flights recorded involving single flight by an adult bird also observed hunting over Area B, and a pair of birds were also observed hunting to the south west of Blackcraig Hill.

Curlew: two flights recorded involving single birds observed on singing/displaying over the E part of the Extension Site and over Area B, and another single bird observed singing/displaying to the north of the original Repowering Site;

Snipe: Four sightings involving a single bird observed on territory to the south west of the Extension Site and in Area B, and several birds were also observed on calling (presumably on territory) within and to the north of the original Repowering Site as well as within Area B;

Lapwing: a single bird was observed over moorland to the north of Area B;

Golden plover: flights recorded involved flocks of 2 and 60 birds observed over the northern part of the existing wind farm site and a flock of 41 birds on top of Blackcraig Hill southwest of the Extension Site;

Pink-footed geese: A single migrating flock of 44 birds observed flying due north over Area B; and

Greylag geese: three flights by between two and six birds were observed over the northern, southern and eastern parts of the site.

11.6. Assessment Methodology

The assessment of ornithological effects associated with the proposed Development, including cumulative effects, will be undertaken in accordance with guidelines published by SNH[79], CIEEM[80].

11.7. Receptors Scoped Into Assessment

It is proposed that if the following receptors are present in significant enough numbers, then they should be **scoped into** the assessment to assess the impact on the baseline conditions:

- Species deemed to be of High or Moderate Nature Conservation Importance, due to their inclusion on Annex I of the EC Birds Directive (Annex I species), Schedule 1 of the Wildlife and Countryside Act (1981) as amended (Schedule 1 species), species on the Red List of UK Birds of Conservation Concern (Stanbury et al, 2021[81]) (Red-list species), Scottish Biodiversity List Species and Local Biodiversity Action Plan Species.

Sensitive receptors, including identification of specific species, will be refined as further ornithological surveys are completed and data received through consultation. This could include additional breeding raptor species, breeding black grouse and wader species. Sensitive receptors will be considered as Important Ornithological Features (IOFs) within the assessment process.

11.8. Potential Effects Scoped Out of Detailed Assessment

It is proposed that the following receptors are scoped-out of the EIAR:

- Muirkirk and North Lowther Uplands SPA and associated qualifying species.

Muirkirk and North Lowther Uplands SPA, designated for regularly supporting important populations of hen harrier, short-eared owl, merlin, peregrine and golden plover, is located 3.8km north of the proposed Development Site. Based on this distance of separation, the typical core foraging ranges of the SPA qualifying species (SNH, 2016[82]) and the sub-optimal lowland valley habitat occupying the intervening land in between it is considered highly unlikely that any of the species directly associated with this designated site would occur on or immediately around the proposed Development Site. Consequently, there are not predicted to be any likely impacts upon Muirkirk and North Lowther Uplands SPA or its associated qualifying species. To this end it is not anticipated that any assessment will need to be carried out under the Conservation of Habitats and Species Regulations 2017 i.e. a Habitats Regulations Appraisal (HRA).

Species not recorded during the field surveys to inform the Proposed Development or those undertaken for other wind farms in the immediately surrounding area will be **scoped-out** of

79 SNH (2018). Assessing Significance of Impacts on Onshore Windfarms out with Designated Areas.

80CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland.

81 Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021) The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

the EIAR in accordance with NatureScot guidance[82], unless otherwise informed by consultation. This includes passage and overwintering waterfowl, which the surveys conducted to date and those conducted to inform the ESs for neighbouring windfarm developments suggest do not fly over or forage or roost in significant numbers in proximity to the proposed Development Site.

11.9. Likely Significant Effects

Taking into account the findings from surveys to date potential significant effects on IOFs associated with construction and operation of the proposed Development are likely to be limited to disturbance, displacement and turbine-related injury or mortality effects.

11.10. Mitigation

Significant effects upon ornithological receptors will be avoided/minimised where possible through the design process. Good practice during construction (NatureScot, 2019[82]) and operation of the proposed Development will also be implemented (for example through the sensitive timing of works and pre-construction checks for nesting birds).

Where significant effects on IOFs are identified, measures to prevent, reduce, and where possible offset these adverse effects will be investigated and proposed. A Breeding Bird Protection Plan (BBPP) will be produced to ensure that all reasonable precautions are taken to protect ornithological features of interest associated with the proposed Development.

11.11. Limitations and Assumptions

Sensitive receptors are based on survey results to date; however, it is assumed that sensitive receptors will not differ greatly following analysis of 2022-23 survey data and any data received through consultation.

11.12. Scoping Questions to Consultees

- Question 14: Do consultees agree that the consultation and range of ornithological surveys proposed or undertaken are sufficient and proportionate to inform the design and assessment of the Proposed Development?
- Question 15: Do consultees agree with the assessment approach proposed?
- Question 16 Do consultees agree with the ornithological receptors upon which the Proposed Development may potentially pose significant effects?
- Question 17: Do consultees hold any existing information that may be considered relevant to the assessment?

82 NatureScot (2019). Windfarm Construction: Good Practice 4th Edition. Guidance - Good practice during Wind Farm construction | NatureScot .

12. Hydrology, Geology and Hydrogeology

12.1. Introduction

As part of the EIAR, a Hydrological, Geological and Hydrogeological Impact Assessment will be undertaken on those receptors that are likely to experience a significant impact from the construction, operation, and decommissioning of the proposed Development.

The study area, in respect of potential impacts on hydrological and hydrogeological receptors, will include the proposed Development extent. Additionally, the assessment will take into account potential downstream connectivity to areas extending beyond this. The study area, in respect of potential impacts on peat and carbon-rich soils, considers land within the proposed Development area only.

12.2. Legislation and Guidance

12.2.1. International Legislation and Policy

The assessment takes into account the requirements of the Water Framework Directive (2000/60/EC) (WFD). The WFD aims to protect and enhance the quality of surface freshwater (including lakes, rivers and streams), groundwater, GWDTE, estuaries and coastal waters. The key objectives of the WFD relevant to this assessment are:

- To prevent deterioration and enhance aquatic ecosystems; and
- To establish a framework of protection of surface freshwater and groundwater.

The WFD resulted in The Water Environment and Water Services (Scotland) Act 2003, which gave Scottish Ministers powers to introduce regulatory controls over water activities in order to protect, improve and promote sustainable use of Scotland's water environment. These regulatory controls, in the form of The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) or CAR, have made it an offence to undertake the following activities without a CAR authorisation:

- Discharges to all wetlands, surface waters and groundwaters;
- Disposal to land;
- Abstractions from all wetlands, surface waters and groundwaters;
- Impoundments (dams and weirs) of rivers, lochs, wetlands and transitional waters; and
- Engineering works in inland waters and wetlands.

12.2.2. National & Regional Legislation and Policy

The assessment takes into account the following legislation and policy:

- The Water Environment and Water Services (Scotland) Act 2003;

- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended);
- Flood Risk Management (Scotland) Act 2009;
- The Water Supply (Water Quality) (Scotland) Regulations 2001;
- Private Water Supplies (Scotland) Regulations 2006;
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017;
- Part IIa of the Environment Protection Act 1990;
- Waste Management Licensing Regulations 1994;
- Pollution Prevention and Control Regulations (Scotland 2000); and
- Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.
- Land Use Planning System (LUPS) Guidance Note 4: Planning Guidance on Onshore Windfarm Developments;
- LUPS Guidance Note 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems; and
- Scottish Environment Protection Agency (SEPA) Policies:
- No. 19 Groundwater Protection Policy for Scotland;
- No. 22 Flood Risk Assessment Strategy;
- No. 41 Development at Risk of Flooding: Advice and Consultation;
- No. 54 Land Protection Policy; and
- No. 61 Control of Priority & Dangerous Substances & Specific Pollutants in the Water Environment.

12.2.3. Other Guidance and Good Practice

Table 12.1 lists other key guidance and best practice documentation relevant to the assessment.

Table 12.1 Good Practice and Statutory Guidance

TOPIC	SOURCE OF INFORMATION
Scottish Government Planning Advice Notes (PAN's)	PAN 50: Controlling the Environmental Effects of Surface Mineral Workings; PAN 51 Planning (revised 2006), Environmental Protection and Regulation; PAN 1/2013 Environmental Impact Assessment; PAN 61 Sustainable Urban Drainage Systems; PAN 79 Water and Drainage; and

	Flood Risk (2015); Planning Advice.
SEPA Guidance for Pollution Prevention (GPPs) and Pollution Prevention Guidelines (PPGs)	GPP1 Understanding your environmental responsibilities – good environmental practices; GPP 2: Above Ground Oil Storage Tanks; GPP 4: Treatment and Disposal of Wastewater Where there is no Connection to the Public Foul Sewer; GPP 5: Works and Maintenance in or Near Water; PPG 6: Working at Construction and Demolition Sites; PPG 7: Safe storage – The safe operation of refuelling facilities; GPP 8: Safe Storage and Disposal of Used Oils; GPP 13: Vehicle Washing and Cleaning; GPP 21: Pollution incident response planning; GPP 22: Dealing with Spills; and GPP 26: Safe Storage - Drums and Intermediate Bulk Containers.
SEPA Position Statements (Published)	WAT-PS-06-02: SEPA (2015), Culverting of Watercourses, Version 2; WAT-PS-07-02: SEPA (2012), Bank Protection, Version 2; WAT-SG-23: SEPA (2008), Engineering in the Water Environment, Good Practice Guide - Bank Protection Rivers and Lochs, Version 1; WAT-SG-25: SEPA (2010), Engineering in the Water Environment, Good Practice Guide, Construction of River Crossings, Version 2; WAT-SG-26: SEPA (2010), Engineering in the Water Environment, Good Practice Guide, Sediment Management, Version 1; WAT-SG-31: SEPA, (2006) Special Requirements for Civil Engineering Contracts for the Prevention of Pollution, Version 2; WAT-SG-75: SEPA (2018), Sector Specific Guidance: Construction Sites, Version 1 & Supporting guidance (WAT-SG-75) Water Run-Off from Construction Sites September 2021; and WAT-SG-78: SEPA (2012), Sediment Management Authorisation, Version 1
Construction Industry Research and Information Association (CIRIA)	CIRIA C692 Environmental Good Practice on Site (third edition); CIRIA C753 SuDS Manual (2015); CIRIA C532 Control of Water Pollution from Construction Sites; CIRIA C648 Control of Water Pollution from Linear Construction Projects; and CIRIA C689 Culvert Design and Operation Guide.

Other Guidelines	NatureScot and Scottish Renewables Joint Publication, (2019) Good Practice During Windfarm Construction Version 4 FCE, SNH, (2010), Floating Roads on Peat; Scottish Renewables, Joint Publication (2012), Development of Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste; SEPA, The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended), A Practical Guide, Version 9, March 2022; SEPA Technical Flood Risk Guidance for Stakeholders – Version 12, May 2019. SS-NFR-P-002; SEPA Land Protection. Reference EP054; SEPA Land Use Planning Guidance CC1 (LUPS-CC1) (2019). Climate change allowances for flood risk assessment in land use planning. Issue 1. SEPA Land Use Planning Guidance Note 4 (2017): Planning Guidance on On-Shore Windfarm Developments, Version 9;

12.3. Existing Conditions

12.3.1. Existing Land-Use & Topography

The proposed Development and study area features a pre-existing Hare Hill Windfarm and extension with areas of commercial coniferous forestry plantation. Hare Hill is the topographical high point (601 m AOD) situated to the north west. Beyond the proposed Development, the town of Kirkconnel is located 900 m to the north east, with Sanquhar located 5 km east.

12.3.2. Surface water hydrology

The proposed Development lies within the catchment of the River Nith, with Afton Water and Kello Water being the primary pathways along with a combination of smaller named and unnamed watercourses. The tributary catchment of Afton Water joins the River Nith approximately 3.9 km to the north west of the proposed Development, with the Kello Water joining the River Nith 1.7 km to north east.

The western area of the proposed Development is drained by the Pollach Burn, March Burn, and unnamed watercourses that confluence with the Afton Water. The northern area is drained primarily by Redree Burn, Garepoo Burn, March Burn, Polmarlach Burn, Polhote Burn, Polneul Burn and unnamed watercourses that flow directly into the River Nith. The eastern and southern areas of the proposed Development are drained by a number of Kello Water tributaries, such as Earlseat Burn, Glengap Burn, and Polbroc Burn.

Channels within the proposed Development are typical of upland or moorland catchments with channels often narrow and incised into the superficial geology. Channel bedload are likely to include bedrock, sands and gravels, peat and vegetation. Drainage ditches / grips as

well as channel engineering are also evident in most catchments. Catchments featuring commercial coniferous forestry plantations will feature an artificial drainage system associated with the land use.

According to the National River Flow Archive[83], the nearest river gauging station to the proposed Development is situated in the River Nith at Hall Bridge (NGR NS 684 129). A review of the long-term flow archive for this gauging station (1959 – 2021) indicates a mean annual flow of 5.9 m^3/s and a Q10 flow of 16.1 m^3/s. Flow is generally highest during the winter months between November and February. The on-site catchment areas are considerably smaller than the River Nith which has a total catchment extent of 155 km^2 above Kirkconnel, with Kello Water featuring a 31.11 km^2 catchment area and Afton Water featuring a 40.69 km^2 catchment area. Nevertheless, the seasonal discharge patterns are likely to be similar. Flow within the watercourses of the proposed Development would be considered in more detail within the EIAR to ensure the appropriate design of drainage and watercourse crossings.

12.3.3. Water Resources

Following a review of the Ordnance Survey mapping and aerial imagery there are multiple properties that are located adjacent to the proposed Development. Given the nature of the surrounding land use and rural location of the proposed Development, it is known that a number of these properties will be served by a Private Water Supply (PWS), with abstractions potentially within or fed by land within the proposed Development area. Further consultation with residents, EAC and DGC will be required to confirm the nature of the water supply arrangements.

Formal consultation will be carried out with Scottish Water following Scoping to confirm the presence of Drinking Water Protected Areas (DWPA) and other public water infrastructure in the vicinity of the proposed Development Area.

12.3.4. Water Quality

The three primary watercourses within the vicinity of the proposed Development have been classified under SEPA's River Basin Management Plans (RMBP) (SEPA 2011). The RBMPs are one of the requirements of the Water Framework Directive (WFD) (2000/60/EC) and are the plans designed for protecting and improving the water environment. The details of the watercourses hydrologically connected with the proposed Development that are classified under the RMBP classification scheme are provided in Table 12.2 below:

Table 12.2 RBMP classification of watercourses in the vicinity of the proposed Development

RIVER	2020 ECOLOGICAL STATUS	CURRENT & TARGETED ECOLOGICAL STATUS (IN LINE WITH FIRST, SECOND, AND THIRD RBMP CYCLES)	
		2027	Long Term
River Nith	Moderate	Good	Good
Afton Water	Good	Good	Good

83 National River Flow Archive 2022 79003 - Nith at Hall Bridge. Available at https://nrfa.ceh.ac.uk/data/station/info/79003 (accessed 08/11/2022)

Kello Water	Good	Good	Good

12.3.5. Designated Areas

There are five designated sites within 5 km of the proposed Development that are presented in Table 12.3. Of these five designated sites, only two of them are located within the proposed Development or are hydrologically connected. Fountainhead is located on Hare Hill and is designated as a SSSI due to its mineralogical significance relating to the historical mining land use. Polehote and Polneul Burns are located on the northern slope of White Hill, with the proposed Development within the upper catchment of these watercourses. They are designated as SSSI for containing important stratigraphy of the Upper Carboniferous with flora and fauna present within the rock.

Table 12.3: Designated Sites within 5 km of the proposed Development

SITE	DESIGNATION	DISTANCE FROM PROPOSED DEVELOPMENT	DESIGNATION CRITERIA	HYDROLOGICALLY CONNECTED TO THE PROPOSED DEVELOPMENT?
Fountainhead	SSSI	On site	Geological – Mineralogy	Located within the proposed Development Geological designations that are unlikely to be impacted by the proposed Development
Polehote and Polneul Burns	SSSI	0.35 km	Geological - Stratigraphy	proposed Development is located in the upper catchment of these watercourses. Geological designations that are unlikely to be impacted by the proposed Development
North Lowther Uplands	SSSI / SPA	2.5 km	Geological - Mineralogy	Not connected to the proposed Development. The area is located on the northern side of the River Nith.
Lagrae Burn	SSSI	3 km	Geological - Stratigraphy	Not connected to the proposed Development. The watercourse is located on the northern side of the River Nith.
Muirkirk Uplands	SSSI / SPA	3 km	Geological – Palaentology	Not connected to the proposed Development. The area is located on the

Biological – Blanket Bog	northern side of the River Nith.

SSSI – Site of Special Scientific Interest

SPA – Special Protection Area

12.3.6. Flood Risk

The Flood Risk Management (Scotland) Act 2009 sets in place a statutory framework for delivering a sustainable and risk-based approach to managing flooding.

Flood information available on the SEPA Flood Map[84] indicates that that fluvial flood risk within the catchments of Afton Water and Kello Water are at high – 10 % (1 in 100 year) likelihood of fluvial (watercourse) flooding in any given year. High risk areas are confined within the riparian zones of the main channel. It should be noted that many of the tributaries within the proposed Development do not have information relating to the flood risk.

Site wide, small scattered patches of medium and high likelihood pluvial (surface water) flooding are indicated on the SEPA Flood Map, however these are limited in spatial extent. Polmarlach Burn, Polhote Burn, and Polneul Burn are at high – 10 % (1 in 100 year) likelihood of pluvial flooding in any given year, however these areas are localised to the riparian zones of the channel.

A qualitative flood risk assessment will be undertaken as part of the EIAR. The assessment will be carried out in accordance with NPF4 Policy 22 The document states that "Plans should take into account take the probability of flooding from all sources and make use of relevant flood risk and river basin management plans for the area."

12.3.7. Soils and Peat

Peat is a soft to very soft, highly compressible, highly porous organic material that can consist of up to 90 – 95% water, with 5 – 10% solid material[85]. Unmodified peat consists of two layers; a surface acrotelm which is usually 10 – 30 cm thick, highly permeable and receptive to rainfall. Decomposition of organic matter within the acrotelm occurs aerobically and rapidly. The acrotelm generally has a high proportion of fibrous material and often forms a crust in dry conditions.

A second layer, or catotelm, lies beneath the acrotelm and forms a stable colloidal substance which is generally impermeable. As a result, the catotelm usually remains saturated with little groundwater flow. Peat is thixotropic, meaning that the viscosity of the material decreases when stress is applied. The thixotropic nature of peat may be considered less important where the peat has been modified through artificial drainage or natural erosion and is drier but will be significant when the peat body is saturated.

84 SEPA, Interctivie Flood Map https://map.sepa.org.uk/floodmaps/FloodRisk/ , accessed 14/11/2022

85 J. Warburton, J. Holden and A.J.Mills, (2004), Hydrological controls of surficial mass movements in peat, Earth-Science Reviews, 67, 139 – 156

Upon review of the National Soil of Map of Scotland[86], the proposed Development features dystrophic blanket peat, peaty gleys, peaty gleyed podzols, and humus-iron podzols. The predominant soil type is dystrophic blanket peat and peaty gleyed podzols.

The Carbon and Peatland Map (2016), shows that the peat deposits found on the Proposed Developable Area are primarily Class 1 (Nationally important) and Class 3 (Occasional peatland habitat) soils with pockets of Class 2 (Nationally important) and 4 (Unlikely peatland habitat). Class 5 (No peatland vegetation) soils are also present, however these are primarily located on the northern slopes of High Cairn and the eastern area around Hunters Hill.

A phase 1 and phase 2 peat depth survey will be undertaken as part of the EIA and will be supplemented by the existing data that was collected in support of Hare Hill Windfarm Extension. The assessment will be carried out in accordance with the Scottish Government Guidance[87]. The initial phase 1 survey would be undertaken on a 100 m grid pattern within the Site. Upon completion of the phase 1, a peat interpolation map would be produced to highlight the survey results that would inform design as well as the phase 2 peat depth survey. The sensitivity and importance of peat habitats is understood. As well as following Scottish Government Guidance for peat survey, SEPA would be consulted to agree an approach to peat surveys. If required, further probing would be carried out in areas of deep peat to better understand the extent and quality (i.e. is there exposed peat, evidence of erosion etc).

12.3.8. Bedrock Geology

According to the 1:50,000 scale British Geological Survey (BGS) Solid Bedrock Geology, the proposed Development is underlain by the Kirkcolm Formation and the Blackcraig Formation which consist of wackes that are marine sedimentary rocks ranging from coarse to fine grained. Hare Hill, located in the northern section of the proposed Developable Area, is underlain by the Hare Hill Pluton that is granodioritic composition and has metamorphosed the surrounding sedimentary rocks. The eastern section of the proposed Developable Area (adjacent to Polshag Hill) is underlain by Scottish Middle and Lower Coal Measures Formations. In terms of linear features, there are multiple inferred faults located underneath the forested area on the slopes of High Cairn and Black Hill. Additionally, there is an inferred fault line running through Laglass Hill towards Mynwhirn Hill where it connects to another inferred fault line running north-south towards Mid Hill.

12.3.9. Superficial Geology

According to the 1:50,000 scale BGS Superficial Deposits, the proposed Development features superficial deposits that primarily consist of peat. In addition to peat, there are areas dominated by glacial till that are localized to watercourses, such as Kello Water and Polstacher Burn, with small pockets of alluvium (a combination of silt, sand, and gravel) that are featured near Polstacher Burn and Kello Water also.

86 Scotland Soils, Interactive Soils Map https://map.environment.gov.scot/Soil_maps/?layer=1 ,. accessed 14/11/2022

87 Scottish Government 2017, Guidance on Developments on Peatland – Peatland Survey. https://www.gov.scot/publications/peatland-survey-guidance/ accessed 14/11/2022.

12.3.10. Hydrogeology

According to the BGS Aquifer Classifications, the proposed Development is primarily underlain by low productivity aquifers with small volumes of groundwater being found in near surface weathered zones, secondary fractures, and rare springs. These aquifers are referred to as the Kirkcolm Formation and Blackcraig Formation, with the igneous intrusion present also. However, towards the north east of the proposed Development, the area is underlain by the Scottish Coal Measures Group which is a moderately productive aquifer with low yields from sandstones and higher yields where mining has taken place.

12.3.11. Groundwater Dependent Terrestrial Ecosystems

GWDTE will be fully assessed in the EIA process, in line with SEPA LUPS- GU31[88] guidance, potential GWDTE habitats will be identified within 100 m or 250 m of excavations down to 1 m bgl (below ground level), and 2 m bgl respectively. Any identified GWDTE habitats will be subject to a detailed site-specific risk assessment.

12.4. Standard Mitigation

The design of the proposed Development will avoid known impacts on hydrological receptors as far as possible (embedded mitigation). Throughout the EIA process and following further survey work and feedback from the consultation process, it may be that the layout presented here in the Scoping Report, further develops. Should any changes occur that are likely to have a significant impact on the receptor these will be included within the EIAR. If the changes are not likely to have a significant impact, these will first be discussed with the relevant consultees, to ensure that they too are in agreement with the applicant's understanding and before excluding them from the EIA.

12.4.1. Mitigation by Design

A series of buffer distances have been adopted to help reduce effects of the proposed Development on the hydrological environment. A 50 m buffer has been implemented for all identified natural hydrological features. Infrastructure will be located outside this buffer except where access necessitates.

Watercourse crossings associated with the new access track required as part of the proposed Development will be minimised as far as practicable.

Following a detailed and site specific peat probing campaign the layout of infrastructure will be carefully considered to not only reduce peat excavation but also avoid disturbance and placement of infrastructure on areas of deep peat (> 1 meter). Peat impact minimisation will be included in the design process, with restoration of surrounding peat considered in tandem during the design process. Details on peatland condition, reinstatement and restoration opportunities would be provided within the Peatland Management Plan (PMP) and draft Habitat Management Plan (dHMP).

88 Scottish Environment Protection Agency, 2017, Land Use Planning System SEPA Guidance Note 31 (LUPS-GU31), https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf , accessed 14/11/2022

As part of the EIAR detailed site investigations will take place and a peat slide risk assessment (PSRA) will be produced to make sure the proposed Development is designed to avoid areas of high risk. A PMP will also be produced and along with the PSRA will demonstrate how impact on peat will be minimised. The design of the proposed Development and PSRA and PMP will include consideration of alternative construction techniques and use of floating track. Existing tracks will be utilised as far as possible to minimise the disturbance of new ground.

12.4.2. Good Practice Mitigation

Mitigation will follow the well-established principles of industry good practice so as to prevent or minimise effects on the surface and groundwater environment. The following good practice principles will be included as part of the embedded mitigation:

- *Drainage* – all runoff derived from works associated with the proposed Development will not be allowed to directly enter the natural drainage network. All runoffs will be adequately treated via a suitably designed drainage scheme with appropriate sediment and pollution management measures. The proposed Development is situated in an upland hydrological area, and it is imperative that the drainage infrastructure is designed to accommodate storm flows based on a 1 in 200 year event + climate change to help maintain the existing hydrological regime.
- *Storage* – all soil/peat stockpiles as well as equipment, materials and chemicals will be stored well away from any watercourses. Chemical, fuel and oil stores will be sited on impervious bases with a secured bund.
- *Vehicles and Refuelling* – standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Where practicable, refuelling of vehicles and machinery will be carried out in designated areas, on an impermeable surface, and well away from any watercourse.
- *Maintenance* – only emergency maintenance to construction plant will be carried out within the Planning Application Boundary, in designated areas, on an impermeable surface well away from any watercourse or drainage, unless vehicles have broken down necessitating maintenance at the point of breakdown, where special precautions will be taken.
- *Welfare Facilities* – on-site welfare facilities will be adequately designed and maintained to ensure all sewage is disposed of appropriately. This may take the form of a soakaway or tankering and off-site disposal depending on the suitability of the site for a soakaway and only with prior agreement with SEPA.
- *Cement and Concrete* – fresh concrete and cement are very alkaline and corrosive and can be lethal to aquatic life. The use of wet concrete in and around watercourses will be avoided and carefully controlled.
- *Monitoring Plan* – all activities undertaken as part of the proposed Development will be monitored throughout the construction phase. Such monitoring will be to ensure environmental compliance.

- *Contingency Plans* – plans will ensure that emergency equipment is available on site i.e. spill kits and absorbent materials, advice on action to be taken and who should be informed in the event of a pollution incident.
- *Training* – All relevant staff personnel will be trained in both normal operating and emergency procedures and be made aware of highly sensitive areas on site.

Further details on specific mitigation requirements will be provided as part of the EIA. This will include the preparation of an outline CEMP as well as associated appendices, including but not limited to, a peat slide risk assessment, a peat management plan, a watercourse crossing assessment and hydrological monitoring plan. Under the Water Environment (Miscellaneous) (Scotland) Regulations 2017, amendments were made to the Controlled Activities Regulations (CAR) and the proposed Development will require a construction site licence for water management across the entirety of the Site prior to any construction works taking place, including enabling works.

12.5. Potential Sources of Impact

Based on baseline conditions described above, it is anticipated that the following potentially significant effects could occur as a result of the proposed Development:

- There is the potential to alter in-channel or overland flow regimes through excavations, disruption to artificial drains, exposure of bare earth or rock, alteration to artificial drainage and the construction of watercourse crossings. This could impact downstream areas already vulnerable to flood risk;
- There is the potential to increase erosion and transport of sediment to watercourses as a result of constructing watercourse crossings, vegetation and soil stripping, excavations and dewatering activities. Potential effects include direct and indirect effects on aquatic ecology and fluvial morphology of vulnerable receptors;
- There is the potential to impact on receiving soils, groundwater and watercourse quality through the release of contaminated water and stored chemicals used on-site during construction works. Potential effects include those on water quality and indirect effects on aquatic ecology of vulnerable receptors;
- There is potential to permanently alter or disrupt shallow groundwater flow, in particular through the installation / subsequent removal of tracks, removal of juvenile forestry, implementation of drainage measures and excavation of turbine foundations and pouring of concrete;
- There is potential to cause the loss / degradation of any carbon rich soil / peat during construction and operation of the proposed Development. These impacts may arise from the excavation, storage, transportation of peat, which may impact its structural integrity and its ability to act as a store of carbon. This may also include indirect and localised impacts such as drying of the peat and resultant oxidation through changes in shallow groundwater flow or ineffective peat reinstatement practices; and
- Excavation of soil and bedrock during the construction phase of the proposed Development could cause localised disruption and interruption to groundwater flow. Interruption of groundwater flow would potentially reduce the supply of groundwater to GWDTE thereby causing an alteration/change in the quality or quantity of and/or the

physical or biological characteristics of the GWDTE. Contamination of groundwater may also cause physical or chemical contamination to the GWDTE.

12.6. Receptors and Impacts Scoped In or Out

Based on the findings of the baseline study and whether the significance of any impact on receptors can be quantified at this stage, Table 12.4 identifies what is proposed to be scoped in or out of the EIAR.

Table 12.4 Proposed Scoping Topics

RECEPTOR	SCOPE IN OR OUT	REASON
Site Hydrology	Scope In	An appropriate level of assessment will need to be considered to understand the potential impacts of the development on water quality, flood risk and potential pollution following confirmation of the site design.
Water Resources	Scope In	The presence of any public water supply abstractions will be confirmed with Scottish Water following Scoping. PWS are still to be considered and assessed in light of placement of windfarm infrastructure. Further detail is required to confirm supply arrangements and/or mitigation requirements. Further consultation with the local authorities and residents will be required.
Designated Site	Scope Out	There are two SSSI located within the proposed Development area that are designated for geological features. As these sites will be avoided by the windfarm infrastructure and there will be no direct impact on them it is considered appropriate that designated features can be scoped out from further assessment.
Flood Risk	Scope In	Whilst a high level desk based assessment has been provided above, further assessment will be required due to the mapped water features in the proximity to proposed infrastructure.
Soils and Peat	Scope In	Further assessment will likely be required to inform a peat slide risk assessment, peat impact minimisation, peat management plan and carbon balance assessment. Information on peat will also be utilised for production of a GWDTE assessment.
Geology	Scope Out	No specific mitigations to protect geodiversity are required. Review of the local geology information will be considered for the GWDTE assessment.
Hydrogeology	Scope In	Assessment will be required to confirm the presence of GWTDE on site based on habitat, soils and hydrogeological information.

12.7. Scoping Questions to Consultees

- Question 18: Do consultees have any comments regarding the EIA only concentrating on those receptors which may be subject to significant effects from the proposed Development (either directly or indirectly)?

- Question 19: Table 12.4 above notes the receptors and potential impact proposed to be included within the EIA. Do consultees have any comment regarding this sufficiently covering the potential impacts on features from the proposed Development and what is proposed to be scoped out?

13. Cultural Heritage

13.1. Introduction

This section provides an overview of the Archaeology and Cultural Heritage context for the proposed Development. It sets out proposed Study Areas to be adopted in the EIA and sets out the currently recorded baseline within those study areas. The relevant legislative and policy framework, and the guidance relevant to the EIA, is set out, along with the methodology that will be employed in the EIA.

The Cultural Heritage section of the EIAR will assess the potential for direct and indirect effects on the cultural heritage within the proposed Development Site, arising from construction activities, and effects upon the settings of heritage assets with statutory and non-statutory designations in the wider landscape surrounding the proposed Development.

13.2. Study Area

Two study areas will be used for the assessment:

- Inner Study Area: The proposed Development Site, defined by the site developable area boundary, within which components of the proposed Development, and associated infrastructure are to be sited, will form the study area for the identification of heritage assets that could receive direct or indirect effects arising from the construction of the proposed Development.
- Outer Study Area: A wider study area, extending 10 km from the outermost finalised proposed turbine locations, will be used for the identification of cultural heritage assets whose settings may be affected by the proposed Development (including cumulative effects).

13.3. Baseline Description

13.3.1. Inner Study Area (Figure 13.1)

The proposed Development Site covers two local authority areas (East Ayrshire and Dumfries and Galloway) and these have separate Historic Environment Records (HER). The Dalhanna Farm developable area shown in Figure 13.1 is covered by West of Scotland Archaeology Service (WoSAS), whereas the eastern part of the site (Corserig development area and Church Commission Forestry Area C) comes under the remit of Dumfries and Galloway Archaeology Service (DGCAS).

There are three sites recorded in the WoSAS HER, within the Dalhanna Farm developable area: a former Antimony Mine (15704); and two sheepfolds (46593 and 46594). All three sites are considered to be of heritage value at a local level and of low sensitivity. A third record (9028) relates to a linear water channel that has been enhanced by ditching. It is of no heritage value and of negligible sensitivity.

There are no other recorded heritage assets within the Dalhanna Farm developable area, although two cairns (High Cairn and McCrierick's Cairn) are shown on 1898 Ordnance Survey mapping along the County boundary between East Ayrshire and Dumfriesshire. These, if they

survive, may simply be shepherd's cairns or marker cairns on hill summits. A small group of old whinstone quarries is also shown on the 1898 map, close to McCrierick's Cairn. None of these sites is more than of local heritage value and of low sensitivity.

There are nine sites recorded in the DGC HER within the Corserig development area. Part of the route of the Deil's Dyke (MDG 11242-7), a linear earthwork and former land boundary, most likely dividing areas of upland pasture from lowland arable, runs roughly east to west through the northernmost past of the Corserig area: through Librymoor Plantation. It is recorded in the HER as being potentially of Iron Age to post-medieval date and to be potentially of national importance and is therefore considered to be of high sensitivity.

A second record (MDG 67) relates to a possible dyke or track identified on historic aerial photography but considered most likely to be a spoil bank from a drainage ditch. It is likely to be of little or no heritage value and is likely to be of negligible significance.

Seven other (unreferenced) sites, recorded in the HER within the Corserig area, are sheepfolds or sheep shelters identified from historic Ordnance Survey maps. As relic minor features of the historic landscape, they are of heritage value at a local level and of low sensitivity.

There are two sites recorded in the DGC HER within the Church Commission Forestry Area C. The Deil's Dyke (MDG 11247), described above, passes through the northern part of Area C. As noted above, it is recorded in the HER as being potentially of national importance and is therefore considered to be of high sensitivity.

A sheepfold (unreferenced) is also recorded and is shown on historic Ordnance Survey maps (1860 and 1898). It is visible on modern aerial photography close to the March Burn. Several other features of the historic environment (sheepfolds, sheep shelters and old enclosures), relics related to post-medieval stock management and sheep rearing, are shown on the 1898 Ordnance Survey map. None of these sites is of more than local heritage value and of low sensitivity.

13.3.2. Outer Study Area (Figure 13.2)

Preliminary assessment of the Historic Environment Scotland (HES) designations database shows that there are six scheduled monuments within the Outer Study Area.

In addition, there are 71 Listed Buildings within the Outer Study Area: one is Category A Listed, 37 are Category B Listed, and the remaining 33 are Category C Listed. There is also one Conservation Area (Sanquhar) within the Outer Study Area. Category A Listed Dumfries House (LB 14413) lies 14 km to the northwest of the proposed Development and is a sensitive receptor that will be included in the assessment.

There are no Inventory Gardens and Designed Landscapes (GDLs) or Inventory Historic Battlefield Sites within the Outer Study Area. The southeastern edge of Dumfries House GDL lies 12.5 km to the northwest of the proposed Development and forms the setting for Category A Listed Dumfries House and will be included in the assessment.

In addition to the designated heritage assets in the HES databases, there are a number of heritage assets in Local Authority databases that are considered to be non-statutory register (NSR) sites, potentially of schedulable quality and of national importance. The WoSAS HER records two such sites (Fardenreoch Cairn (8018) and Craigdullyeart Hill Limestone Quarries

(13051)), while the DGC HER records 36 such sites. Seventeen of these are individual sections of the Deil's Dyke earthwork. Six others are funerary cairns that lie to the east and southeast of the proposed Development.

The DGC HER also records two non-inventory designed landscapes (NIDLs) within the Outer Study Area: Craigdarroch and Eloick, both of which have some relict historic value and are considered to be of regional importance.

13.4. Guidance and Legislation

The assessment will be prepared following the advice and guidance in the following documents:

13.4.1. Legislation

- Ancient Monuments and Archaeological Areas Act 1979;
- Planning (Listed Buildings and Conservation Areas (Scotland) Act 1997 (as amended by Historic Environment (Amended) (Scotland) Act 2011); and
- Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

13.4.2. Planning Policies

- National Planning Framework 4 (NPF4) (Scottish Government, 2023); and
- Historic Environment Policy for Scotland (HEPS) (Historic Environment Scotland (HES), 2019a).

13.4.3. Guidance

- Environmental Impact Assessment Handbook (Scottish Natural Heritage (SNH) and HES, 2018, version 5);
- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeology (CIfA), 2014);
- Principles of Cultural Heritage Impact Assessment in the UK (Institute of Environmental Management and Assessment (IEMA), 2021);
- Designation Policy and Selection Guidance (HES, 2019b);
- Managing Change in the Historic Environment: Setting (HES, 2016 – updated 2020); and
- Planning Advice Note 2/2011: Planning and Archaeology (PAN 2/2011).

13.5. Assessment Methodology

13.5.1. Desk-Based Assessment Method

A desk-based assessment will be conducted covering the Inner Study Area. The purpose will be to identify all known heritage assets, designated or otherwise, that could be directly affected by the proposed Development, and to inform an assessment of the archaeological potential of the proposed Development Site.

Sources to be consulted for the collation of data will include:

- East Ayrshire HER, maintained by WoSAS;
- Dumfries and Galloway HER;
- HES on-line GIS Spatial Data Warehouse;
- National Record of the Historic Environment (NRHE);
- Historic maps held by National Library of Scotland;
- Historic aerial photographic imagery (vertical and oblique) available through the National Collection of Aerial Photography (NCAP);
- Modern aerial photographic imagery available online via Google Earth, Bing Maps and ESRI World Imagery;
- Historic Land-Use Assessment Data for Scotland (HLAmap);
- Lidar data available through Scottish Remote Sensing Portal (where available);
- Any existing geotechnical data, including peat survey data when available; and
- Other readily accessible published sources, including any reports referenced in HER/NRHE records.

Data will be gathered for the Outer Study Area to identify designated heritage assets that may be subject to effects on their settings and to provide baseline information for the assessment of setting effects.

13.5.2 Field Survey Method

A walk-over field survey of the proposed Development Site will be carried out with the following aims:

- To assess the present baseline condition of the heritage assets identified through the desk-based assessment and to accurately record their locations;
- To identify any further features of cultural heritage interest not detected from the desk-based assessment that could be directly or indirectly affected by construction of the proposed Development; and
- To assess the Inner Study Area for its potential to contain currently unrecorded, buried archaeological remains that could be directly or indirectly affected by construction of the proposed Development.

Identified sites will be recorded on pro-forma monument recording forms and by digital photography, and their positions (and where appropriate their extents) logged using a Global Positioning System (GPS). The survey data will be compiled in a GIS and used during the design iteration work. The results of the survey work will be provided to the relevant Local Authorities' Archaeological Advisors, for inclusion in the HER following completion of the proposed Development.

Site visits to key heritage assets in the Outer Study Area will be carried out, where necessary and in as far as access is possible, to assess the predicted effect of the Proposed Development on their settings. Site visits will include any assets specifically identified by

consultees as requiring assessment and those identified through analysis of the blade tip height ZTV, where it is considered, on the basis of professional judgement, that the effect on their settings could be significant.

13.5.2. Assessment Method

The effects of the proposed Development on heritage assets will be assessed on the basis of their type (direct effects, indirect impacts, setting impacts, and cumulative impacts) and nature (adverse or beneficial). The assessment will take into account the value/sensitivity of the heritage asset, and its setting, and the magnitude of the predicted impact.

- Direct impacts: occur where the physical fabric of the asset is removed or damaged, or where it is preserved or conserved, as a direct result of the proposal. Such impacts are most likely to occur during the construction phase and are most likely to be permanent.
- Indirect impacts: occur where the fabric of an asset, or buried archaeological remains, is removed or damaged, or where it is preserved or conserved, as an indirect result of the proposal even though the asset may lie some distance from the proposal. Such impacts are most likely to occur during the construction phase and are most likely to be permanent.
- Setting impacts: these are generally direct and result from the proposal causing change within the setting of a heritage asset that affects its cultural significance or the way in which it is understood, appreciated, and experienced. Such impacts are generally, but not exclusively, visual, occurring directly as a result of the appearance of the proposal in the surroundings of the asset. However, they may relate to other senses or factors, such as noise, odour or emissions, or historical relationships that do not relate entirely to intervisibility, such as historic patterns of land-use and related historic features. Such impacts may occur at any stage of a proposal's lifespan and may be permanent, reversible, or temporary.
- Cumulative impacts: can relate to impacts on the physical fabric or on the setting of assets. They may arise as a result of impact interactions, either of different impacts of the proposal itself, or additive impacts resulting from incremental changes caused by the proposal together with other projects already in the planning system or allocated in a Local Development Plan.
- Adverse effects are those that detract from or reduce cultural significance or special interest of heritage assets.
- Beneficial effects are those that preserve, enhance or better reveal the cultural significance or special interest of heritage assets.

13.5.3. Assigning Sensitivity to Heritage Assets

Cultural heritage assets are attributed value or importance through the designation process. Designation ensures that sites and places are recognised by law through the planning system and other regulatory processes. The level of protection and how a site or place is managed varies depending on the type of designation and the laws and policies that apply to it (HES, 2019b).

Table 13.1 summarises the relative sensitivity of heritage assets (including their settings) relevant to the proposed Development, based on the guidance set out in the SNH/HES EIA Handbook (version 5; 2018).

Table 13.1 Sensitivity of Heritage Assets

SENSITIVITY OF ASSET	DEFINITION / CRITERIA
HIGH	Assets valued at an international or national level, including: Scheduled Monuments Category A Listed Buildings Inventory Gardens and Designed Landscapes Inventory Historic Battlefields Non-designated assets that meet the relevant criteria for designation (including sites recorded in HERs as non-statutory register (NSR) sites of presumed national importance)
MEDIUM	Assets valued at a regional level, including: Archaeological sites and areas that have regional value (contributing to the aims of regional research frameworks) Archaeologically Sensitive Areas (ASA) (where these are identified in Local Authority records) Non-Inventory Designed Landscapes (NIDL) (where these are identified in Local Authority records) Category B Listed Buildings Conservation Areas
LOW	Assets valued at a local level, including: Archaeological sites that have local heritage value Category C listed buildings Unlisted historic buildings and townscapes with local (vernacular) characteristics
NEGLIGIBLE	Assets of little or no intrinsic heritage value, including: Artefact find-spots (where the artefacts are no longer in situ and where their provenance is uncertain) Poorly preserved examples of particular types of features (e.g. quarries and gravel pits, dilapidated sheepfolds, etc)

13.5.4. Criteria for Assessing the Significance of Effects

The magnitude of impact (adverse or beneficial) will be assessed in the categories, high, medium, low, and negligible as described in Table 13.2.

Table 13.6.2 Magnitude of Impact

MAGNITUDE OF IMPACT	CRITERIA	
	ADVERSE	BENEFICIAL
HIGH	Changes to the fabric or setting of a heritage asset resulting in the complete or near complete loss of the asset's cultural significance.	Preservation of a heritage asset in situ where it would otherwise be completely or almost completely lost.
	Changes that substantially detract from how a heritage asset is understood, appreciated, and experienced.	Changes that appreciably enhance the cultural significance of a heritage asset and how it is understood, appreciated, and experienced.
MEDIUM	Changes to those elements of the fabric or setting of a heritage asset that contribute to its cultural significance such that this quality is appreciably altered.	Changes to important elements of a heritage asset's fabric or setting, resulting in its cultural significance being preserved (where this would otherwise be lost) or restored.
	Changes that appreciably detract from how a heritage asset is understood, appreciated, and experienced.	Changes that improve the way in which the heritage asset is understood, appreciated, and experienced.
LOW	Changes to those elements of the fabric or setting of a heritage asset that contribute to its cultural significance such that this quality is slightly altered.	Changes that result in elements of a heritage asset's fabric or setting detracting from its cultural significance being removed.
	Changes that slightly detract from how a heritage asset is understood, appreciated, and experienced.	Changes that result in a slight improvement in the way a heritage asset is understood, appreciated, and experienced.
NEGLIGIBLE	Changes to fabric or setting of a heritage asset that leave its cultural significance unchanged and do not affect how it is understood, appreciated, and experienced.	

13.5.5. Assessment of Effects on Setting

The SNH/HES EIA Handbook (2018) Appendix 1, paragraph 42 advises that:

"In the context of cultural heritage impact assessment, the receptors are the heritage assets and impacts will be considered in terms of the change in their cultural significance".

Historic Environment Scotland's guidance document, 'Managing Change in the Historic Environment: Setting' (HES, 2016 – updated 2020), notes that:

"Setting can be important to the way in which historic structures or places are understood, appreciated, and experienced. It can often be integral to a historic asset's cultural significance."

"Setting often extends beyond the property boundary or 'curtilage' of an individual historic asset into a broader landscape context".

The guidance also advises that:

"If proposed development is likely to affect the setting of a key historic asset, an objective written assessment should be prepared by the applicant to inform the decision-making process. The conclusions should take into account the significance of the asset and its setting and attempt to quantify the extent of any impact. The methodology and level of information should be tailored to the circumstances of each case".

The guidance recommends that there are three stages in assessing the impact of a development on the setting of a historic asset or place:

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

The SNH/HES EIA Handbook (2018) Appendix 1, paragraph 43 advises that:

"When considering setting impacts, visual change should not be equated directly with adverse impact. Rather the impact should be assessed with reference to the degree that the proposal affects those aspects of setting that contribute to the asset's cultural significance".

Following these recommendations, the turbine blade tip and hub height ZTVs for the proposed Development will be used to identify those heritage assets from which there would be theoretical visibility of one or more of the proposed wind turbines, and the degree of theoretical visibility:

- Scheduled Monuments, Category A and B Listed Buildings, Conservation Areas, Inventory Gardens and Designed Landscapes and Inventory Historic Battlefields, where present within the blade tip height ZTV and within the Outer Study Area will be included in the assessment.
- Category C Listed buildings and Non-Inventory Designed Landscapes (NIDLs) within the blade tip height ZTV and within 5 km of the outermost turbines will be included in the assessment.
- Consideration will be given to designated heritage assets beyond 10 km where long-distance views or intervisibility are considered to be an important aspect of their settings. In this instance, Category A Listed Dumfries House (LB 14413) and its associated GDL is identified as a sensitive receptor.

- Consideration will also be given to designated heritage assets where there is no predicted visibility from the asset but where views of or across the asset are important factors contributing to its cultural significance. In such cases, consideration will be given to whether the proposed Development could appear in the background to those views.

The sensitivity of the asset (Table 13.1) and the magnitude of the predicted impact (Table 13.2) are used to inform an assessment of the significance of the effect (direct effect or effect on setting), summarised using the formula set out in the matrix in Table 13.3. The matrix employs a gradated scale of significance (from Negligible to Major effects) and where two outcomes are possible through application of the matrix, professional judgment supported by reasoned justification, will be used to determine the level of significance.

Table 13.3 Significance of Effects

MAGNITUDE OF IMPACT	SENSITIVITY OF ASSET			
	HIGH	MEDIUM	LOW	NEGLIGIBLE
HIGH	Major	Major / Moderate	Moderate / Minor	Minor / Negligible
MEDIUM	Major / Moderate	Moderate	Moderate / Minor	Minor / Negligible
LOW	Moderate / Minor	Moderate / Minor	Minor	Negligible
NEGLIGIBLE	Minor / Negligible	Minor / Negligible	Negligible	Negligible

Major and Moderate effects are considered to be 'significant' in the context of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations). Minor and Negligible effects are considered to be 'not significant'.

Where a significant effect on the setting of an asset is predicted as a result of change within its surroundings using the approach outlined above, an assessment will be made as to whether that effect would result in a significant adverse effect on the integrity of its setting (NPF4 Policy 7(h)ii). For the purposes of the assessment, the integrity of the setting of an asset will be considered to be maintained if the settings' contribution to the cultural significance of the asset, and our ability to understand, appreciated and experience the monument, would not be compromised by the proposed Development either alone or cumulatively.

13.5.6. Cumulative Assessment

The assessment of cumulative effects on heritage assets will be based upon consideration of the effects of the proposed Development on the settings of assets with statutory designations and non-statutory designations within 10 km of the outermost turbines (the Outer Study Area), in addition to the likely effects of other developments that are under construction, those that are consented but not yet built and those that are currently at the application stage (and for which sufficient detail is available upon which to develop an assessment).

The assessment of cumulative effects on the settings of heritage assets from the proposed Development in combination with pre-existing developments will be addressed in the course of the assessment of effects of the proposed Development alone, as pre-existing developments are part of the baseline environment.

Proposed developments at the scoping or pre-application stage will not be included in the assessment, as such proposals are not fully formed and may be subject to changes that cannot be foreseen.

The schemes to be included in the cumulative impact assessment will be those identified through the LVIA consultations with NatureScot, EAC and DGC.

The assessment will take into account the relative scale (i.e. size and number of turbines) of the identified developments, their distance from the affected assets, and the potential degree of visibility of the various developments from the assets under consideration. The use of cumulative wireline visualisations will be used to aid the assessment.

13.6. Proposed Mitigation

13.6.1. Design Mitigation

- Avoidance of identified areas of constraint located within the proposed Development Site during the design of the turbine layout and the on-site infrastructure.
- Avoid or minimise the visual impact on Category A Listed Dumfries House (LB 14413), 14 km to the northwest of the Proposed Development.

13.6.2. Construction Phase Mitigation

- Fencing off/marking out areas of constraint within the proposed Development Site for avoidance during the construction phase.
- Archaeological evaluations or set piece excavations where heritage assets cannot be avoided.
- Watching briefs/archaeological monitoring in archaeologically sensitive areas.
- Implementation of a working protocol should unrecorded archaeological features be discovered.

13.6.3. Post Construction Monitoring

Post construction site visits would be carried out to verify the effectiveness of the marking-out/avoidance mitigation, to ensure that all markers have been removed and that no damage has occurred to demarcated heritage assets.

13.7. Potential Impacts

13.7.1. Direct Impacts

Construction of the proposed Development could potentially directly affect the previously recorded non-designated heritage assets within the Inner Study Area. However, the nature

and locations of the known heritage assets is such that they can most likely be easily avoided by design and significant adverse direct effects from construction are unlikely to arise.

It is possible that there could be other, as yet unrecorded or unknown and buried remains of archaeological interest within the site and any such remains could be directly affected by construction of the proposed Development. It is not possible to predict where any such buried remains may be located, and other mitigation measures will need to be considered to address the possibility direct impacts on buried archaeological deposits.

13.7.2. Indirect Impacts

Construction of the proposed Development could potentially indirectly affect previously recorded non-designated heritage assets within the Inner Study Area. However, the nature and locations of the known heritage assets is such that they can most likely be easily avoided by design and significant adverse indirect effects are unlikely to occur.

It is possible that there could be other, as yet unrecorded or unknown and buried remains of archaeological interest within the site and any such remains could also be indirectly affected by construction of the proposed Development.

13.7.3. Setting Impacts

The proposed Development could give rise to potentially adverse impacts on the settings of designated heritage assets within the Outer Study Area (as defined above).

Based on the Scoping layout of the proposed Development, the proposed Development would be visible from the Conservation Area and Archaeologically Sensitive Area at Sanquhar and from Listed Buildings and Scheduled Monuments in that area. However, for most of these it is the townscape and the Nith valley, and their associations with each other, that form the important aspects of their setting. The hillsides along the southern side of the River Nith are also characterised by existing windfarm development. It is unlikely that the proposed Development would appreciably alter the baseline setting of designated heritage assets in and around Sanquhar.

Those assets most sensitive to adverse effects on their settings are likely to be the Scheduled Monument sites (Dundurn Fort, on St Fillan's Hill (SM 2885)) and St Blane's Chapel (SM 5434)), to the south of the Proposed Development, and the Category A Listed Edinample Castle (LB 4198) where their currently remote rural settings could be adversely affected by the visual impact of the introduction of wind turbines into their settings. Dumfries House (LB 14413) and its associated GDL, 14 km to the northwest of the proposed Development, is identified as an important cultural heritage asset that could have its setting adversely affected by the proposed Development. The setting of the House and GDL will be taken into account during the design process and any predicted adverse effect on its setting will be addressed in the EIAR, supported by visualisations.

13.8. Receptors and Impacts Scoped In and Out of Assessment

Table 13.4: Summary of Receptors and Impacts for Cultural Heritage

IMPACT	SCOPED IN (PHASE[89])			JUSTIFICATION
	C	O	D	
Direct and indirect effects on heritage assets within the Inner Study Area.	Y	N	N	Construction activities (such as ground-breaking activities, quarry blasting, vehicle movement, and soil/overburden storage) could potentially directly or indirectly impact upon heritage assets present within the Inner Study Area.
Effects on the settings of heritage assets within the Outer Study Area.	N	Y	N	The presence of the proposed Development could potentially affect the settings of heritage assets within the Outer Study Area (which includes the Inner Study Area).
Effects on the settings of Listed Buildings within towns and villages.	N	N	N	For Listed Buildings within towns and villages, the proposed Development would not appreciably alter the features of their settings that contribute to their cultural significance.
Effects on the settings of heritage assets out with the Outer Study Area.	N	N	N	At distance greater than 10 km it is considered that, in most instances, the proposed Development would not appreciably alter the features of the settings of the heritage assets that contribute to their cultural significance.
Cumulative effects on the setting of heritage assets during operation.	N	Y	N	The proposed Development could in combination with other development in the surrounding landscape potentially affect the settings of heritage assets within the Outer Study Area.

13.9. Scoping Questions to Consultees

The following questions are directed to consultees:

- Question 20: Do you agree that the scope of the proposed assessment is appropriate?
- Question 21: Do you agree that the proposed study areas are appropriate?
- Question 22: Do you agree that the proposed assessment methodology is appropriate?

89 C = Construction, O = Operation, D = Decommissioning

- Question 23: Do you agree with the main potential setting impacts identified?
- Question 24: Are there any specific assets for which consultees would wish to have visualisations provided?

14. Traffic and Transport

14.1. Introduction

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

Due to the nature of a windfarm project where operational traffic is limited weekly to only a very small number of Light Goods Vehicles undertaking maintenance, and because future decommissioning activities are likely to generate smaller volumes of traffic compared to the construction phase, the assessment will focus on impacts during the construction phase of the proposed Development only, excluding the operational and decommissioning phases from the assessment. It is currently proposed that the assessment will provide an expected 'worst case' example of impacts on the local road network, however if required, the assessment can present the most likely scenario for traffic impacts as an alternative.

14.2. EIA - Traffic and Transport Chapter

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

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

14.3. Consultation

In order to agree the scope of the Traffic and Transport assessment it is intended to consult with the following stakeholders:

- East Ayrshire Council;
- Dumfries and Galloway Council;

- Transport Scotland; and
- Police Scotland.

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

14.4. Geographical Context

The proposed Development Site is situated between the towns of Kirkconnel in Dumfries & Galloway and New Cumnock in East Ayrshire. The proposed Development Site straddles the administrative boundaries of EAC) and DGC. Project traffic will utilise the existing Hare Hill site entrance off the A76.

It is anticipated that the AIL will travel via the M77 and A76 to site, from the selected port of entry.

Given the road network arrangement and location of the Site, it is considered that there are several route options from identified material supply centres (e.g., quarries) which would eventually converge onto the A76 at various locations, depending on their origin. Beyond these points the traffic would be dispersed via multiple routes, resulting in the overall increases in traffic volumes on each route being minimised.

It is therefore proposed that the geographical extent of the assessment is limited to assessment of traffic on the A76, approaching from both the east and west of the site entrance.

For AIL assessment it is proposed that the geographical extent will be from the M77/A76 junction to the proposed Development.

14.5. Traffic Impact Assessment

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

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

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

At this stage, turbine component deliveries are anticipated to come from the Port of Glasgow King George V.

14.6. Assessment Exclusions

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

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

Decommissioning of the proposed Development is unlikely to take place before the end of its life and as such a minimum period of 50 years is assumed before decommissioning takes place. Due to the changes in the baseline situation which may have occurred by the time that the proposed Development is decommissioned it is considered impractical to assess the likely environmental effects. Given the uncertainty of baseline conditions around 50 years in the future and the expected reduction in traffic volumes associated with decommissioning, it is proposed to scope out decommissioning impacts from this assessment. However decommissioning impacts will be considered within the decommissioning plan which will be submitted six months prior to decommissioning.

14.7. Baseline Traffic

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

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

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

14.8. Assessment Methodology

The Traffic and Transport assessment will be carried out in accordance with the following guidance documents;

- Transport Assessment Guidance (Transport Scotland); and

- IEMA Guidelines for the Environmental Assessment of Road Traffic ("the IEMA Guidelines") to assess impact upon environmental receptors.

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

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

Transport Scotland's Transport Assessment Form has been included as Appendix 3 to aid with establishing the assessment requirements, in line with Transport Scotland's scoping process.

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

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

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

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

14.9. Cumulative Assessment

Consideration will be given to possible cumulative effects of the proposed Development with regards to other proposed Developments, occurring as result of concurrent construction programmes within the same study area. It is important to note that a cumulative assessment in respect of traffic and transport effects is dependent on the

likelihood of more than one windfarm being under construction at the same time as the proposed Development. This is especially pertinent to the peak construction periods associated with the importation of stone which would be dependent on the outputs of local quarries.

The AIL Route Survey Report is an assessment of the potential delivery routes for AILs, associated with the wind turbine component deliveries, will be undertaken to identify the preferred route to the proposed Development, from the nearest suitable port, and to assess what mitigating measures may be required on the public road network.

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

A full Electronic Service Delivery for Abnormal Loads (ESDAL) consultation with the trunk and local roads officers relating to structure issues with the proposed access routes would also be undertaken to identify any structural issues that may arise.

14.10. Preliminary Traffic Management Plan

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

14.11. Scoping Questions to Consultees

- Question 25: Do consultees agree with the proposed geographical extent of the assessment?
- Question 26: Do consultees agree that Operational and Decommissioning phases can be scoped out and the assessment will consider the effects during the construction phase only?
- Question 27: Can consultees provide traffic count data?
- Question 28: Do consultees agree that 'embedded mitigation' can be assumed in baseline assessment of receptors?
- Question 29: Do the consultees agree with the approach to consider the environmental impacts in line with IEMA thresholds of 30% and 10%?
- Question 30: Do the consultees agree with the traffic assessment approach set out in the above section?
- Question 31: Do consultees agree that the 'worst case scenario' be modelled or would a realistic 'most likely scenario' approach be more appropriate?

- Question 32: Do Transport Scotland agree that in relation to their Transport Assessment Guidance, no ‘Transport Statement’ or ‘Transport Assessment’ is required?

15. Aviation and Existing Infrastructure

15.1. Introduction

This section considers the potential effects of the construction and operation of the proposed Development on aviation interests, including those of the United Kingdom (UK) CAA, Ministry of Defence (MOD), National Air Traffic Services (NATS) (comprising NATS (En Route) plc (NERL) and NATS (Services) Limited (NSL)), regional airports, local aerodromes, and other UK aviation stakeholders.

The potential effects that wind turbines can have on aviation interests include the following:

- Turbines can present a physical obstruction in the vicinity of aerodromes or other aviation activity sites such as military low flying areas;
- Turbines are an issue for civil and military aviation Primary Surveillance Radars (PSRs) as the characteristics of moving turbine blades are like that of aircraft. If spurious PSR returns or clutter are generated by turbines they can mask genuine aircraft returns, thereby affecting the safe provision of air traffic services (ATS);
- The effects of wind turbines on Secondary Surveillance Radar (SSR) are considerably less than effects on PSRs. Turbine towers can obstruct and diffract SSR signals, but these effects are typically only considered when turbines are within 10 km of the facility. At greater ranges, SSR signals reflected from wind turbines can result in the radar generating a false target in a direction that is different to where the intended aircraft target is; and
- Turbines can cause adverse effects on the overall performance of Communication, Navigation and Surveillance (CNS) equipment.

15.2. Study Area

In considering the spatial coverage of the aviation study area, the overriding factor is the potential for turbines to have an impact on civil and military PSRs, taking into account required radar operational ranges. In general, PSRs installed at civil and military airfields have an operational range of between 40 nautical miles (nm) and 60 nm. All radar equipped airfields within 60 nm (111 km) of the proposed Development are therefore included in the study area. En route radars operated by NERL and military Air Defence (AD) radars are required to provide coverage at ranges in excess of 60 nm and so all such radars with potential Radar Line of Sight (RLoS) of the proposed Development turbines are also included in the study area.

Potential receptors considered within the study area are outlined below.

15.2.1. Civil Aerodromes

The CAA publication CAP 764 Policy and Guidelines on Wind Turbines (CAA 2016) states the distances from various types of aerodromes where consultation should take place. These distances include:

- Aerodromes with a surveillance radar – 30 km;
- Licensed aerodromes where the wind turbines will lie within airspace coincidental with any published Instrument Flight Procedures (IFPs);
- Non-radar equipped licensed aerodromes with a runway of more than 1,100 metres (m) – 17 km;
- Non-radar equipped licensed aerodromes with a runway of less than 1,100 m – 5 km;
- Non-radar equipped unlicensed aerodromes with a runway of more than 800 m – 4 km;
- Non-radar equipped unlicensed aerodromes with a runway of less than 800 m – 3 km;
- Gliding sites – 10 km; and
- Other non-aerodrome aviation activity such as parachute sites and microlight sites within 3 km.

CAP 764 advises that these distances are for guidance purposes only and do not represent ranges beyond which all wind turbine developments will be approved or within which they will always be objected to. For example, aerodromes may utilise their radars at ranges considerably in excess of 30 km.

As well as examining the technical impact of turbines on CNS facilities, it is also necessary to consider the physical safeguarding of Air Traffic Control (ATC) operations using the criteria laid down in the CAA publication CAP 168 Licensing of Aerodromes (CAA 2022) to determine whether wind turbines will breach obstacle clearance criteria.

15.2.2. MOD

MOD receptors under consideration within the study area include:

- MOD airfields, both radar and non-radar equipped;
- MOD AD radars; and
- Military aircraft engaged in low flying activities.

15.2.3. NERL facilities

It is necessary to consider the possible effects of wind turbines upon NERL radar systems; a UK-wide network of PSR and SSR facilities which provides en route information for both civil and military aircraft.

15.2.4. Meteorological radio facilities

Wind turbines have the potential to adversely impact meteorological radio facilities such as weather radar. The Met Office must be consulted by developers of wind turbine proposals within a 20 km radius zone of any of their UK weather radar sites.

15.3. Baseline Description

15.3.1. Airspace

The proposed Development lies below a volume of uncontrolled (Class G) airspace which extends from ground level to 5,500 feet (ft) above mean sea level (amsl). In uncontrolled airspace the responsibility to see and avoid other traffic and obstacles rests with the pilots in command of civilian and military aircraft and any ATS provided is essentially advisory.

Above the uncontrolled airspace is a portion of controlled (Class D) airspace known as the Scottish Terminal Manoeuvring Area (TMA). Aircraft within Class D airspace are under a Radar Control Service. Clearance from the controlling authority is required to enter the controlled airspace and control instructions are mandatory. It provides a 'known traffic environment' in which ATC is aware of all traffic operating within the designated airspace. This airspace, specifically TMA 2, extends from 5,500 ft amsl up to Flight level (FL) 195 (atmospheric pressure equivalent of 19,500 ft amsl) and is controlled by Scottish Control (NERL) located at the NATS Prestwick Centre. The airspace contains IFPs associated with Glasgow Prestwick, Glasgow and Edinburgh Airports, and lower ATS routes.

The published Area Minimum Altitude in the vicinity of the proposed Development is 4,100 ft amsl. This provides a minimum obstacle clearance of 1,000 ft above all obstacles within the specified area. With a maximum possible tip elevation of 2,800 ft amsl, the minimum clearance would be maintained above the proposed turbines.

The proposed Development is located within military Low Flying Area 20T (Area 2B at night), predominantly within an MOD red high priority consultation zone, with a smaller area within a blue low priority zone. This airspace is a Tactical Training Area within which military aircraft may conduct low flying training down to 100 ft Minimum Separation Distance. Although wind turbines in red zones are likely to raise considerable and significant concerns from the MOD, these should be alleviated by the fitting of MOD accredited aviation safety lighting to the turbines in accordance with Air Navigation Order Article 222.

15.3.2. Aerodromes

The nearest radar equipped aerodromes to the proposed Development are Glasgow Prestwick Airport, 32 km to the north-west, Glasgow Airport, 58 km to the north, and Edinburgh Airport, 75 km to the north-east.

Initial modelling indicates that at least 24 of the 27 proposed turbines would be in RLoS of Glasgow Prestwick Airport's Terma PSR. Conversely, none of the proposed turbines would be in RLoS of the Glasgow or Edinburgh PSRs.

The nearest non-radar equipped licensed aerodrome to the proposed Development is Carlisle Airport, 90 km to the south-east, while the nearest minor aerodrome identified is the

private airstrip at Benston Farm, 7 km to the north-west. The closest known glider airfield is at Falgunzeon, 48 km south-east of the proposed Development.

Leuchars Station, formerly Royal Air Force (RAF) Leuchars, is the closest military radar equipped airfield to the proposed Development, 134 km to the north-east. Turbines within the proposed Development would not be in RLoS of the Leuchars PSR. A non-radar military airfield, RAF Kirknewton, lies 67 km north-east of the proposed Development.

15.3.3. En route radars and navigation aids

The closest NERL operated radars to the proposed Development are the combined PSR/SSR facilities at Lowther Hill (16 km east) and Great Dun Fell (125 km south-east), and the PSR only facilities at Cumbernauld (62 km north) and Kincardine (80 km north-east).

The NATS online self-assessment map for 200 m tip turbines suggests that all of the proposed turbines would be in RLoS of one or more of these facilities.

Initial modelling indicates that all the proposed turbines would be in RLoS of Lowther Hill PSR, at least 23 of the 27 proposed turbines would be in RLoS of Great Dun Fell PSR, and at least five turbines would be in RLoS of Cumbernauld PSR. The proposed turbines would not be in RLoS of Kincardine PSR.

In order to protect their SSR facilities from the impact of windfarms, NATS establish a safeguarded zone of radius 28 km (15 nm) around them. All the proposed turbines are within this range from Lowther Hill SSR.

The closest NERL en route navigation aid to the proposed Development is the Green Lowther Distance Measuring Equipment (DME) facility, 17 km to the west. The NATS recommended safeguarded zone is a circle of radius 10 km around the DME.

RAF Spadeadam is an Electronic Warfare Tactics facility approximately 96 km south-east of the proposed Development. The Spadeadam Range is served by a PSR at Deadwater Fell (90 km east-south-east) and the Berry Hill PSR/SSR (98 km south-east).

Initial modelling indicates that none of the proposed turbines would be in RLoS of Deadwater Fell PSR or Berry Hill PSR/SSR.

The closest MOD AD radar is at Brizlee Wood, 141 km east of the proposed Development. Initial modelling indicates that the proposed turbines would not be in RLoS of Brizlee Wood PSR.

15.3.4. Met Office weather radars

The closest Met Office weather radar to the proposed Development is located at Holehead in Stirlingshire, 70 km to the north.

15.4. Guidance and Legislation

There are a number of documents which provide relevant guidance and legislation for assessing the impact of wind turbines on aviation.

- Onshore Wind Policy Statement 2022 (Scottish Government 2022);

- CAP 032: UK Aeronautical Information Publication (AIP) (CAA 2023);
- CAP 168: Licensing of Aerodromes (CAA 2022);
- CAP 670: Air Traffic Services Safety Requirements (CAA 2019);
- CAP 738: Safeguarding of Aerodromes (CAA 2020);
- CAP 764: Policy and Guidelines on Wind Turbines (CAA 2016);
- Air Navigation Order 2016/765 (CAA 2022);
- Policy Statement: Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150m Above Ground Level (CAA 2017);
- NATS windfarm self-assessment maps, available on the NATS website;
- UK Military AIP (MOD 2023); and
- MOD Obstruction Lighting Guidance (MOD 2020).

15.5. Assessment Methodology

The assessment will comply with the guidance documents listed in Section 15.4 and comprise further desk-based studies, including RLoS modelling and IFP assessments, that will identify and examine in greater detail sensitive aviation and radar receptors. These studies will be undertaken in parallel with consultation with relevant stakeholders to provide a detailed understanding of potential impacts. It is expected that consultation will be an iterative process, allowing for any concerns that are raised to be considered throughout the pre-application phase and in finalising the consent application.

15.6. Consultation

It is proposed that consultation is undertaken with the following aviation stakeholders:

- NERL;
- MOD;
- Glasgow Prestwick Airport;
- Glasgow Airport; and
- Edinburgh Airport.

15.7. Receptors and Impacts Scoped In and Out of Assessment

The impact on PSRs is scoped into the assessment. Turbines within the proposed Development would be in RLoS of the Glasgow Prestwick Airport PSRs, and the NERL PSR facilities at Lowther Hill, Great Dun Fell and Cumbernauld. All other PSR facilities within the study area are scoped out of the assessment.

The proposed Development would be within the NATS recommended safeguarded zone for the Lowther Hill SSR, therefore impacts on this facility are scoped in. All other SSR and en route navigation aid facilities within the study area are scoped out of the assessment.

The proposed Development would be beyond the 20 km consultation radius of any Met Office weather radar sites, therefore meteorological radio facilities are scoped out of the assessment.

The proposed Development would be east of and adjacent to Glasgow Prestwick's controlled airspace and could have an impact on the Airport's IFPs. The proposed turbines could also need to be displayed on Glasgow and Edinburgh Airports' IFP charts. Impacts on these airports' operations are therefore scoped into the assessment. Impacts on other aerodromes are scoped out of the assessment.

The impact of the proposed turbines on military low flying is scoped into the assessment.

15.8. Telecommunications

Fixed microwave links have the potential to be affected by proposed infrastructure in the Proposed Developable Area. During the feasibility stage a telecommunications link was identified entering the Proposed Developable Area from the northeast (see Figure 3.3) as being owned by Vodafone (Todholes Hill Mast) which serves the operational Hare Hill Windfarm. In the Sandy Knowe Extension EIA, Vodafone requested a 50 m buffer from the first Fresnel Zone, so the following equation was applied to the micro path buffer:

Hare Hill Extension Buffer = 50 m + Blade length (75 m) + 1st Fresnel Zone (7.5 m) = 132.5 m

Further consultation with the operators of the service will be conducted to determine the impact the proposed wind turbines may have on the identified telecommunication links.

15.9. Utilities

Potential utilities including gas and electricity will be investigated and assessed during the EIA, with the final layout designed to avoid potential direct effects.

15.10. Public Access

The locations of any footpaths will be considered during the iterative design process. Scoping responses from the local planning authority and ScotWays will be considered during the final design work to ensure balance between wind optimisation and potential effects on access are addressed.

15.11. Scoping Questions to Consultees

- Question 33: Do you agree that the scope of the proposed assessment is appropriate?

16. Noise

16.1. Introduction

During their operation, windfarms have the potential to create noise effects through both aerodynamic noise and mechanical noise. Aerodynamic noise would be caused by the interaction of the turbine blades with the air. Mechanically generated noise would be caused by the operation of internal components, such as the gearbox and generator, which are housed within the nacelle of the turbine. However, the level of mechanical noise radiated from current technology wind turbines is generally engineered to a low level.

During construction, noise and vibration could arise from both onsite activities, such as construction of onsite access tracks, turbine foundations, the control building, removal of the existing wind turbines and also from the movement of construction related traffic both onsite and travelling on public roads to and from the proposed Development.

This chapter sets out the proposed approach to the assessment of potential effects of noise and vibration on nearby noise-sensitive receptors.

16.2. Existing Conditions

The proposed Development is located in an area of generally low population density, however there are a number of individual noise-sensitive dwellings located around the proposed Development. The nearest settlements, with corresponding higher density of noise-sensitive receptors, are New Cumnock to the northwest and Kirkconnel to the east.

For noise-sensitive receptors located closest to the proposed Development, the ambient noise environment will be influenced by natural noise sources such as wind-disturbed vegetation, water courses and birdsong, localised activities such as forestry or farming operations, with a varying influence from operating wind turbines, such as those already operating within the proposed Development Site (Hare Hill Windfarm and Hare Hill Windfarm Extension). The noise environment in New Cumnock and Kirkconnel will also be influenced by road traffic noise.

In addition to the existing wind turbines on the proposed Development, there are a number of other operational windfarms which will also have a varying influence on the existing ambient noise environment. Closest to the proposed Development are the Sandy Knowe Windfarm to the East and the Sanqhuar Windfarm to the southeast, with more distant operational windfarms, such as Whiteside Hill Windfarm to the south east and the Afton Windfarm to the west.

16.3. Design Considerations

The wind turbine layout will be designed such that operational noise levels, including cumulative contributions from neighbouring sites, comply with the relevant noise limits at neighbouring noise-sensitive locations based on a representative turbine model.

Ancillary infrastructure will also be reviewed in relation to the risk of significant effects associated with operational noise, as well as construction noise and vibration.

16.4. Proposed Surveys and Assessment Methodologies

16.4.1. Guidance

Planning Advice Note (PAN) PAN1/2011[90] provides general advice on preventing and limiting the adverse effects of noise without prejudicing economic development. It makes reference to noise associated with both construction activities and operational windfarms.

The web-based planning advice note[91] on 'Onshore wind turbines' provides further advice on noise and confirms that the recommendations of ETSU-R-97 'The Assessment and Rating of Noise from Windfarms'[92], "should be followed by applicants and consultees, and used by planning authorities to assess and rate noise from wind energy developments".

Good practice in the application of the ETSU-R-97 methodology will be referenced, as set out in Institute of Acoustics Good Practice Guide to the Application of ETSU-R-97 (or IOA GPG)[93]. This includes guidance on the assessment of cumulative operational noise impacts from windfarms, and on this point, further guidance set out in an article in the Institute of Acoustics Noise Bulletin[94] will also be considered.

PAN1/2011 and the Technical Advice Note accompanying PAN1/2011 provide further advice on construction noise and make reference in particular to British Standard BS 5228 (see below). Furthermore, the Control of Pollution Act 1974 provides different means for local authorities of controlling construction noise and vibration.

16.4.2. Proposed Study Area

The assessment will consider noise sensitive residential locations in the vicinity of the proposed Development. Specifically, ETSU-R-97 states that noise levels will be considered acceptable, even in the absence of measured baseline data, if predicted noise levels (including cumulative contributions from all windfarms) do not exceed 35 decibel (dB) LA90.

Therefore, the assessment will consider dwellings where predicted levels approach or are likely to approach this threshold, and also include properties located closer to the proposed Development, provided the specific contribution of the proposed Development is not negligible relative to that of the other schemes considered.

These dwellings will also be potentially affected by noise or vibration effects from the construction of the proposed Development infrastructure. In addition, dwellings located along the site access track or route will also be considered in relation to construction traffic.

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90 Planning Advice Note 1/2011: planning and noise, The Scottish Government, Published 3 March 2011.
https://www.gov.scot/publications/planning-advice-note-1-2011-planning-noise/

91 Onshore wind turbines: planning advice, Planning advice relating to onshore wind turbines, The Scottish Government, Published 28 May 2014.
https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/

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

93 M. Cand, R. Davis, C. Jordan, M. Hayes, R. Perkins (2013). A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, Institute of Acoustics.

94 Windfarms cumulative impact assessment, Bowdler et al., Institute of Acoustics Noise Bulletin Vol. 41 No. 1, Jan/Feb 2016.

16.4.3. Desk and Field Survey Methods

ETSU-R-97 generally requires the baseline noise environment at nearby noise sensitive receptors to be characterised by measuring background noise levels as a function of site wind speed at the nearest neighbours (or, at a representative sample of the nearest neighbours). ETSU-R-97 also requires that any such measurements are not significantly influenced by existing operational turbines, to prevent unreasonable cumulative increases.

An initial review of the baseline data surveyed for the operational wind turbines on the proposed Development as well as other adjacent windfarm schemes (and which are publicly available in the EIA Reports for those schemes), suggests that existing baseline levels have been sufficiently defined for the purposes of an assessment of operational noise in accordance with ETSU-R-97 and best practice. Therefore, undertaking additional noise monitoring is not anticipated to be necessary.

New measurements would in any case involve considerable practical difficulties, given that these should not be influenced by operational wind turbines according to the requirements of ETSU-R-97. Aside from the influence of operational windfarms, the noise environment at the relevant properties is unlikely to have substantially changed since the previous surveys were undertaken.

The potential implication of wind shear effects due to the heights of the turbines to be considered for the proposed Development would be taken into account in line with best practice. The relevant wind speed references used for existing baseline surveys and noise limits would be reviewed, with the application of correction factors where necessary.

The approach to the derivation of baseline background noise levels, relevant noise limits and criteria would be discussed in consultation with the Environmental Health Department of both DGC and EAC. The assessment methodology, in particular with regards to cumulative impacts, will also be discussed.

16.4.4. Assessment Method

The methodology for the assessment of operational noise from windfarms in Scotland recommended in planning guidance is that documented in ETSU-R-97. In summary, the assessment shall:

- Identify the nearest noise sensitive receptors;
- Determine the quiet day-time and night-time noise limits derived from background noise levels at the nearest neighbours (see above);
- Specify the type and noise emission characteristics of the wind turbines proposed for the Site;
- Calculate noise emission levels which would be due to the operation of the wind turbines as a function of site wind speed at the nearest neighbours, including the cumulative effect of all acoustically relevant wind turbines; and
- Compare the calculated windfarm noise emission levels with the derived noise limits.

The good practice guidance referenced above (IOA GPG) will be taken into account, including advice on baseline survey data, wind shear and noise prediction methodology.

The calculated windfarm noise emission levels will be compared with the noise limits derived in accordance with ETSU-R-97. These limits, for each noise-sensitive receptor, apply to the total noise produced by all windfarms. Therefore, potential cumulative operational noise levels, including existing, consented and application wind turbines in the area, must be assessed relative to these limits.

When considering neighbouring cumulative windfarm noise, the potential noise emissions from adjacent windfarm sites will be considered by examining the level of noise emission allowed under the respective consent for each of the sites, in line with current best practice (see guidance referenced above). The assessment will also include consideration of the wind turbines already operating within the proposed Development Site, the contribution to total cumulative noise levels due to operation of these wind turbines which has been assumed, as well as the previous apportionment of the total noise budget, when consents were granted for neighbouring windfarms which post-date the consents for Hare Hill Windfarm and Hare Hill Windfarm Extension.

In assessing the impact of noise and vibration from the construction activities, it is usual to accept that the associated works are of a temporary nature. The assessment of potential effects due to noise emissions during construction will be undertaken in accordance with the BS 5228 British Standard guidance 'Code of practice for noise and vibration control on construction and open sites'. Predictions of construction noise will be made referencing typical activity emission levels and likely variations in noise levels at surrounding receiver locations, using the methodology set out in BS 5228 Part 1[95]. This standard is referenced in Technical Advice Note to PAN 1/2011: Planning and Noise. This standard can be used to predict noise levels associated with the different construction activities used throughout the construction programme. Part 2 of the BS 5228 standard[96] considers construction vibration and this will also be referenced.

Any blasting if used for rock extraction at borrow pits may also create vibration and air overpressure which may require assessment.

Consideration will also be given to the potential effects of construction traffic on sensitive receptors in the area. Depending upon the outcome of the assessment of traffic (See Chapter 14: Traffic and Transport), the effects of traffic along the access route will be assessed on the basis of the methodology within BS 5228-1, and the 'Calculation of Road Traffic Noise'[97], where appropriate.

The assessment of the temporary effects of construction noise is primarily aimed at understanding the need for dedicated management measures and, if so, the types of measures that are required. In this respect, relevant working practices, traffic routes, and proposed working hours will be considered in the assessment.

The assessment of construction noise and vibration will identify if and when predicted noise levels may be above standard guideline limits, taking into account the rural character of the area. For construction traffic, the criteria set out in the Design Manual for Roads and

95 BS 5228-1:2009 (amended 2014) 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'

96 BS 5228-2:2009 (amended 2014) 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'

97 Calculation of Road Traffic Noise, HMSO Department of Transport, 1988.

Bridges[98] would also be referenced. Construction noise management procedures will also be determined.

16.5. Potential Significant Effects

16.5.1. Effects Scoped In

The following effects will specifically be assessed:

- Noise during operation of the proposed Development;
- Cumulative noise during operation with other nearby windfarms; and
- Noise and vibration associated with the construction activities and associated traffic and blasting activities.

16.5.2. Effects Scoped Out

It is recognised that vibration resulting from the operation of windfarms is imperceptible at typical separation distances. It is therefore proposed to scope out the assessment of vibration produced during the operation of the proposed Development.

With regard to infrasound and low frequency noise, the above-referenced online planning advice note, Onshore wind turbines, refers to a report for the UK Government which concluded that "there is no evidence of health effects arising from infrasound or low frequency noise generated by the wind turbines that were tested". The current recommendation is that ETSU-R-97 should continue to be used for the assessment and rating of operational noise from windfarms.

It is therefore not proposed to undertake specific assessments of infrasound and low frequency noise, but the noise chapter will consider the latest supporting information on these subjects, as well as the topic of wind turbine blade swish or Amplitude Modulation (or AM).

16.6. Approach to Mitigation

Mitigation of operational noise will be achieved through evolution of the design of the proposed Development, such that the relevant ETSU-R-97 noise limits can be achieved at the surrounding properties with commercially available wind turbines, taking into account the noise emissions from other windfarms in the area.

Regarding construction noise, relevant working practices, traffic routes, management procedures and proposed working hours will be set out within an outline CEMP .

16.7. Scoping Questions to Consultees

- Question 34: Are the consultees happy with the suggested approach for the noise assessment, including elements scoped in and out?

98 Design Manual for Roads and Bridges (LA 111: 2019), Highways England, Transport Scotland, etc., Nov 2019

- Question 35: Do the consultees have any concerns regarding the use of historical background noise data as the basis for the operations?

17. Socio-Economics

17.1. Introduction

This chapter will consider the potential socio-economic effects from the proposed Development.

The socio-economics assessment will include consideration of local employment generation and the wider indirect and induced effects from the development.

17.2. Baseline Description

The baseline assessment will include a description of the current socio-economic baseline within the local area and a summary of the economic performance data.

The baseline will cover:

- Employment and economic activity in the local area within the context of regional and national economies; and
- Wage levels within the regional economy compared to the national level.

17.3. Study Areas

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

- East Ayrshire;
- Dumfries and Galloway; and
- Scotland.

There is no specific legislation or guidance on the methods that should be used to assess the socio-economic impacts of a proposed onshore windfarm development. The proposed method has however been based on established best practice, including that used in the UK Government and industry reports on the sector. In particular, this assessment will draw from two studies by BiGGAR Economics on the UK onshore wind energy sector: a report published by RenewableUK and the Department for Energy and Climate Change (DECC) in 2012 on the direct and wider economic benefits of the onshore wind sector to the UK economy (BiGGAR Economics, 2012)[99] and a subsequent update to this report published by RenewableUK in 2015 (BiGGAR Economics, 2015)[100]. Since then, the evidence from those assessments has been updated based on a series of evaluations of the economic benefits delivered by recent onshore wind developments.

There is also no formal legislation or guidance on the methods that should be used to assess the effects that renewable energy development may have on general tourism and recreation

99 Department of Energy & Climate Change and RenewableUK. (2012) Onshore Wind, Direct & Wider Economic Impacts [Online] Available at: Microsoft Word - SB - Report Onshore Wind Direct & Wider Economic Impacts 26apr12 Amends & comments - SB (publishing.service.gov.uk) [Accessed: May 2022]

100 RenewableUK. (2015) Onshore Wind: Economic Impacts in 2014 [Online] Available at: onshore_economic_benefits_re.pdf (ymaws.com) [Accessed: May 2022]

interests. The proposed method will consider individual attractions and tourism facilities to assess if there could be any effects from the proposed Development.

It is also important that the socio-economic and tourism assessment takes account of the relevant local and national policy objectives. The assessment work will also include other relevant strategies including:

- Scotland's National Performance Framework[101];
- Scotland's National Strategy for Economic Transformation[102];
- Scotland Outlook 2030 (the national tourism strategy)[103]; and
- Climate Change (Emissions Reduction Targets) (Scotland) Act[104];
- Onshore Wind Policy Statement[105]
- Onshore Wind Sector Deal[106];
- National Planning Framework 4 (Sustainable Places Project No 3 and Policy 25)[107]
- Dumfries and Galloway Regionwide Community Fund[108]
- South Scotland Regional Economic Strategy[109];
- Borderlands Inclusive Growth Deal[110]
- Ayrshire Region Economic Strategy [111]
- Ayrshire Growth Deal[112].
- PROPOSED SCOPE OF SURVEY AND ASSESSMENT

It is anticipated that the study will be desk-based and the contents of the assessment chapter will include:

- Introduction, including scope of assessment and methodology;
- Economic development and tourism strategic context;
- Baseline socio-economic context;
- Socio-economic assessment including direct and indirect impacts;

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101 Scottish Government. (2022) National Performance Framework [Online] Available at: National Performance Framework | National Performance Framework {accessed: May 2022]

102 Scottish Government. (2022) Scotland's National Strategy for Economic Transformation [Online] Available at: Scotland's National Strategy for Economic Transformation - gov.scot (www.gov.scot) [Accessed: May 2022]

103 Scottish Tourism Alliance. (2020) Scotland Outlook 2030 [Online] Available at: Scotland Outlook 2030 - Scotland's tourism strategy (scottishtourismalliance.co.uk) [Accessed: May 2022]

104 Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 (legislation.gov.uk) (Accessed Oct 2023)

105 Onshore Wind Policy Statement 2022 (www.gov.scot) (Accessed Oct 2023)

106 Onshore Wind Sector Deal for Scotland (www.gov.scot) (Accessed Oct 2023)

107 National Planning Framework 4 (www.gov.scot) (Accessed Oct 2023)

108 Dumfries and Galloway Regionwide Community Fund - Dumfries and Galloway Council (dumgal.gov.uk)

109 South-of-Scotland-Regional-Economic-Strategy.pdf (dumgal.gov.uk) (Accessed Oct 2023)

110 HOME | Borderlands Inclusive Growth Deal (borderlandsgrowth.com) (Accessed Oct 2023)

111 Ayrshire Regional Economic Strategy (east-ayrshire.gov.uk) (Accessed Oct 2023)

112 UK Government (2020) Ayrshire Growth Deal Available at: https://www.gov.uk/government/publications/ayrshire-growth-deal [Accessed: June 2023}

- Proposed measures and actions to maximise local economic impacts;
- Setting up a community benefit fund to be considered
- Proposed measures and actions to mitigate any harmful effects (if required); and
- Summary of findings and conclusions.

17.4. Potential Impacts

Assessing the significance of effects will be based on assessing the sensitivity of an economy asset to change and then assessing the potential magnitude of the change associated with the proposed Development. When sensitivity and magnitude are combined, the significance of effect will be assessed. Major and moderate effects will be considered significant in the context of EIA Regulations.

In order to assess the magnitude of the socio-economic direct and indirect impacts (both temporary and permanent), the level of activity/employment supported during the construction and operation phases will be estimated.

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

17.5. Potential Mitigation

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

17.6. Potential Effects

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

The potential direct socio-economic effects will include:

- Temporary effects on the local and national economy due to expenditure during the construction phase; and
- Permanent effects on the local and national economy due to expenditure associated with the operational phase.
- The potential indirect socio-economic effects will include:
- Permanent effects as a result of any additional public expenditure that could be supported by the additional tax revenue that would be generated during the operational phase; and

- Permanent effects on the local economy that could be supported by any community funding or shared ownership proposals during the operational phase.

The relationship between windfarm development and tourism has been the subject of several studies. It is widely accepted that windfarm developments have no impact on tourism. The matter of tourism has been excluded from Policy 11 of NPF4 and therefore it is suggested that tourism is scoped out of the EIAR.

17.7. Scoping Questions to Consultees

- Question 36: Do consultees have any suggestions on socio-economic effects that should be specifically considered in the assessment?
- Question 37: Do consultees agree that tourism should be scoped out?

18. Forestry

18.1. Introduction

This section sets out the proposed approach to the assessment of potential effects on the forestry within the proposed Development Site which would result from the construction and operation of the proposed Development.

In the UK there is a strong presumption against permanent deforestation unless it addresses other environmental concerns. In Scotland, such deforestation is dealt with under the Scottish Government's Control of Woodland Removal Policy (Forestry Commission Scotland, 2009).[113] The purpose of the policy is to provide direction for decisions on woodland removal in Scotland. It will be essential that the proposed Development addresses and satisfies the requirements of the Policy.

18.2. Study Area

The Forestry Study Area will be limited to the woodlands within the Proposed Developable Area.

18.3. Baseline Description

There are areas of commercial forestry located within the Proposed Developable Area. It is largely comprised of two main blocks, plus other separate small areas of woodland. Corserig Forest is owned by the Scottish Ministers on behalf of the Scottish nation and managed by Forestry and Land Scotland (FLS). It forms part of the wider Upper Nithsdale Composite Land Management Plan (LMP) which expires in 2028. High Cairn Forest is privately owned and managed under the High Cairn Long Term Forest Plan which expires in April 2023.

The forestry baseline will describe the crops existing at time of preparation of the EIAR. Where available this will include current species; planting year; felling and replanting plans;

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

and other relevant woodland information. The baseline will be compiled from a desk based assessment and field surveys as necessary.

An initial desk based assessment identified there are small areas of woodland within both of the main forests recorded in the Ancient Woodland Inventory Scotland (Scottish Natural Heritage, 2010)[114] as Ancient of Semi-Natural Origin and Long Established of Plantation Origin. Small areas within both forests are recorded as native woodland in the Native Woodland Survey of Scotland (Forestry Commission Scotland, 2013)[115], though it is noted that these areas do not necessarily match the areas recorded in the Ancient Woodland Inventory. The main forest blocks are recorded as primarily conifer forests with open ground in the National Forest Inventory Scotland (Forestry Commission Scotland, 2018)[116].

18.4. Guidance and Legislation

The proposed Development forestry proposals will be prepared in accordance with current policies, guidance and best practice, including, but not limited to:

- Forestry Commission (2017): The UK Forestry Standard: The Government's Approach to Sustainable Forestry, Forestry Commission, Edinburgh;
- Forestry Commission Scotland (2009): The Scottish Government's Policy on Control of Woodland Removal, Edinburgh;
- Forestry Commission Scotland (2013): The Native Woodland survey of Scotland;
- Forestry Commission Scotland (2018) The National Forest Inventory Woodland Scotland;
- Forestry Commission Scotland (2019): Guidance to Forestry Commission Scotland staff on implementing the Scottish Government's Policy on Control of Woodland Removal;
- SEPA (2017): SEPA Guidance Notes WST-G-027 "Management of Forestry Waste";
- SEPA (2014): LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land;
- The Scottish Government (2018): The Forestry and Land Management (Scotland) Act 2018, Edinburgh;
- The Scottish Government (2019: Scotland's Forestry Strategy 2019 -2029, Edinburgh; and
- UKWAS (2018): The UK Woodland Assurance Standard 4th Edition, UKWAS, Edinburgh.

18.5. Assessment Methodology

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

114 Scottish Natural Heritage (2010). Ancient Woodland Inventory Scotland. Available at: https://map.environment.gov.scot/sewebmap [accessed on 15th November 2022].

115 Forestry Commission Scotland (2013). The Native Woodland survey of Scotland. Available at https://scottishforestry.maps.arcgis.com/apps/webappviewer/index.html?id=0d6125cfe892439ab0e5d0b74d9acc18 [accessed on 15th November 2022].

116 Forestry Commission Scotland (2018). The National Forest Inventory Scotland. Available at https://data-forestry.opendata.arcgis.com/datasets/b71da2b45dde4d0595b6270a87f67ea9_0 [accessed on 15th November 2022].

proposed Development. It will further include a restocking plan showing any areas to be replanted or areas which are to be left unplanted for the proposed Development.

The assessment will include landowner crop databases; the Native Woodland Survey of Scotland (NWSS) (Forestry Commission Scotland, 2013); the National Forest Inventory (Forestry Commission Scotland, 2018); aerial photography; Scottish Forestry publicly available databases; and current Policy, Legislation and Guidance.

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

A key issue will be the integration of the proposed Development into the existing and proposed forest structure to minimise the loss of woodland area; address the sensitivities identified as part of the assessment; and to ensure the Landowners and the Applicant are able to meet their management objectives. Forest design and the effect of the proposed Development on it is an important part of the overall design process.

The changes to the forest structure will be analysed and described including changes to woodland composition, timber production, traffic movements and the felling and restocking plans where relevant. The resulting changes to the forest structure will be assessed for compliance against the UK Forestry Standard (Forestry Commission, 2017)[117] and the Scottish Government's Control of Woodland Removal Policy in line with the methodology outlined in the Control of Woodland Removal Policy Implementation Guidance (Forestry Commission Scotland, 2019)[118].

18.6. Potential Mitigation

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

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

18.7. Potential Impacts

Commercial forests are dynamic and constantly changing through, for example, landowner activities; market forces; natural events, such as windblow or pest and diseases; or developments. The forestry assessment will be a factual assessment describing the changes to the physical forest structure resulting from the incorporation of the proposed

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

118 Forestry Commission Scotland (2019). Guidance to Forestry Commission Scotland staff on implementing the Scottish Government's Policy on Control of Woodland Removal. Available at https://forestry.gov.scot/publications/349-scottish-government-s-policy-on-control-of-woodland-removal-implementation-guidance/viewdocumen [accessed on 10 February 2022]

Development into the forests. Other Chapters within the EIAR will identify the sensitive receptors relevant to their disciplines and report on the effects of the Proposed Development forestry proposals on these receptors.

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

18.8. Receptors and Impacts Scoped Out of Assessment

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

18.9. Scoping Questions to Consultees

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

- Question 38: Are consultees content with the proposed methodology and scope for the forestry assessment?
- Question 39: Do the consultees have any information, particularly with reference to new guidance, which should be taken into account?

19. Other Issues

A single EIAR chapter will be prepared to address any implications the proposed Developable Area may have on other technical disciplines that are not covered within the other technical chapters of the EIAR. It is anticipated that this chapter would address the following issues:

- Shadow Flicker;
- Climate Change;
- Carbon Balance;
- Population and Human Health;
- Major Accidents and Disaster;
- Ice Throw; and
- Lightning.

19.1. Shadow Flicker

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

Shadow flicker will be calculated assuming:

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

There is no standard for the assessment of shadow flicker in Scotland and there are no guidelines with which to quantify what exposure levels would represent a significant versus not significant effect. In the absence of specific guidelines and if shadow flicker has to be assessed in the EIAR, the assessment will considered the 'Best Practice Guidance for Planning Policy Statement 18 (PPS18) Renewable Energy' (Department of Environment Northern Ireland, 2009)[119] from Northern Ireland, which states: *"It is recommended that shadow flicker at neighbouring offices and dwellings…should not exceed 30 hours per year or*

119 Department of Environment, Northern Ireland (2009) Best practice Guidance to Planning Policy statement 18 'Renewable Energy [Online] Available at: Planning Policy Statement 18 'Renewable Energy' Best Practice Guidance (infrastructure-ni.gov.uk). [Accessed 23/05/2022]

30 minutes per day". As such, properties where shadow flicker would potentially exceed these thresholds would be subject to significant effects.

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

19.2. Climate Change

A windfarm has the potential to make savings on greenhouse gas emissions compared to electricity generation which involves the burning of fossil fuels. The EIAR will consider the current electricity generation mix and assess the level of CO_2 savings that could potentially be saved depending on the source of electricity generation the windfarm is displacing at any given time. An assessment will be undertaken in accordance with Scottish Government recommended methodology[120].

Where peat or carbon-rich soils are present, SEPA requires planning applications for onshore windfarms to include a systematic assessment of the likely effects to these features. This requirement aligns with the - EIA Directive 2014/52/EU (as amended)[121] which sets out that direct and indirect effects of development projects on climate (Article 3[122]) and climatic factors (Annex IV) are considered. Accordingly, a Climate Impact Assessment (CIA) will be undertaken in accordance with Schedule 4 of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 which at the time transposed the EIA Directive into Scottish law and states that:

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

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

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

The assessment will also consider relevant Scottish policy on climate change and adaption and will also consider the climate change targets of DGC and EAC.

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

120 The Scottish Government (2008) Calculating carbon savings from windfarms on Scottish peat lands: a new approach [Online] Available at:https://www.gov.scot/publications/calculating-carbon-savings-wind-farms-scottish-peat-lands-new-approach/pages/13/ [Accessed 20/05/2022]

121 European Union. (2014) Assessment of the Effects of Certain Public and Private Projects on the Environment [Online] Available at: DIRECTIVE 2014/•52/•EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL - of 16 April 2014 - amending Directive 2011/•92/•EU on the assessment of the effects of certain public and private projects on the environment - (europa.eu) [Accessed: May 2022]

122 "Article 3 1. The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: (a) population and human health; (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; (c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape; (e) the interaction between the factors referred to in points (a) to (d)". [Accessed: October 2023]

19.3. Carbon Balance

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

A carbon balance assessment employs the Scottish Government's Carbon Calculator Tool[123] and quantifies the CO_2 emissions savings over the life of the proposed Development against the release of CO_2 from other energy generation methods as a result of implementing the project. It also reports on the time it takes to pay back any carbon debt and the potential effects of the proposed Development on climate change in terms of carbon savings produced.

A carbon balance assessment will be produced to give an indication of the proposed Development's impact on the existing peat on site and to assess the potential effects in terms of carbon dioxide (CO_2) emissions against the total potential carbon savings attributed to the proposed Development. The assessment will quantify the gains over the life of the project against the release of CO_2 during construction, including loss of peat bog and construction of roads/tracks and other infrastructure. The latest version of the Carbon Calculator that is available before the application is submitted will be used. It is not expected for there to be any requirement for the Carbon Balance assessment to be amended post submission following any further update of the Carbon Calculator that may occur.

19.4. Population and Human Health

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

19.5. Major Accidents and Disasters

The proposed Development is not located in an area with a history of natural disasters such as extreme weather events, and the construction and operation of the proposed Development would be managed within the requirements of a number of health and safety related regulations, including the Construction (Design and Management) Regulations 2015[124] and the Health and Safety at Work etc. Act 1974[125]. However, a screening exercise would be undertaken to identify further detail that may need to be provided (in relation to flood risk or peat slide risk for example).

123 The Scottish Government (2008) CARBON CALCULATOR TOOL [Online] Available at Carbon Calculator Tool (sepa.org.uk).[Accessed 20/05/2022]

124 Health and Safety Executive. (2015) The Construction (design and Management) Regulations 2015 [Online] Available at: Construction - Construction Design and Management Regulations 2015 (hse.gov.uk) [Accessed: May 2022]

125 UK Government. (1974) Health and Safety at Work etc. Act 1974 [Online] Available at: Health and Safety at Work etc. Act 1974 (legislation.gov.uk) [Accessed: May 2022]

19.6. Ice Throw

Ice throw is the process of ice falling or being launched from the blades of a turbine. As embedded mitigation, the turbines will have sensors on them to detect the build-up of ice and automatically prevent the turbines spinning when ice has developed on them, thus preventing the ice being thrown. Scottish Government's Onshore Windfarm Advice Sheet[126] states that danger to human or animal life from falling parts or ice is rare. **Ice throw will not be assessed in the EIA and is therefore scoped out of the assessment**.

19.7. Lightning

As stated in Scottish Government's Onshore Windfarm Advice Sheet[126], the danger to human or animal life from lightning strike via a turbine is rare since lightning is directed down the turbine to the earth; the turbine itself being earthed. Maintenance of the turbines would not be undertaken during high lightning risk weather conditions. **Lightning will not be assessed in the EIA and is therefore scoped out of the assessment.**

19.8. Scoping Questions to Consultees

- Question 40: Do consultees agree with the proposed approach of the assessments within Section 18?

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

20. Residual, Synergistic Effects and Mitigation

A concluding chapter will present the key findings from each EIAR chapter and any required mitigation. In line with The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 it will then assess the potential synergistic effects that may occur in combination.

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

21. EIAR Accompanying Documents

21.1. Non-Technical Summary

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

22. Conclusion

This Scoping Report has been prepared by Natural Power on behalf of the Applicant in anticipation of an application under Section 36 of the Electricity Act 1989[127] for the Hare Hill Windfarm Repower development, located between the towns of Kirkconnel in Dumfries and Galloway and New Cumnock in East Ayrshire.

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

127 UK Government. (1989) Electricity Act 1989 [Online] Available at: Electricity Act 1989 (legislation.gov.uk) [Accessed: November 2022]

23. Summary of Consultee Questions

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

- Question 1: Do consultees agree a micrositing allowance of 50 m to allow flexibility within the project design?
- Question 2: Do consultees agree with the approach to the EIA?
- Question 3: Do consultees agree with the proposed chapters to be included in the EIAR?
- Question 4: Are consultees content with the proposed methodology for the LVIA?
- Question 5: Are consultees content with the proposed approach to undertaking viewpoint photography and preparing visualisations?
- Question 6: Are consultees in agreement with the proposed study areas, focus, and source data for the assessment of landscape effects?
- Question 7: Are consultees in agreement with respect to the effects that are proposed to be scoped out?
- Question 8: Are consultees content that the LVIA scope has identified the most important receptors to be assessed?
- Question 9: Are consultees content with the proposed viewpoints identified, and could they advise of any additional viewpoints they consider necessary to assess the effects of the proposed Development?
- Question 10: Are consultees content with the proposed approach to the cumulative assessment and could they advise of any specific cumulative sites they consider should be included in the assessment?
- Question 11: Do consultees have any comments regarding the EIA only concentrating on those receptors which may be subject to significant effects from the proposed Development (either directly or indirectly)?
- Question 12: Table 10.2 notes the receptors and potential impact proposed to be included within the EIA. Do consultees have any comment regarding this sufficiently covering the potential impacts on features from the proposed development and what is proposed to be scoped out?
- Question 13: Are consultees satisfied that survey effort proposed for 2023 is suitable in order to provide a robust assessment of effects?
- Question 14: Do consultees agree that the consultation and range of ornithological surveys proposed or undertaken are sufficient and proportionate to inform the design and assessment of the Proposed Development?
- Question 15: Do consultees agree with the assessment approach proposed?

- Question 16: Do consultees agree with the ornithological receptors upon which the Proposed Development may potentially pose significant effects?
- Question 17: Do consultees hold any existing information that may be considered relevant to the assessment?
- Question 18: Do consultees have any comments regarding the EIA only concentrating on those receptors which may be subject to significant effects from the proposed Development (either directly or indirectly)?
- Question 19: Table 12.4 above notes the receptors and potential impact proposed to be included within the EIA. Do consultees have any comment regarding this sufficiently covering the potential impacts on features from the proposed Development and what is proposed to be scoped out?
- Question 20: Do you agree that the scope of the proposed assessment is appropriate?
- Question 21: Do you agree that the proposed study areas are appropriate?
- Question 22: Do you agree that the proposed assessment methodology is appropriate?
- Question 23: Do you agree with the main potential setting impacts identified?
- Question 24: Are there any specific assets for which consultees would wish to have visualisations provided?
- Question 25: Do consultees agree with the proposed geographical extent of the assessment?
- Question 26: Do consultees agree that Operational and Decommissioning phases can be scoped out and the assessment will consider the effects during the construction phase only?
- Question 27: Can consultees provide traffic count data?
- Question 28: Do consultees agree that 'embedded mitigation' can be assumed in baseline assessment of receptors?
- Question 29: Do the consultees agree with the approach to consider the environmental impacts in line with IEMA thresholds of 30% and 10%?
- Question 30: Do the consultees agree with the traffic assessment approach set out in the above section?
- Question 31: Do consultees agree that the 'worst case scenario' be modelled or would a realistic 'most likely scenario' approach be more appropriate?
- Question 32: Do Transport Scotland agree that in relation to their Transport Assessment Guidance, no 'Transport Statement' or 'Transport Assessment' is required?
- Question 33: Do you agree that the scope of the proposed assessment is appropriate?
- Question 34: Are the consultees happy with the suggested approach for the noise assessment, including elements scoped in and out?
- Question 35: Do the consultees have any concerns regarding the use of historical background noise data as the basis for the operations?

- Question 36: Do consultees have any suggestions on socio-economic effects that should be specifically considered in the assessment?
- Question 37: Do consultees agree that tourism should be scoped out?
- Question 38: Are consultees content with the proposed methodology and scope for the forestry assessment?
- Question 39: Do the consultees have any information, particularly with reference to new guidance, which should be taken into account?
- Question 40: Do consultees agree with the proposed approach of the assessments within Section 18?

24. Responding to this Scoping Report

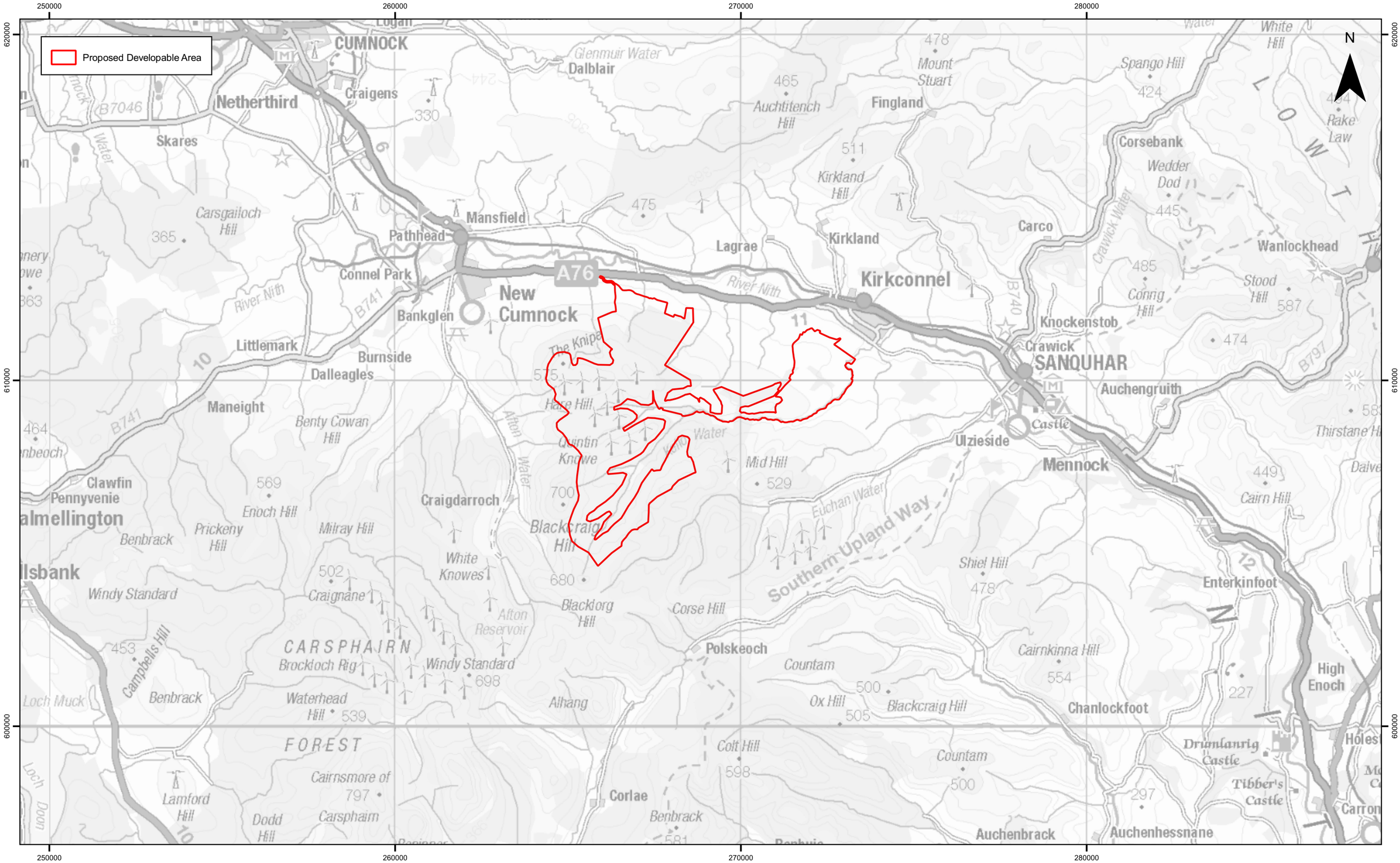
Consultee responses to this report should be directed to the ECU, who will then form a Scoping Opinion. The ECU can be contacted via email:

Econsents_Admin@gov.scot

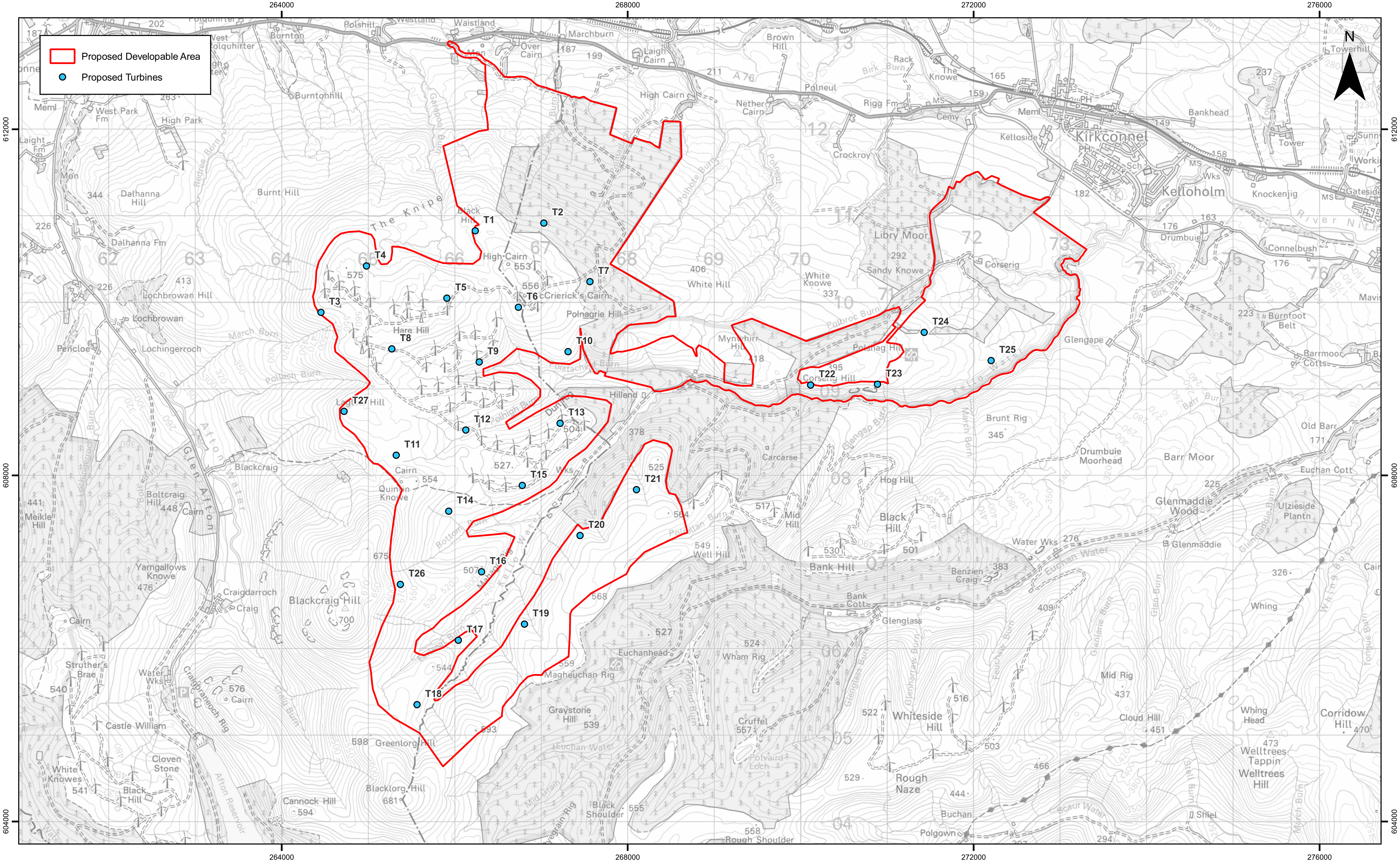
The Applicant will welcome copies of responses to inform the scope of EIA to be undertaken for the proposed Development. Further direct consultation will be undertaken with each consultee as the EIA progresses.

Appendices

A. Hare Hill proposed Development



ScottishPower Renewables					1:100,000 Scale @ A3	0 1 2 3 4 km	**Hare Hill Repower** Site Location	**Drg No** GB200665_M_045_C
								Rev C
								Date 03/10/23
								Figure 3.1
								Coordinate System: British National Grid



ScottishPower Renewables	1:40,000 Scale @ A3	0 0.5 1 1.5 2 km	**Hare Hill Repower**	**Drg No**	GB200665_M_051_C
			Proposed Turbine Layout	**Rev**	C
				Date	03/10/23
				Figure	3.2

Coordinate System: British National Grid

B. LVIA

260000 265000 270000 275000

610000 605000

N

- Proposed Developable Area
- Proposed Hare Hill Repower Turbines
- Hare Hill turbines with 10 m buffer
- Hare Hill Extension turbines with 10 m buffer
- Watercourse with 50 m buffer
- Right of Way with 200 m buffer
- Core path with 200 m buffer
- Micropath with 132.5 m buffer
- Noise sensitive properties with 1 km buffer
- Overhead line with 200 m buffer
- Semi-Natural Ancient Woodlands
- Plantation on Ancient Woodlands Site
- Special Protection Area
- Geological Conservation Review site
- Site of Special Scientific Interest
- Historic Environment Record (HER) with 20 m buffer
- Canmore site with 50 m buffer
- Sanquhar turbine
- Sanquhar II turbine
- Euchanhead turbine
- Sandy Knowe turbine
- Sandy Knowe Extension turbine
- Slope greater than 14°

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15 T16 T17 T18 T19 T20 T21 T22 T23 T24 T25 T26 T27

260000 265000 270000 275000

ScottishPower Renewables	1:40,000 Scale @ A3	0 0.5 1 1.5 2 km	**Hare Hill Repower** Regional Context

Drg No	GB200665_M_046_C	Coordinate System: British National Grid
Rev	C	
Date	03/10/23	
Figure	3.3	

Legend

- Turbine Locations
- Proposed Developable Area
- Distance from turbines (5km intervals)

Zone of Theoretical Visibility

- 1-6 tips visible
- 7-13 tips visible
- 14-20 tips visible
- 21-27 tips visible

Notes: The ZTV is calculated to turbine tip heights of 175m and 250m, from a height of 2m above ground level. The terrain model is bare ground derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

5km
10km
15km
20km
25km
30km
35km
40km
45km

N

190000 200000 210000 220000 230000 240000 250000 260000 270000 280000 290000 300000 310000 320000 330000 340000

650000 640000 630000 620000 610000 600000 590000 580000 570000

1:400,000 Scale @ A3	0 5 10 15 km

Hare Hill Repower

Zone of Theoretical Visibility to 45km

Drg No	22013-005-r3	
Rev	r3	Coordinate System: British National Grid
Date	18/10/23	
Figure	9.1	

Legend

- Turbine Locations
- Proposed Development Area
- Distance from turbines (5km intervals)

Other Wind Farms:

- Existing
- Consented (within 15km)

Zone of Theoretical Visibility

- 1-6 tips visible
- 7-13 tips visible
- 14-20 tips visible
- 21-27 tips visible
- National Scenic Areas
- East Ayrshire Sensitive Landscape Area
- D&G Regional Scenic Area
- Inventory Gardens & Designed Landscapes
- Wild Land Areas

Notes: The ZTV is calculated to turbine tip heights of 175m and 250m, from a height of 2m above ground level. The terrain model is bare ground derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

220000 230000 240000 250000 260000 270000 280000 290000 300000 310000

630000 620000 610000 600000 590000 580000

Loudoun Castle · Caprington Castle · Lanfine · Carnell · Auchincruive · Dumfries House · La Rochelle · Craigengillan · Bargany · Galloway Hills · Scot's Mining Company House · Drumlanrig Castle · Thornhill Uplands · Maxwelton (Glencairn Castle) · Dalswinton · Cowhill Tower · Moffat Hills · Torthorwald Ridge · Terregles Ridge · Raehills · Stobo Castle · Dawyck

25km · 20km · 15km · 10km · 5km · 30km · 35km · 40km

ScottishPower Renewables

1:250,000 Scale @ A3

0 5 10 15 km

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Hare Hill Repower

Designated Landscapes

Drg No	22013-006-r5
Rev	r5
Date	01/11/23
Figure	9.2

Coordinate System: British National Grid

Legend

- Turbine Locations
- Proposed Development Area
- Distance from turbines (5km intervals)

Other Wind Farms:

- Existing
- Consented (within 15km)

Landscape Character Types

- Agricultural Lowlands - Ayrshire
- Broad Valley Upland
- Foothills - Ayrshire
- Foothills - D&G
- Foothills with Forest - D&G
- Low Hills - Ayrshire
- Lowland Hills - Ayrshire
- Lowland River Valleys - Ayrshire
- Middle Dale - Ayrshire
- Middle Dale - D&G
- Narrow Wooded River Valley - D&G
- Pastoral Valley - D&G
- Pastoral Valleys - Ayrshire
- Plateau Moorland - Ayrshire
- Plateau Moorlands - G&CV
- Rugged Upland - Ayrshire
- Rugged Uplands - D&G
- Rugged Uplands with Forest - D&G
- Southern Uplands - Ayrshire
- Southern Uplands - D&G
- Southern Uplands - G&CV
- Southern Uplands with Forest - Ayrshire
- Southern Uplands with Forest - D&G
- Upland Basin - Ayrshire
- Upland Fringe - D&G
- Upland Glen - Ayrshire
- Upland Glen - G&CV
- Upland Glens - D&G
- Upland River Valley - G&CV
- Upland River Valleys - Ayrshire
- Upper Dale - D&G

Areas without colour are outside the Zone of Theoretical Visibility

Notes: The ZTV is calculated to turbine tip heights of 175m and 250m, from a height of 2m above ground level. The terrain model is bare ground derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

239904 249900 259896 269892 279888 289884

620000 610000 600000 590000

N

5km 10km 15km 20km

ScottishPower Renewables

1:160,000 Scale @ A3

0 2 4 6 8 10 km

Hare Hill Repower

Landscape Character Types

Drg No	22013-007-r5
Rev	r5
Date	01/11/2023
Figure	9.3

Coordinate System: British National Grid

Legend

- Turbine Locations
- Proposed Development Area
- Distance from turbines (5km intervals)

Other Wind Farms:

- Existing
- Consented (within 15km)

Zone of Theoretical Visibility

- 1-6 tips visible
- 7-13 tips visible
- 14-20 tips visible
- 21-27 tips visible
- Proposed Viewpoints

1 Blackcraig Hill
2 Glen Afton
3 Kelloholm
4 Crawick Multiverse Park
5 A76 Kirkconnel
6 Merkland
7 New Cumnock Rail Station
8 Glaisnock Road
9 B741 Knockburnie
10 Auchinleck Main Street
11 SUW above Brandleys Cottage
12 SUW Whing Head
13 SUW Benbrack
14 Cairnsmore of Carsphairn
15 Cairnkinna Hill
16 Lowther Hill
17 Cairn Table
18 B743 Limmerhaugh Muir

Notes: The ZTV is calculated to turbine tip heights of 175m and 250m, from a height of 2m above ground level. The terrain model is bare ground derived from OS Terrain 50 height data. Earth curvature and atmospheric refraction have been taken into account.

220000 230000 240000 250000 260000 270000 280000 290000 300000 310000

630000 620000 610000 600000 590000 580000

ScottishPower Renewables

1:250,000 Scale @ A3

0 5 10 15 km

Hare Hill Repower

Zone of Theoretical Visibility and Proposed Viewpoints

Drg No	22013-008-r5	
Rev	r5	Coordinate System: British National Grid
Date	01/11/23	
Figure	9.4	

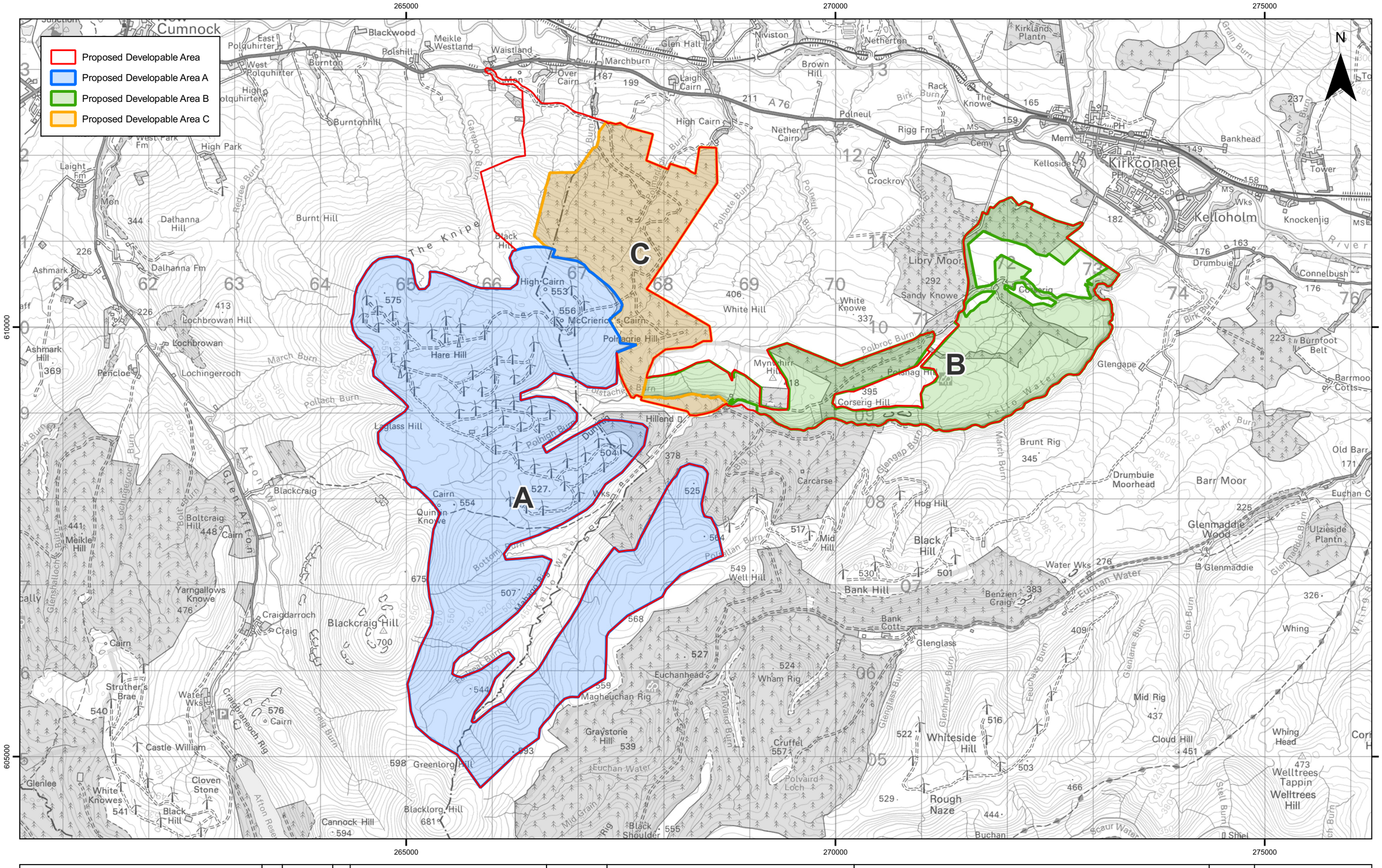
C. Ecology

Table C.1 Ecology walkover target notes

NUMBER	NOTES
1	Burn
2	Small area of mire
3	Turbine location on D5/ E1.8
4	Burn
5	Standing water - pools
6	Turbine location within D5
7	Small area of E1
8	Turbine location on D5
9	Area of D1.1
10	Mosaic of E2.1/B5 (30/70%).
11	Turbine location on deep peat. Predominantly E1.8 with mosaic E1.2/B5
12	Area of D5
13	Watercourse
14	Turbine location on deep peat. E1.6
15	Turbine location on deep peat. E1.6
16	Turbine location on peat
17	Turbine location on peat
18	Turbine location on B1.2
19	Turbine location on shallow peat. D5
20	E2.1/B5 (50/50%)
21	E2.1/B5 (50/50%)
22	Turbine location on peat
23	Turbine location on deep peat. Mosaic of E1.6/E1.8
24	Turbine location on deep peat. Mosaic of E1.6/E1.8
25	Watercourse
26	Ditch blocking
27	Ditches blocked
28	Turbine location on deep peat. E1.6
29	Turbine location on deep peat. E1.6
30	Watercourse
31	Turbine location on peat
32	Turbine location on peat
33	Ditch blocking
34	Watercourse
35	Watercourse
36	Watercourse
37	Ditches blocked all along the north face of hill
38	Turbine location on peat 0.5m. Mosaic of E1.6/D5
39	Turbine location on peat 0.5m. Mosaic of E1.6/D5
40	Watercourse

41	Small pockets of E1.6
42	Watercourse
43	Watercourse
44	Turbine location on peat. E1.6
45	Turbine location on peat. E1.6
46	Turbine location on peat. E1.6
47	Watercourse
48	Area of mosaic B5/E2.1
49	Watercourse
50	Watercourse
51	Turbine location D5
52	Area of E2.1/B5
53	Aerial imagery suggests area of bog/ heath habitat
54	Aerial imagery suggests area of bog/ heath habitat
55	Aerial imagery suggests area of bog/ heath habitat
56	Aerial imagery may suggest recent woodland planting
57	Aerial imagery & OS map may suggest area of bog/ heath habitats or marshy grassland
58	Aerial imagery suggests area of continuous bracken and scattered trees
59	Aerial imagery & OS map may suggest area of bog/ heath habitats or marshy grassland
60	Aerial imagery & OS map may suggests area of bog/ heath habitats or marshy grassland
61	Aerial imagery & OS map may suggests area of coniferous or broadleaved planting on bog/heath habitat
62	Aerial imagery may suggests area of heath/grassland habitats
63	Mosaic of E1.6.1 and D5
64	With mosaic of E1.6.1 and D5
65	Mosaic of E1.6.1/D5
66	Mosaic of E1.6.1/D5
67	Also holds some B5 habitat - mosaic
68	Mosaic with D5

Source: Natural Power 2022



ScottishPower Renewables

1:40,000 Scale @ A3

0 0.5 1 1.5 2 km

Hare Hill Repower

Habitat Walkover Survey Areas

Drg No	GB200665_M_042_C
Rev	C
Date	03/10/23
Figure	10.1

Coordinate System: British National Grid

265000 270000 275000

610000 605000

N

- Proposed Developable Area
- Proposed turbine
- 2022 Phase 1 survey area (assessed via aerial imagery)
- 2014 Phase 1 survey area
- A1.1.1 - Broadleaved woodland - semi-natural
- A1.2.2 - Coniferous woodland - plantation
- SI B1.2 - Acid grassland - semi-improved
- B5 - Marsh/marshy grassland
- C1.1 - Bracken - continuous
- D1.1 - Dry dwarf shrub heath - acid
- D2 - Wet dwarf shrub heath
- D5 - Dry heath/acid grassland
- D6 - Wet heath/acid grassland
- E1.6.1 - Blanket sphagnum bog
- E1.7 - Wet modified bog
- E1.8 - Dry modified bog
- E2.1 - Flush and spring - acid/neutral flush
- BM E3.2 - Fen - basin mire
- G1 - Standing water
- G2 - Running water
- J3.6 - Buildings
- J4 - Bare ground
- Target note

See inset

Inset

1:25,000
0 0.25 0.5 0.75 1 km

1:40,000
Scale @ A3

0 0.5 1 1.5 2 km

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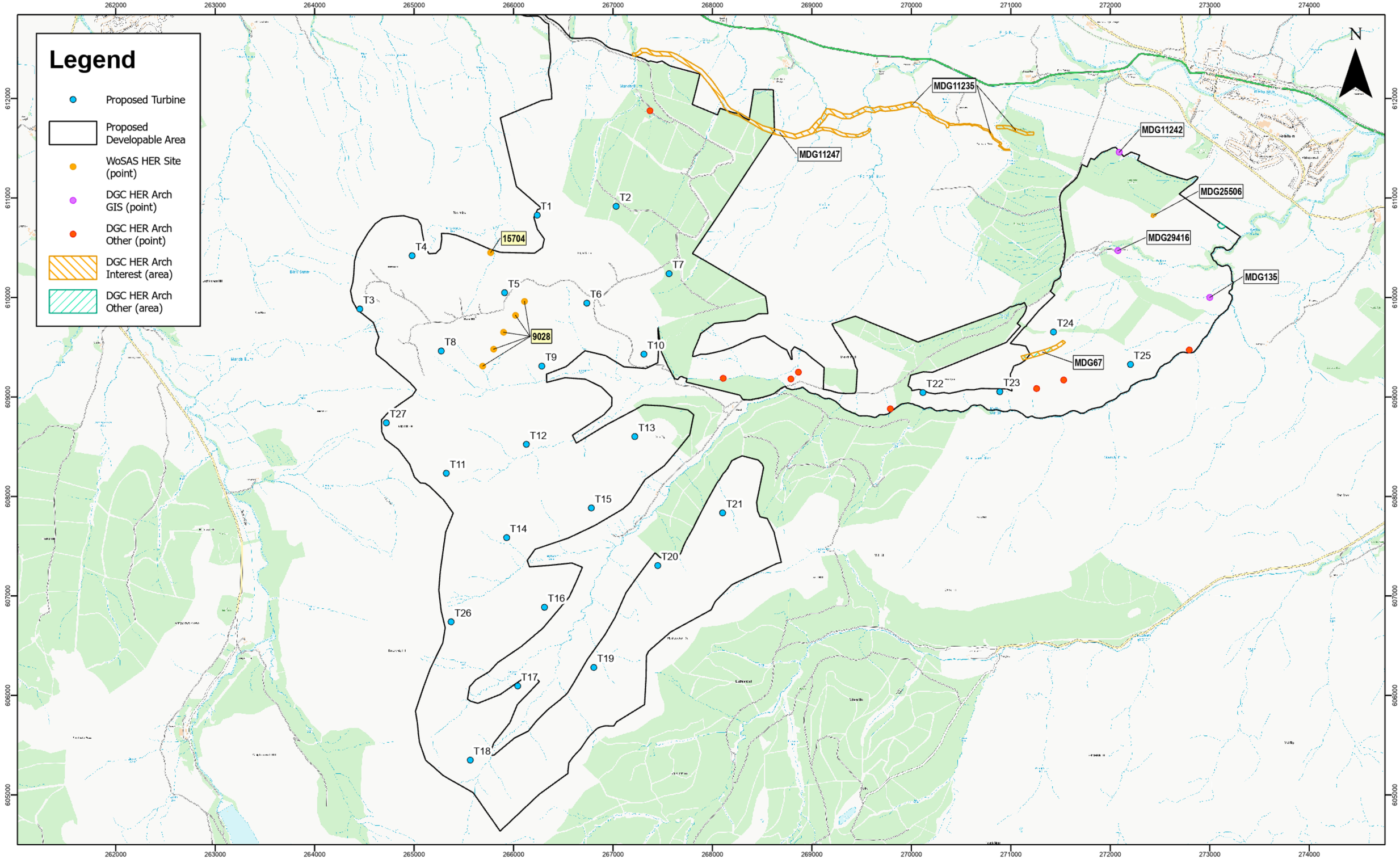
Hare Hill Repower

Habitat Walkover Survey Results 2022: Proposed Turbine Layout

Drg No	GB200665_M_053_C
Rev	C
Date	03/10/23
Figure	10.2

Coordinate System: British National Grid

D. Cultural Heritage



ScottishPower Renewables

Rev	Date	By	Comment
C	02/10/23	SG	Third Issue.

1:35,000 Scale @ A3

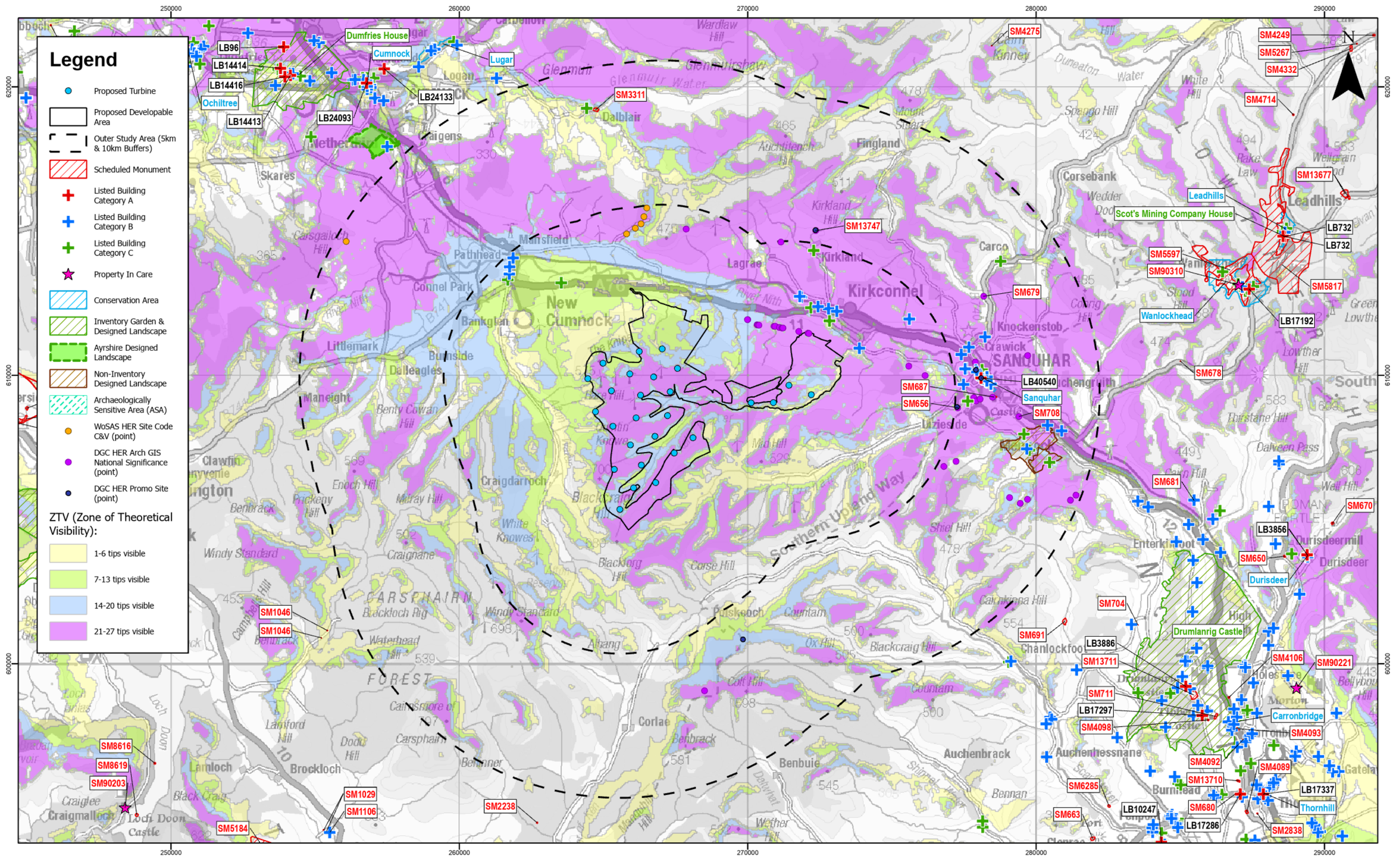
0 1 2 Km

Hare Hill Repower, East Ayrshire and Dumfries & Galloway

Cultural Heritage: Inner Study Area

Drg No	xxxx-xxxx-xxx
Rev	C
Date	02/10/23
Figure	13.1

Datum: OSGB36
Projection: TM



ScottishPower Renewables

Rev	Date	By	Comment
C	02/10/23	SG	Third Issue.

1:120,000 Scale @ A3

0 3.5 7 Km

Hare Hill Repower, East Ayrshire and Dumfries & Galloway

Cultural Heritage: Outer Study Area

Drg No	xxxx-xxxx-xxx
Rev	C
Date	02/10/23
Figure	13.2

Datum: OSGB36 Projection: TM

E. Traffic and Transport

Transport Scotland Transport Assessment Form

Contact Details		
	Applicant	Consultant
Contact name	David Boyd	Craig Galloway
Company	Scottish Power Renewables Ltd	Natural Power Consultants Ltd
Address	ScottishPower Renewables ScottishPower House 320 St Vincent St Glasgow G2 5AD	120 Bath Street, Glasgow, G2 2EN
Telephone		
E-mail		

Development Details	Hare Hill Repower
Brief description	The following are being considered for the Proposed Development: • Up to 27 turbines with associated infrastructure; • Temporary borrow pits; • Underground electricty cables; • Access tracks; • Permanent anemometry mast; • Temporary construction and storage compounds,laydown areas and ancillary infrastructure; • Battery/energy storage; • Substation, compound, and control building; and • Waste water and drainage attenuation measures.
Existing/ historical site use	Open moorland and agricuatural land Hare Hill Windfarm Hare Hill Extension Windfarm
Location: Street/Road Town/City/Plan Area (Map to be included)	The Proposed Development site is situated between the towns of Kirkconnel in Dumfries & Galloway and New Cumnock in East Ayrshire. The Proposed Development site straddles the administrative boundaries of East Ayrshire Council (EAC) and Dumfries & Galloway Council (DGC).
Size (e.g. GFA, no. of dwellings, etc.) Indicate if any thresholds in Table 3.1 are exceeded.	The Proposed Development covers an area of approximately 2,270 hectares and exceeds the thresholds noted in Table 3.1.
Opening year(s)	To be confirmed.