

AIRDS HILL WIND FARM

SCOPING REPORT



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1. INTRODUCTION

- 1.1 This Environmental Impact Assessment (EIA) Scoping Report relates to a proposal by Airds Hill Wind Farm Limited for a wind farm and associated infrastructure on land at Airds Hill, East Ayrshire. It is seeking the opinion of East Ayrshire Council on the scope of the information to be supplied in the EIA Report for the proposed Development.
- 1.2 OnPath Energy's experience, alongside that of our consultants, in the preparation and implementation of major developments, along with our knowledge of the locality has been used to define the extent of the study area and identify the main environmental effects proposed in this report.

THE NEED FOR AN EIA

- 1.3 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations) divides EIA development into 2 categories:
 - a) Schedule 1– developments that are likely to have significant effects and for which an EIA is mandatory; and
 - b) Schedule 2 – developments where the need for an EIA is judged on a case-by-case basis depending on whether proposals are likely to cause significant environmental effects by virtue of factors such as nature, size and location.
- 1.4 The proposed Development is considered to constitute a Schedule 2 development as it will be an installation for harnessing wind power for energy production that involves the installation of more than 2 turbines, and the hub height of the turbines will exceed 15 meters. Therefore, an EIA Report will be submitted as part of the Planning Application.

PURPOSE OF THIS DOCUMENT

- 1.5 The EIA Regulations (Regulation 4) specify that an EIA must:

(2) ... identify, describe and assess in an appropriate manner, in light of the circumstances relating to the Proposed Development, the direct and indirect significant effects of the Proposed Development (including, where the Proposed Development will have operational effects, such operational effects) on the factors specified in paragraph (3) and the interaction between those factors.

(3) The factors are—

(a) population and human health;

(b) biodiversity, and in particular species and habitats protected under [any law that implemented] Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds;

(c) land, soil, water, air and climate; and

(d) material assets, cultural heritage and the landscape.



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

- 1.6 EIA scoping refers to the activity of identifying the likely environmental ‘topics’ that should be considered within the EIA. Through consideration of the environmental topics and potential receptors, the EIA scoping initiates the process of determining the potential likely significant effects, which in turn results in the identification of issues to be addressed in the EIA.
- 1.7 The Regulations do not provide a definition of what constitutes a significant environmental effect. This is because the significance of effects can only be determined on an individual basis according to the environmental parameters under consideration and the context in which the assessment is made. Significance is generally determined through a combination of the sensitivity of a receptor and the magnitude of the impact.
- 1.8 This report therefore aims to:
- a) Seek agreement on the likely significant effects associated with the Proposed Development and thus the proposed scope of the EIA Report;
 - b) Seek agreement on the non-significant effects that can be excluded and scoped out of the EIA Report; and
 - c) Invite comment on the proposed approach to baseline data collection, prediction of environmental effects and the assessment of significance.
- 1.9 If it is concluded that topics can be scoped out of the EIA this does not mean that they will not be assessed as part of the planning application. It just means that they have been scoped out of the EIA Report.
- 1.10 As per the requirements of schedule 17(2) of the EIA Regulations, this report includes:
- a) A description of the location of the development, including a plan sufficient to identify the land;
 - b) A brief description of the nature and purpose of the development and of its likely significant effects on the environment; and
 - c) Such other information or representations as the development may wish to provide or make.
- 1.11 The scoping report has been based upon both site surveys and desk-based assessments.

Regulation 19 notice

- 1.12 This report also represents a notice under Regulation 19 of the EIA Regulations for public bodies, as listed in the Regulations, to make available to OnPath Energy information which would be relevant to the preparation of the EIA.

Question 1: Do you have any information which would be relevant to the preparation of the EIA for Airds Hill Wind Farm?



CONSUTLATION

- 1.13 Consultation with relevant stakeholders including the Local Planning Authority, statutory consultees and the local community will be undertaken throughout the EIA and site design process. Initial discussions have already taken place with East Ayrshire Council, NatureScot on the scope of the ecology and ornithology baseline assessments and with the local community via the 9CC. OnPath Energy will continue to engage as the development progresses.
- 1.14 Consultation with the community will involve, but will not be limited to, exhibitions, questionnaires, distribution of information leaflets and an up-to-date dedicated project website.
- 1.15 OnPath Energy believe that consultation is a key part of the EIA process. It will help to inform the assessment methodologies and shape the project.



2. PROPOSED DEVELOPMENT

THE SITE

- 2.1 The Site, as shown on plan SR01, is located approximately 2.5km north of edge New Cumnock and 3.5km east of Cumnock, just to the north of the A76.

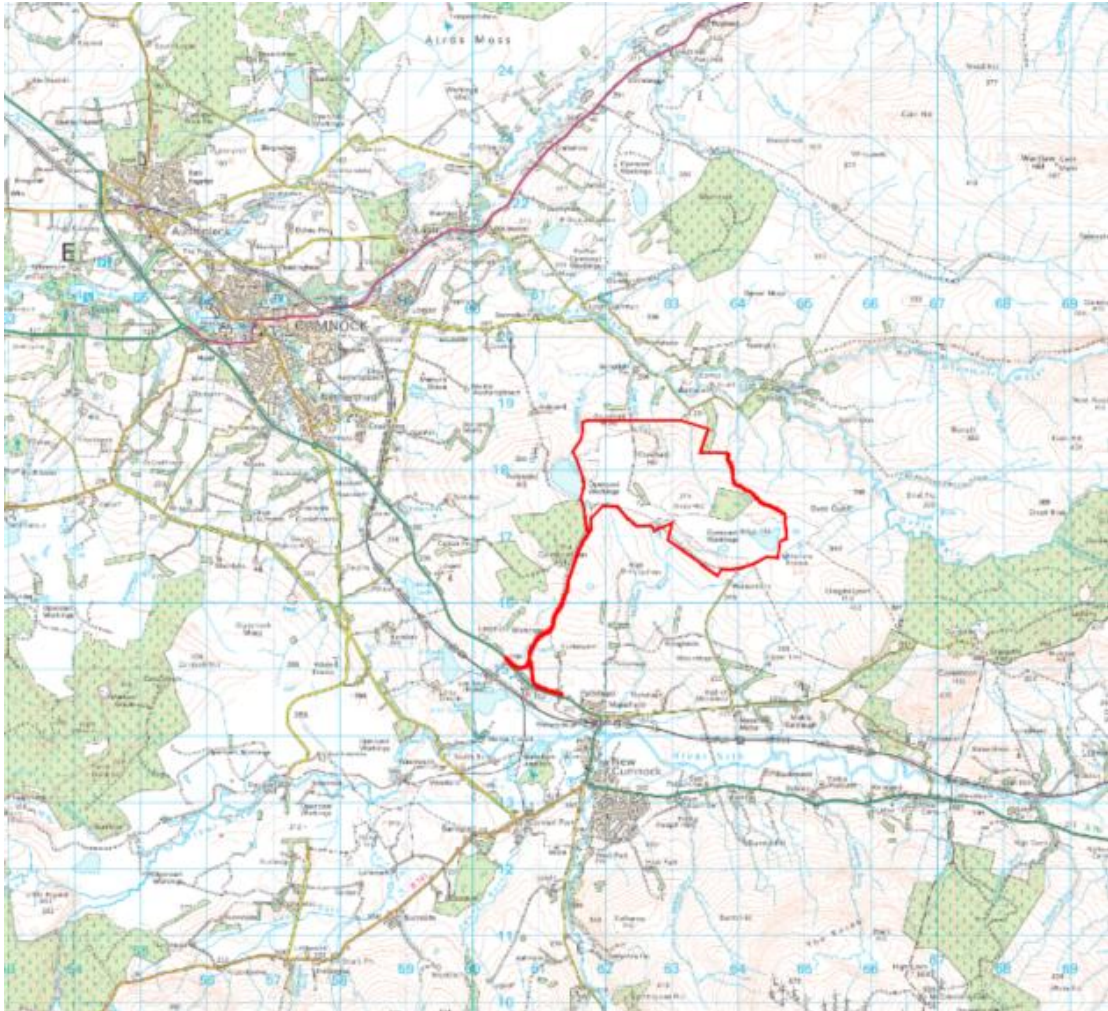


Figure 2.1 – Site Location (extract from SR01)

- 2.2 The area within which we are examining the potential to locate turbines is shown on plan SR02. A large part of the Site forms part of the partly restored surface coal mine which has been subject on remediation works in recent years. The Site is heavily influenced by the historic opencast workings.
- 2.3 The Site is approximately 452 hectares, and ranges between 348m AOD and 240m AOD. The majority of the Site consists of grassland or bare ground. There are two blocks of mature woodland on Site with further commercial tree planting having recently taken place in the centre of the Site. There are several small watercourses that run through the Site as well as number of ponds.

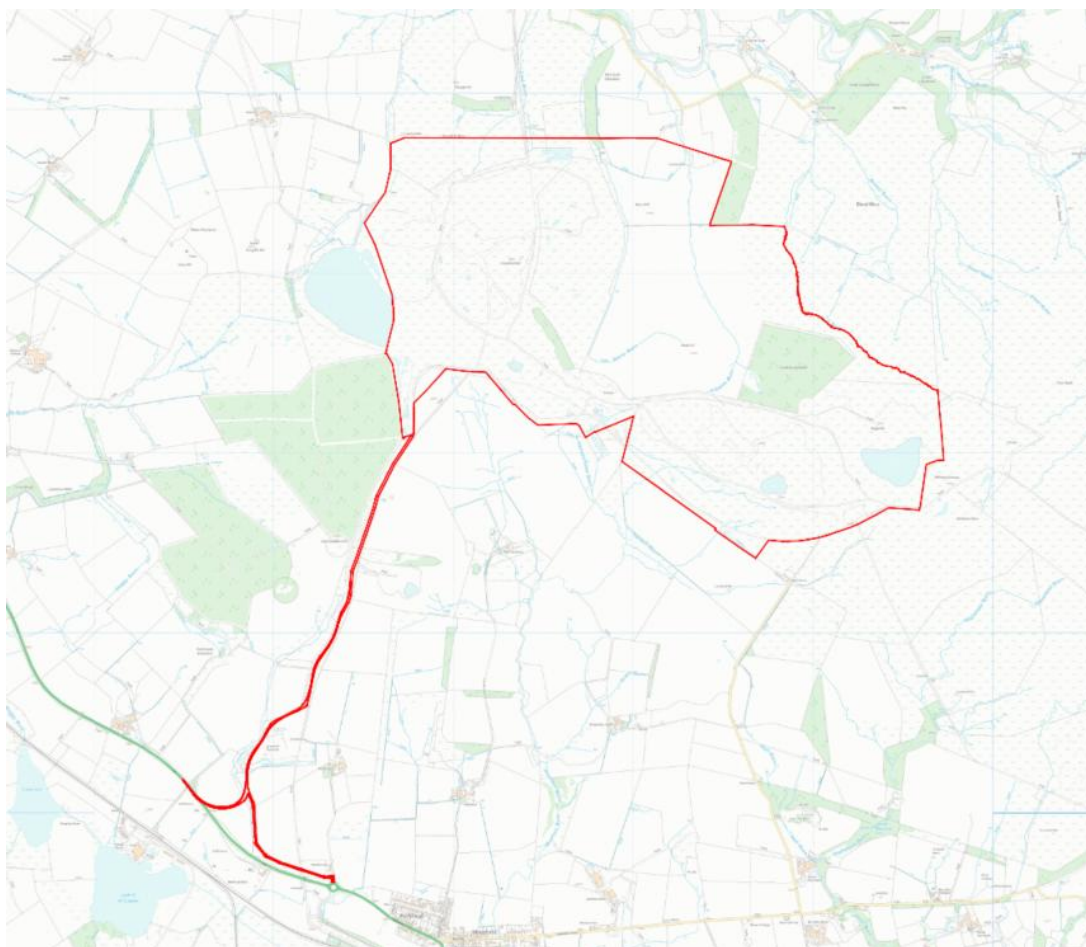


Figure 2.2 – Scoping Site Boundary (extract from SR02)

- 2.4 Access to the Site will be via the A76 from a westerly direction. While the existing Site access from the roundabout off the A76 will be utilised for general construction traffic, a new site entrance to ensure larger components can get onto the Site will be created directly off the A76 approximately 1km west of the roundabout.
- 2.5 There are no ecological or cultural heritage designations on the Site. The Muirkirk and North Lowther Uplands Special Protection Area (SPA) and Muirkirk Uplands Site of Special Scientific Interest (SSSI) are located directly to the east of the site.
- 2.6 As illustrated on plan 4.5 in Appendix 1 there are a number of other wind farms at various stages of the development process around Airds Hill. Cumulative impact will therefore need to be considered as part of the EIA Report. The scope of the cumulative assessment for each of the topic area will be set out in the relevant sections, but as a general overview wind farms within 20km of the proposed wind turbines will initially be considered, with the exception of any turbines under 50m within 10km of the Site and turbines under 80m over 10km from the Site. Table 4.2 in Chapter 4 lists the schemes which will initially be considered.

Question 2: Are any their sites missing from the cumulative sites listed in table 4.2 (please see chapter 4) that should be taken into consideration as part of the Airds Hill EIA?

THE PROPOSED DEVELOPMENT

2.7 A preliminary turbine layout for the proposed Development is shown on figure SR03. However, it is worth noting that an EIA is an iterative process, as potential effects are identified, the design of the project is adjusted where appropriate and suitable mitigation measures proposed. Therefore, this layout will be developed to take account of environmental and technical constraints, as well as consultation feedback, as the project progresses.

2.8 It is envisaged that the proposed Development will include the following elements:

- a) Up to 8 wind turbines. These will be 3 bladed horizontal axis machines with maximum blade tip heights of up to 250m and rotor diameters likely to be around a maximum of 170m.

The final size of turbines will reflect the environmental and technical constraints present on Site. They will aim to create a balance between maximising the renewable energy production and environmental and technical issues.

The final choice of turbine will not be known when the EIA Report is drafted, so for the purpose of the EIA the assessments will be based on the maximum height and rotor diameters within an identified range to ensure flexibility in turbine selection.

Due to the height of the turbines, greater than 150m, they will require to be lit with visible aviation lighting;

- b) Turbine foundations, the dimensions of which will be dependent on the size of the turbines;
- c) Turbine crane pads and laydown areas for erection and maintenance of turbines;
- d) An anemometer mast to measure the wind speeds on site;
- e) Site control building and substation area: the control building will comprise a single storey building with an associated electrical compound for any outside transformers and switchgear;
- f) New junction off A76;
- g) On Site access tracks with watercourse crossings – the extent of on-site tracks is currently unknown as it will be informed by the final turbine layout. The on-site tracks will be located to minimise impact on sensitive habitats, minimise the number of water course crossings, and where possible utilise existing tracks on Site;
- h) Underground cables;
- i) If ground conditions are suitable borrow pits may be created on Site during the construction period; and
- j) Temporary construction compound.

2.9 The planning application will seek a temporary planning permission to operate the wind farm for 40 years.



- 2.10 The proposed Development will have a generating capacity of less than 50MW.
- 2.11 At this stage it is envisaged that the connection of the substation to the wider grid network would fall under a separate consenting process and would therefore be subject to a separate environmental assessment. It will not be considered as part of the EIA for the proposed Development.



3. APPROACH TO EIA

- 3.1 The EIA will be carried out in accordance with the Regulations and current best practice. It will assess the direct, indirect, cumulative, short, medium, long, permanent, temporary beneficial and adverse effects of the proposed Development for the 'scoped-in' topics. Any mitigation measures proposed to avoid, reduce or address significant adverse effects will be described in the EIA Report, and additional enhancement measures will be discussed in the planning application.
- 3.2 It is envisaged that each technical chapter within the EIA Report will include the following sections:
- a) Summary;
 - b) Statement of Competence;
 - c) Introduction;
 - d) Scope of Assessment, including scoping and consultation;
 - e) Brief Overview of Policy, legislation and guidance relevant to that Chapter;
 - f) Methodology;
 - g) Baseline conditions;
 - h) Assessment of effects;
 - i) Mitigation; and
 - j) Residual effects.
- 3.3 The EIA Report will include a description of reasonable alternatives considered and an indication of the main reasons for selecting the chosen option. This will include an assessment of how the Site was identified taking into consideration factors such as grid availability and capacity, and environmental and planning constraints. The approach to the Site design and alternative options considered will also be set out.



4. LANDSCAPE AND VISUAL IMPACT

- 4.1 It is acknowledged from the outset that, in common with almost all commercial-scale wind and energy developments, some landscape and visual effects would occur as a result of the Proposed Development, including potentially some significant effects.
- 4.2 A key principle of the European Landscape Convention is that all landscapes matter and should be managed appropriately. It is also acknowledged that landscapes provide the surroundings for people's daily lives and often contribute positively to the quality of life and economic performance of an area.
- 4.3 It is therefore proposed that a Landscape and Visual Impact Assessment (LVIA) is undertaken as part of the EIA and an LVIA Chapter be included in the EIA Report. The LVIA will be undertaken by Chartered Landscape Architects, who are experienced in the assessment of large scale, onshore wind and solar energy projects and are fully familiar with the landscape in and around this part of East Ayrshire, having previously delivered the LVIAs for other nearby consented projects.
- 4.4 It is proposed that the LVIA will consider the potential effects of the Proposed Development upon:
- a) Individual landscape features and elements;
 - b) Landscape character; and
 - c) Visual amenity and the people who view the landscape.

BASELINE DESCRIPTION

- 4.5 The Proposed Development site is located in East Ayrshire on an area of plateau moorland, which until recently comprised of opencast colliery workings. The Proposed Development is located approximately 2.5km to the north of the edge of New Cumnock and just over 5km to the east of the centre of Cumnock.

Landscape Character

- 4.6 In March 2019, NatureScot published an updated set of Landscape Character Type boundaries and descriptions, which includes mapping and descriptions which supersede earlier documents. The Proposed Development is located in the 'Plateau Moorland – Ayrshire' Landscape Character Type (LCT 78). The key characteristics of LCT 78 are defined as:
- *“Topography is comparatively level with extensive plateaux rising to soft contoured ridges.*
 - *Underlain by basalts to the east and greywackes to the south-west.*
 - *Covered by blanket bog, heather and grass moorland, with extensive mosses and peatland forming an important component of this landscape type.*
 - *Frequent extensive areas of coniferous forest of uniform age which, in places, have significantly modified the original character of these areas in terms of colour, texture and views.*



- Largely undeveloped with a sparse network of roads.
 - Wind farm development on the north-eastern margins.
 - Open, exposed and rather remote landscape, wild in character, although this is lessened in places by the presence of wind turbines and associated infrastructure.
 - Views are open and medium to longer distance depending on undulations in the local topography”.
- 4.7 At the regional level, the site is located within the ‘East Ayrshire Plateau Moorlands’ Landscape Character Type 18A, as defined in the *East Ayrshire Landscape Wind Capacity Study* (LWCS). The sensitivity of this LCT to wind energy development is discussed in the LWCS, which states that:
- “While the large scale, simple landform and land cover of these uplands reduces sensitivity to larger turbine typologies, the presence of the ‘landmark’ hills and cumulative effects with turbines sited in this and other nearby upland areas are key constraints. There would be High-medium sensitivity to the very large and large typologies (turbines >70m)”.*
- 4.8 The LWCS goes on to provide ‘Guidance for Development’ in LCT 18A which states that:
- “There is very limited scope for the very large and large typologies (turbines >70m) to be accommodated within this landscape. Turbines should be set well back from the more sensitive outer edges of this landscape to avoid significant impact on smaller scale settled lower slopes and valleys within this character type and the adjacent landscapes of the East Ayrshire Lowlands (7c), Upland Basin (15) and Upland River Valleys (10). They should not be sited close-by, or significantly intruding on key views to and from the landmark hills of Blackside, Corsencon, Cairn Table and Wardlaw Hill”.*

Landscape Designations

- 4.9 The Proposed Development is not located within or adjacent to a nationally designated landscape. The turbines lie adjacent to a Local Landscape Area (LLA) identified in the East Ayrshire Local Plan, but no development would be required within the LLA. There are a number of Gardens and Designed Landscapes in the wider landscape surrounding the site, but none within 5 km and only one within 15 km, Dumfries House.
- 4.10 Landscape designations in the vicinity of the site are illustrated at **Figure 4.4**.

RELEVANT GUIDANCE AND LEGISLATION

- 4.11 The LVIA will be undertaken in accordance with the principles of best practice, as outlined in published guidance documents, notably the third edition of the *Guidelines for Landscape and Visual Assessment* (GLVIA3), (Landscape Institute and the Institute for Environmental Management and Assessment, 2013).
- 4.12 The methodology and assessment criteria proposed for the assessment has been developed in accordance with the principles established in this best practice document. It should be acknowledged that GLVIA3 establishes guidelines, not a specific methodology. The preface to GLVIA3 states:



“This edition concentrates on principles and processes. It does not provide a detailed or formulaic ‘recipe’ that can be followed in every situation – it remains the responsibility of the professional to ensure that the approach and methodology adopted are appropriate to the task in hand.”

- 4.13 The approach has therefore been developed specifically for this assessment to ensure that the methodology is fit for purpose.
- 4.14 As part of the development of the proposed methodology, consideration has also been given to the following documents:
- a) *Assessing the Cumulative Landscape and Visual Impact of Onshore Wind Energy Developments (NatureScot, March 2021);*
 - b) *Siting and Design of Wind farms in the Landscape, Version 3a (SNH, August 2017);*
 - c) *Visual Representation of Wind farms – Version 2.2 (SNH, February 2017);*
 - d) *Landscape Institute (LI) Technical Guidance Note 06/19 Visual representation of development proposals (Landscape Institute, September 2017);*
 - e) *LI Technical Guidance Note 02/19 Residential Visual Amenity Assessment (RVAA), (Landscape Institute, March 2019); and*
 - f) *Guidance on Aviation Lighting Impact Assessment (NatureScot 2024).*

PROPOSED SCOPE OF SURVEY AND ASSESSMENT

- 4.15 It is proposed that the main objectives of the LVIA will be as follows:
- a) to identify, evaluate and describe the current landscape character of the site and its surroundings, and also any notable individual or groups of landscape features within the site
 - b) to determine the sensitivity of the landscape to the type of development proposed
 - c) to identify potential visual receptors (i.e. people that would be able to see the Proposed Development) and evaluate their sensitivity to the type of changes proposed
 - d) to identify and describe any impacts of the Proposed Development in so far as they affect the landscape and/or views of it and evaluate the magnitude of change due to these impacts
 - e) to identify and describe any mitigation measures (including mitigation which is inherent in the design and layout of the Proposed Development) that have been adopted to avoid, reduce and compensate for landscape and visual effects
 - f) to identify and assess any cumulative landscape and visual effects
 - g) to evaluate the level of residual landscape and visual effects; and
 - h) to make a professional judgement about which effects, if any, are significant



Distinction between Landscape and Visual Effects

- 4.16 In accordance with the published guidance, landscape and visual effects shall be assessed separately, although the procedure for assessing each of these is closely linked. A clear distinction has been drawn between landscape and visual effects as described below:
- a) Landscape effects relate to the effects of the Development on the physical and perceptual characteristics of the landscape and its resulting character and quality; and
 - b) Visual effects relate to the effects on specific views experienced by visual receptors and on visual amenity more generally

Study Areas

- 4.17 In order to assist with defining the study area, a digital Zone of Theoretical Visibility (ZTV) model has been produced as a starting point to illustrate the geographical area within which views of the different components of the development on the site are theoretically possible. This was based on a 'bare-earth' scenario, whereby the screening effect of areas of existing vegetation or built features in the landscape are not taken into account. The ZTV was modelled both to blade tip height using the currently proposed maximum turbine height of 250 m, and to hub height using the currently assumed height of 167 m, and both are presented at **Figures 4.1- 4.3**.
- 4.18 The ZTVs are a useful tool used to provide a focus on the area and receptors that are most likely to be affected by a Proposed Development but should always be subject to verification in the field. In this regard, site visits shall always form the primary basis in understanding the actual likely visibility of development at the site.
- 4.19 Having reviewed the ZTVs and with regard to best practice guidance, it is proposed that the LVIA will consider an initial 35 km radius study area. Detailed assessment will then be provided for a 20 km section of this study area, which it is considered represents a proportionate extent of the study area and the limit within which any potential significant effects might occur.
- 4.20 For the cumulative assessment, consideration was initially given to a 60 km radius from the site, as recommended by NatureScot best practice guidance. Following this review, it is proposed that a 20 km detailed study area be adopted to consider cumulative effects, which is considered represents a proportionate extent of the study area and the limit within which any potential significant cumulative effects might occur.

Visual Receptors

- 4.21 A detailed consideration of the potential for effects to the visual amenity of receptors in the landscape surrounding the site will be set out in the LVIA. This visual assessment will be informed by a selection of representative assessment viewpoints, which are listed below, each of which will be illustrated with daytime visualisations prepared in line with NatureScot best practice guidance.
- 4.22 The LVIA will focus on the potential effects of the Proposed Development on different receptor groups, including settlements, footpath users, recognised tourist routes, long distance walking routes, cycle routes and centres for tourism.



- 4.23 It is also proposed to carry out a separate Residential Visual Amenity Assessment (RVAA) covering any properties located within 2 km of a proposed turbine. Properties lying within a 2 km radius of the design freeze layout will be identified and the list further refined by reference to both the bare earth zone of theoretical visibility consideration of any localised screening provided by woodland and other buildings.
- 4.24 This additional assessment will be presented in an appendix to the LVIA Chapter and would complement the assessment of visual receptors within the LVIA, providing further detail in relation to the effect on the views and amenity from different parts of each property and its curtilage.

Proposed LVIA Viewpoint Locations

- 4.25 It is proposed that the 15 locations set out in **Table 4.1** are included as viewpoints in the LVIA. The locations which are illustrated on **Figures 4.1-4.4** represent visual receptors and character types at a range of distances and directions from the site.

Table 4.1 Proposed LVIA Viewpoints

Viewpoint Number	Location	OS Grid Reference
1	Glenmuir Water Road, west of Dalblair	263279, 618920
2	Glenmuir Water Road, Darmalloch	261260, 620265
3	Loganhill Road	259034, 619471
4	Junction of A70 and Glenmuir Road	258211, 620449
5	Cumnock, Kings Way	258000, 619683
6	Craigens	258429, 618749
7	Auckinleck, Coal Road	255599, 621773
8	A76, New Cumnock	262619, 613120
9	New Cumnock, Greenbraes Drive	262118, 612550
10	Mansfield	262213, 614304
11	Connel Park, Boig Road	260624, 612811
12	Dalleagles	257622, 610619
13	Cronberry	260432, 622705
14	A76, Over Cairn	266521, 613093
15	Cairn Table	272414, 624216

- 4.26 The proposed viewpoint locations are located at a range of distances and directions from the Proposed Development, are at varying elevations and cover a variety of different character areas and types. Some of the viewpoints are intended to be representative of the visual experience in a general location whereas other viewpoints illustrate the view from a specific or important vantage point.
- 4.27 Each of the representative viewpoints will be visited to evaluate the sensitivity of views. In addition, the study area will also be extensively visited to consider the visibility of the Proposed Development as receptors move through the landscape.
- 4.28 The viewpoints will be used as the basis for determining the effects on visual receptors within the Study Area. The level of effect experienced by different visual receptor



groups will be determined by considering in tandem the sensitivity and view with the magnitude of impact.

Visualisations

- 4.29 For each of the above viewpoints, daytime visualisations will be prepared in line with the *Visual Representation of Wind farms – Version 2.2* (SNH, February 2017).
- 4.30 A digital model will be generated to enable the production of wirelines of the Proposed Development from locations throughout the study area to help identify the scale, arrangement and visibility of the proposed turbines. These images will be reviewed on site to assess how natural and built screening would affect visibility of the Proposed Development.
- 4.31 Each of the wireframe models for the viewpoints within 20 km of the site will then be developed further into photomontages to help illustrate the predicted impact of the Proposed Development.
- 4.32 In addition to the proposed wind turbines, the other project components (e.g. access tracks) will be shown in photomontages for viewpoints within 5 km when they would be visible. Beyond 5 km it is considered unlikely that the ancillary elements would form more than a limited element of the entire Proposed Development when compared to the turbines.

Assessment of Turbine Lighting

- 4.33 The Proposed Development will incorporate turbines greater than 150 m, some of which under Civil Aviation Authority (CAA) Regulations will require to be lit with visible aviation lighting.
- 4.34 It is recognised that in some circumstances, it may be possible for turbine lighting to result in a significant effect on the character of the surrounding landscape. For example, if the proposed wind energy development is located within or in close proximity to a designated dark sky area, or is remote from existing sources of visible lighting, such as residential areas, commercial or industrial sites, or major roads.
- 4.35 For wind energy developments which are not located in such areas, it is considered that there would be no potential for significant effects on landscape character to arise from visible turbine lighting of the type proposed. This is because in these areas the character of the landscape during low natural light levels is already in part characterised by the presence of artificial lighting. Therefore, the addition of visible turbine lighting would not have the potential to bring about a fundamental change to the characteristics of the landscape.
- 4.36 The surrounding landscape context around the Proposed Development contains some existing sources of artificial light, particularly within surrounding settlements, industrial developments and along highways, and when considering surrounding wind farms already consented with visible aviation lighting. Therefore, the assessment of turbine lighting will focus solely on the additional visual effects introduced by the lights. The effect of turbine lighting on landscape character will be scoped out of the EIA.
- 4.37 In accordance with “*Guidance on Aviation Lighting Impact Assessment*” (NatureScot 2024), the LVIA will assess the additional visual effects of the aviation lighting in the main body of the LVIA chapter. The additional change introduced by the aviation lighting will form a component of the magnitude of change.



- 4.38 This consideration will be informed by a ZTV of the lit turbines and night-time visualisations from a selection of viewpoints, illustrating the proposed lighting effects. In line with NatureScot Visualisation Guidance, the viewpoints selected represent locations from where people are most likely to experience the wind farm at night.
- 4.39 It is proposed that the following night-time visualisations will be produced:
- a) VP 1 – Glenmuir Water Road, west of Dalblair;
 - b) VP 2 - Glenmuir Water Road, Darmalloch;
 - c) VP 6 – Craigens;
 - d) VP 8 – A76, New Cumnock; and
 - e) VP 11 - Connel Park, Boig Road.
- 4.40 The viewpoints will be used to inform consideration of the potential visual effects on key visual receptors in individual properties, settlements and users of nearby roads.
- 4.41 Photographic examples of existing aviation lighting in similar light conditions will be presented in a separate appendix as a ‘control mechanism’.

Cumulative Effects

- 4.42 The LVIA will also consider the potential for any cumulative effects to arise. The requirement for consideration of cumulative effects under the *Environmental Impact Assessment (Scotland) Regulations 2017* is set out in *Schedule 4, paragraph 5*, as follows:
- “A description of the likely significant effects of the development on the environment resulting from, inter alia: (e) the cumulation of effects with other existing and/or approved development, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources”.*
- 4.43 Current best practice guidance for cumulative impact assessment (Assessing the Cumulative Impact of Onshore Wind Energy Developments, (NatureScot, 2021)) refers to a consideration of proposals which are ‘*awaiting determination within the planning process with design information in the public domain*’ and states that ‘*The decision as to which proposals in the planning / consenting system should be included in an assessment is the responsibility of the determining authority.*’
- 4.44 As such, it is proposed in this LVIA to consider cumulative effects caused by the development of the site in conjunction with other sites which are either operational, under construction, consented or the subject of a full planning application. The NatureScot best practice guidelines identify two principal types of cumulative visual impact:
- a) Combined visibility – where the observer is able to see two or more developments from one viewpoint; and



- b) Sequential visibility – where two or more sites are not visible at one location but would be seen as the observer moves along a linear route, for example, a road or public right of way
- 4.45 The guidelines state that ‘combined visibility’ may either be ‘in combination’ (where two or more sites are visible from a fixed viewpoint in the same arc of view) or ‘in succession’ (where two or more sites are visible from a fixed viewpoint, but the observer is required to turn to see the different sites). Each of the above types of cumulative effect will be considered in the LVIA.
- 4.46 The assessment will also consider the potential cumulative effects of wind turbine aviation lighting, with reference to other wind farms that are either operational, under construction, consented or the subject of a full planning application.
- 4.47 In order that the cumulative assessment remains focussed on other schemes that have the greatest potential to give rise to significant cumulative effects it is necessary at the outset to decide which schemes realistically need to be considered in detail, as to consider all schemes within 60 or 35 km of the Proposed Development would simply detract attention from the key issues relating to the application. In this instance, the majority of the wind farms over 20 km away are highly unlikely to give rise to significant cumulative effects which would not occur in any case with the existing distribution of other wind farms (i.e. in the absence of the Proposed Development). It is also considered appropriate and proportionate to scope out all turbines under 50 m within 10 km of the site, and all turbines under 80 m over 10 km distance from the site. The cumulative impact assessment will therefore focus primarily on those schemes within approximately 20 km of the wind turbine element of the Proposed Development, albeit noting that to the north-east, this will be expanded slightly to allow for consideration for all the of developments in and around the Hagshaw Cluster, some of which lie just beyond 20km.
- 4.48 The wind farms identified within **Table 4.2** are therefore the schemes on which the discussion of the cumulative landscape and visual impact effects will be primarily focussed, as illustrated on **Figure 4.5**.

Table 4.2 Cumulative Sites

Site	Blade tip height of turbines	Number of turbines
Operational/Under Construction		
Greenburn	149.9m	16
Hare Hill	64m	20
Hare Hill Extension	70m	35
Kennoxhead - Phase 1	180m	13
Kennoxhead - Phase 2	180m	6
Kennoxhead Extension I (Phase 2)	180m	8
Kennoxhead Extension II (Penbreck) (Phase 2)	200m 220m	1 7
North Kyle	149.9m	49
Enoch Hill	149.9m	16
Afton	120m	27



Wind Standard	125m	30
South Kyle	149.9m	50
Benbrack	130m	18
Windy Rig	125m	16
Bankend Rig	76m	11
Dungavel	101 m 121 m	9 4
Kype Muir	132 m	26
Kype Muir Extension	156 m 176 m 200 m 220 m	4 3 4 4
Cumberhead West	200 m	21
Cumberhead	150 m 180 m	12 2
Galawhistle	110 m 121 m	18 4
Hagshaw Repowering	200 m	14
Hagshaw Hill Extension	80 m	20
Consented		
Lethans	176 m 200 m 220 m	7 10 5
Lethans Extension	235 m 251 m	3 7
Glenmuckloch	133.5	8
Overhill	180m	10
Pencloe	149.9m	12
Windy Standard III (Brockloch Rig 2)	125.5m 177.5m	8 12
In Planning		
The Drum	220m	8
Enoch Hill II	149.m	2
Bankend Rig III	180 m 200 m 230 m 250 m	2 3 1 4
Windy Standard I Repowering	200m	8
Knockippen	150m 180m	4 8



Consultation

- 4.49 The Applicant has held initial pre-application discussions about the Proposed Development with East Ayrshire Council. In addition, the methodology and scope presented in this section has been guided by previous experience of working on numerous similar scale schemes in the general locality.

POTENTIAL MITIGATION

- 4.50 Best practice guidance for EIA states that mitigation measures may include:
- a) avoidance of effects
 - b) reduction in magnitude of effects; and
 - c) compensation for effects (which may include enhancements to offset any adverse effects)
- 4.51 The primary mitigation to be adopted in relation to the Proposed Development will be embedded within the design of the Proposed Development and will relate to the consideration that will be given to avoiding and minimising landscape and visual effects during the evolution of the Proposed Development layout. This is sometimes referred to as 'mitigation by design'

RECEPTORS AND EFFECTS SCOPED IN OR OUT OF ASSESSMENT

- 4.52 In summary, those receptors scoped in or out of the LVIA following initial desk-based review are listed below:
- Scoped In – Direct effects on the landscape features of the site.
 - Scoped In - Physical effects on the landscape character of LCT 18A: East Ayrshire Plateau Moorlands, within the Site.
 - Scoped In – Indirect effects on other LCTs within 20 km radius of the Proposed Development where there is notable theoretical visibility of the Proposed Development.
 - Scoped Out – Indirect effects on other LCTs within 20 km radius of the Proposed Development where there is no notable theoretical visibility of the Proposed Development.
 - Scoped In – Effects on 15no. representative viewpoints and other principal visual receptors within 20km (e.g. settlements, roads, rights of way) where there is notable theoretical visibility of the Proposed Development.
 - Scoped Out – Effects on visual receptors within 20km (e.g. settlements, roads, rights of way) where there is no notable theoretical visibility of the Proposed Development.
 - Scoped In – Indirect effects on the Uplands and Moorlands LLA and any other LLAs within 20km where there is notable theoretical visibility of the Proposed Development.



- Scoped In – Indirect effects on the Dumfries House GDL and any other GDLs within 20km where there is notable theoretical visibility of the Proposed Development.
- Scoped Out – Indirect effects on any nationally designated landscapes or Wild Land as none are located within 20km of the Proposed Development.
- Scoped In – cumulative sites within 20 km, which are either, operational, consented or in planning (extended slightly to include all sites within the Hagshaw Cluster)
- Scoped Out – cumulative sites which are at pre-planning, or scoping stages, all turbines below 50 m and those below 80 m which are over 10m from the site.
- Scoped Out – cumulative sites which are beyond 20km, other than those in the Hagshaw Cluster.
- Scoped In – Detailed assessment of residential properties within 2 km of a proposed turbine as part of a standalone Residential Visual Amenity Assessment.
- Scoped Out - Detailed assessment of residential properties beyond 2 km of a proposed turbine, with these properties being addressed in the main LVIA text only.
- Scoped In – consideration of aviation lighting impacts on visual receptors.
- Scoped Out - consideration of aviation lighting impacts on landscape character.

SCOPING QUESTIONS FOR CONSULTEES

- a) Do you agree with the proposed Study Areas?
- b) Do you agree with the proposed viewpoint locations and night-time visualisation locations?
- c) Do you agree with the matters to be scoped out?
- d) Are there any other wind farms you are aware of within the 20 km study area to be included the cumulative assessment?



5. ORNITHOLOGY

INTRODUCTION

- 5.1 This chapter sets out the proposed approach to the evaluation of ornithological interests of the Site and the assessment of effects on birds during construction, operation and decommissioning of the Proposed Development.

BASELINE

DESK STUDY

- 5.2 A desk study has been undertaken to collate existing bird records and data using the following sources:
- a) NatureScot SiteLink website
 - b) Scottish Raptor Study Group (SRSG) – breeding raptor data for the Site and 2 km buffer around it for 2014-2024
 - c) Ornithological information from work completed in relation to wind farm developments in the wider area around the Site.

MOORLAND BREEDING BIRDS

Survey approach

- 5.3 Upland breeding bird surveys have been carried out on a monthly basis between April and July 2023, and April 2024 and July 2024, following the standard method for the survey of upland waders devised by Brown and Shepherd (1993)² and as updated by Calladine *et al.* (2009). The surveys recorded all relevant breeding birds, with a focus on breeding waders and species of particular conservation concern. Bird locations and behaviour were mapped to the 1:25,000 scale, using the standard BTO activity codes. Supplementary behavioural observations and notes were made to determine breeding locations as accurately as possible. Visits were made at least 7 days apart.
- 5.4 The breeding bird study area was defined as comprising the Site and its access track, and a 500 m buffer of this. Some of the non-moorland habitats such as improved sheep pasture and extensive stands of mature conifers were excluded from the survey, but all areas within the 500 m buffer were otherwise covered. Edges of woodland blocks were also surveyed in case they held tree nesting raptors such as merlin or kestrel. Some areas of young forestry were included (where trees were c. 1 m in height or less) as these held a similar suite of species to the open moorland habitats.

Preliminary results

- 5.5 The results of the Year 1 moorland breeding birds surveys for the Site can be found in Appendix 2. In summary, the recorded species assemblage was as expected, with meadow pipit and skylark dominating. Waders of conservation interest tended to occur within the 500 m buffer rather than on the Site itself.

LEKING BLACK GROUSE

Survey approach



- 5.6 Surveys for black grouse were based on the method recommended by Gilbert *et al.* (1998), using a Study Area which extended to 1.5 km from the Site boundary, were undertaken between March and May in both 2023 and 2024. The extensivity of the black grouse surveys was informed by early Site reconnaissance given the presence of considerable areas of sub-optimal black grouse habitat within the 1.5 km survey buffer.

Preliminary results

- 5.7 The results of the Year 1 black grouse surveys for the Site can be found in Appendix 2. No black grouse were recorded within the Study Area during the 2023 survey visits.

BREEDING DIURNAL RAPTORS

Survey approach

- 5.8 Surveys were carried out for nesting Target Species raptors within a Study Area defined as a 2 km buffer of the Site boundary between April and July in 2023 and 2024.
- 5.9 Birds survived directly included hen harrier, merlin, peregrine and short-eared owl. Breeding golden eagle and osprey were considered unlikely to be present, owing either to the geographical location of the Site, or the absence of suitable mature woodland habitat. Therefore, these species were scoped out of the suite of birds to be surveyed directly, although both would have been noted and recorded if found to be present during any of the surveys described here.
- 5.10 The method described by Hardey *et al.* (2009) was followed, whereby all potentially suitable breeding sites, such as crags and rock outcrops, isolated trees and areas of dense heather were systematically searched for evidence of breeding raptor. Trees within woodland were also searched for evidence of nesting honey buzzard, goshawk and red kite. Nests of more common raptors such as buzzard and kestrel were also noted.

Preliminary results

- 5.11 The results of the Year 1 diurnal raptor walkovers for the Site can be found in Appendix 2. In summary, a peregrine was confirmed as nesting within the wider Study Area during the breeding season covered by that report. Three chicks were subsequently ringed by the Raptor Study Group. The nest location was c. 460 m west of the Site boundary.
- 5.12 No other signs of scarce breeding diurnal raptors were found. However, several pairs of buzzard bred in and around the Study Area and a pair of kestrel bred in the quarry. Sparrowhawk was also thought to have bred in or near the Study Area during 2023.

BARN OWL AND OTHER NOCTURNAL SPECIES

Survey approach

- 5.13 Surveys for owls and other nocturnal species involved a combination of evening listening surveys and/or searches for signs in appropriate habitats (e.g. pellets in buildings potentially suitable for barn owl). In accordance with the methods in Hardey *et al.* (2009), these were carried out in April and May in 2023 and 2024. Any follow-up visits would have been undertaken from late June, in accordance with Shawyer (2011).



Preliminary results

- 5.14 The results of the Year 1 barn owl surveys for the Site can be found in Appendix 2. In summary, three pairs of barn owl were found to have bred within 500 m of the Site. Two of these pairs used dedicated nest boxes while the third was within the ruined Watsonburn Farm.

WINTER WALKOVERS

Survey approach

- 5.15 Monthly visits were made to the Site between October 2023 and March 2024, and October 2024 until March 2025, during which a general walkover was undertaken with the purpose of identifying whether notable numbers of over-wintering birds were present, including over-wintering hen harrier.

Preliminary results

- 5.16 The results of the Year 1 winter walkover surveys for the Site can be found in Appendix 2. In summary, a single over-flying goshawk, a perched peregrine and a single whooper swan were seen, as well as a number of other common raptors, wildfowl and passerines. None of the observations were indicative of winter roosts within a Zone of Influence of the Site.

VANTAGE POINT SURVEYS

Survey approach

- 5.17 Bird species likely to migrate through, breed or winter within 2 km of the Site, and which are known to be vulnerable to wind turbine collision, were considered to be Target Species for which Vantage Point (VP) surveys were undertaken. The Target Species generally included Schedule 1 raptors, divers, wildfowl such as swans or geese and waders. Secondary Species typically comprised more common raptors, gulls and raven.
- 5.18 Potential VP locations were first modelled in GIS and then visited in the field to groundtruth the modelled viewshed. As few vantage points as possible were selected, all outside the development envelope itself and a buffer area of 500 m. No part of the surveyed area was to be further than c. 2 km from a vantage point and overlaps between the vantage point viewsheds were avoided as far as was possible. The three selected VP locations and their viewsheds are shown in Appendix 2, Figure 3.2.
- 5.19 A minimum of 72 hours of observation time was spent at each vantage point each year, 36 hours in the breeding season (April to September) and 36 hours in the winter period (October to March).
- 5.20 The main aim of the observational work was to collect data for Target Species using the Study Area. This information will be used for modelling collision risk. Despite the candidate turbine being unknown at this stage height bands elected for categorising flights were < 90 m: 90-250 m and > 250 m.

Preliminary results

- 5.21 The results of the Year 1 VP surveys for the Site can be found in Appendix 2. In summary, during the 2023 breeding season, the recorded Target Species flights were



dominated by those associated with the pair of peregrine breeding in the quarry, west of the Site boundary (see earlier). (There was also a notable level of kestrel activity in the same general area.) Hen harrier were recorded in flight in the east of the Site, predominantly to the north-east of the Site boundary, and it was thought that this may have represented a breeding attempt within the SPA to the east. Hen harrier were also recorded in the south-east of the wider Study Area. Relatively few of these flights crossed into the Site, but there was a single red kite flight which traversed the eastern section of the Site.

- 5.22 During the 2023-2024 non-breeding season, Target Species flights were again dominated by those associated with peregrine which had nested in the quarry area. Hen harrier flights were the most frequent Target Species in the east of the Study Area, with one flight in the west. The highest level of hen harrier activity was recorded from VP2, and it was thought that up to four individuals comprised these sightings. Red kite flights became increasingly common throughout the Study Area as the winter period progressed, with flights recorded from all three VPs. There were also two flights of goshawk, and one of whooper swan, with the latter flight probably originating from waterbody within the quarry.

POTENTIAL LIMITATIONS OF SURVEY METHODS

- 5.23 Restoration works at the Site, including tree planting, were ongoing throughout both survey years. It was considered unlikely that this would have affected the VP surveys, given the widespread availability of open ground for use by birds such as raptors but could have had implications for ground-nesting species such as waders. Discussion of the effects of this limitation on the conclusions of the Ornithological Impact Assessment will be included in the EIAR.

DESIGNATED SITES

- 5.24 The Muirkirk and North Lowther Uplands Special Protection Area (SPA) abuts the Site along part of its south-eastern boundary. The SPA is designated for its breeding assemblage of upland birds, including regularly occurring populations of European importance of five Annex I species: hen harrier, short-eared owl, merlin, peregrine and golden plover. The SPA is considered to be an Important Ornithological Feature (IOF) of international importance.
- 5.25 The Muirkirk Uplands Site of Special Scientific Interest (SSSI) is also located directly east of the Site. The Muirkirk Uplands SSSI is both a geological and biological SSSI, designated primarily with respect to the breeding bird assemblage covered by the associated SPA designation, but also for its blanket bog and other upland habitat assemblage. Other non-SPA bird species are listed on the SSSI designation, including teal, common buzzard, red grouse, dunlin, snipe, curlew, redshank, whinchat, stonechat, northern wheatear and ring ouzel. The SSSI is considered to be an IOF of National importance.
- 5.26 The Proposed Development is not expected to have any direct impacts on designated sites. However, given the proximity of the Site to the Muirkirk and North Lowther Uplands SPA and the Muirkirk Uplands SSSI, there may be indirect impacts on the qualifying features of these sites. Impacts and resulting effects on the ornithological interests of the SPA/SSSI will be considered in full in the Ornithology chapter of the EIAR, and a full Habitats Regulations Assessment (HRA) will accompany the planning application.



PROPOSED SCOPE OF ASSESSMENT

STATUTORY AND PLANNING CONTEXT

5.27 The compilation of the OIA will take cognisance of relevant legislation, planning policies, conservation initiatives and general guidance, including:

- European Union (Withdrawal) Act 2018 (UK Government, 2018);
- Directive 2009/147/EC on the Conservation of Wild Birds ('Birds Directive') (European Parliament, 2009);
- The Conservation (Natural Habitats &c) Regulations 1994 (as amended) ('The Habitats Regulations');
- The Wildlife and Countryside Act 1981 (as amended) (UK Government, 1981 ;
- The Nature Conservation (Scotland) Act 2004 (as amended) (UK, Government, 2004);
- National Planning Framework 4; and
- South Lanarkshire Local Development Plan 2.

5.28 The following guidance will also be consulted whilst undertaking the assessment:

- Recommended bird survey methods to inform impact assessment of onshore wind farms (SNH, 2017);
- Bird Monitoring Methods (Gilbert *et al.*, 1998);
- Raptors: a field guide to survey and monitoring, 3rd edition (Hardey *et al.*, 2013);
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018);
- Developing field and analytical methods to assess avian collision risk at wind farms (Band *et al.*, 2007);
- Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action (SNH, 2000);
- Use of Avoidance Rates in the SNH Wind Farm Collision Risk Model (SNH 2018);
- Assessing connectivity with Special Protection Areas (SPAs) (SNH, 2016);
- Assessing significance of impacts from onshore wind farms on birds out with designated areas (SNH, 2018);
- Natural Heritage Zone (NHZ) Bird Population Estimates (Wilson *et al.*, 2015);



- Birds of Conservation Concern (BoCC) 5: the population status of birds in the United Kingdom, Channel Islands and Isle of Man (Stanbury *et al.*, 2021);
- The Scottish Biodiversity List (SBL);
- EIAs and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees (SNH, 2016); and
- Disturbance Distances in Selected Scottish Bird Species (NatureScot, 2022).

CONSULTATION

- 5.29 During the OIA process, consultation will be carried out as required, with organisations such as NatureScot, East Ayrshire Council, and other stakeholders likely to have an interest in the ornithological aspects of the Proposed Development site such as RSPB.

POTENTIAL IMPACTS AND THEIR EFFECTS

- 5.30 The OIA will draw on data collected during the desk study and fieldwork and will consider information gained during the consultation process.
- 5.31 The existing and ongoing survey work will provide sufficient information to place the Proposed Development site in context with regard to its important ornithological features. This will provide sufficient information to undertake the impact assessment based on the following broad themes:
- 5.32 Potential negative impacts and their resulting effects may include:
- Direct loss, fragmentation, disturbance or damage of habitats used by ornithological features;
 - Ornithological injury or fatalities;
 - Disturbance or displacement of ornithological features.
- 5.33 Potential positive impacts and their resulting effects could include:
- Habitat creation and enhancement;
 - Long-term protection for nationally important ornithological species and the habitats on which they are dependent.
- 5.34 The assessment of potential impacts will be undertaken against the baseline and the significance of these assessed using standard EIA criteria and professional judgement in line with CIEEM Guidelines for the completion of the OIA. This approach allows the impacts to be systematically identified and assessed for each aspect and stage of the proposed development according to standard assessment criteria and parameters.
- 5.35 The assessment process will be iterative, drawing on the expertise and experience of not only the project ornithologists, but also consultees, the project ecologists and the wider design team.



ORNITHOLOGICAL IMPACT ASSESSMENT METHODOLOGY

5.36 The assessment methodology will be based on the 2018 CIEEM EcIA Guidelines, and can be summarised in six steps:

- identifying and characterising Important Ornithological Features (IOFs);
- identifying and characterising impacts and their effects;
- identifying measures to avoid and mitigate impacts and their effects;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset still significant residual effects;
- identifying opportunities for enhancement to benefit ornithological features, and the monitoring of this.

IDENTIFYING IMPORTANT ORNITHOLOGICAL FEATURES (IOFS)

5.37 The sensitivity, value or importance of ornithological features can be related to a wide range of ecosystem services that they can provide to the environment, people or wider society. These benefits can include the conservation of genetic diversity, people's enjoyment or understanding of biodiversity, or the health benefits of biodiversity. A summary of an approach to valuing ornithological features in Scotland can be found in Table 5.1. The table shows how ornithological importance can be ascertained using a combination of statutory measures (legally protected sites and species) and non-statutory but widely accepted measures, such as the presence of species listed in biodiversity lists of local Biodiversity Action Plans (LBAPs) or as Birds of Conservation Concern (BoCC). Certain bird species have their own frameworks for the assessment of the importance of on-site populations. All these criteria can vary at different geographical scales.

Table 5.1: An approach to assessing Important Ornithological Features (IOFs) in Scotland

Level of sensitivity or importance	Examples (not exhaustive)
International (including European)	An internationally designated site or candidate site (SPA , pSPA , Ramsar site) or an area which NatureScot has determined meets the published selection criteria for such designations, irrespective of whether or not it has yet been notified. Regular presence of a qualifying feature of an existing or proposed statutory site of international ornithological importance, i.e. SPA or Ramsar site, in or around a site, with potential connectivity to its relevant SPA. (In such instances, numbers of birds making use of the development site and/or surrounding area should also be taken into account.) A regularly occurring population within or around a site representing internationally important numbers (e.g. > 1 % of the European resource) of a species listed in Schedule 1 of the EC Wild Birds Directive.
National	A nationally designated site (SSSI, NNR, Marine Nature Reserve) or a discrete area which NatureScot has determined meets the published selection criteria for national designation irrespective of whether or not it has yet been notified, where the designation is for ornithological features.



Level of sensitivity or importance	Examples (not exhaustive)
	A regularly occurring population representing > 1 % of the national population of a nationally important species, i.e. a priority species listed in the Scottish Biodiversity List and/or Schedules 1, 5 (S9 (1, 4a, 4b)) or 8 of the Wildlife and Countryside Act, or species of conservation concern where NatureScot has identified these as being priorities for assessment. This covers breeding, over-wintering and migrating populations. A regularly occurring and viable population of a UK Red Data Book species. A species assemblage fulfilling the Fuller criteria for a site of national importance.
Council	Any regularly occurring, locally significant population of a species listed as being nationally scarce (occurring in 16-100 10 km squares in the UK), Amber- or Red-Listed species of Conservation Concern, or in a relevant Council LBAP or Natural Heritage Zone profile on account of its rarity or localisation. Non-statutory designated wildlife sites designated for their bird assemblage. A species assemblage fulfilling the Fuller criteria for a site of County or Regional importance. Any regularly occurring, locally significant population of a species listed as being nationally scarce (occurring in 16-100 10 km squares in the UK) or in a relevant local BAP on account of its rarity or localisation.
Local	Locally important bird species such as those which are scarce within the local area or notable species (e.g. SBL or LBAP species) regularly resident on or using the site. A species assemblage fulfilling the Fuller criteria for a site of Local importance.
Site	Commonplace and widespread species which contribute to the functioning or value of the wider ecological landscape, such as common and widespread bird species, or occasional individuals of more notable species such as SBL or LBAP species, either resident on or using the site.

IDENTIFYING IMPACTS AND THEIR EFFECTS

- 5.38 Characterising impacts refers to the changes expected in the extent and integrity of an IOF. It takes into consideration the fact that different impacts on different IOFs can result in permanent or temporary effects of differing magnitudes, and this is also dependent on their timing and/or frequency of occurrence, and whether or not they can be reversed.
- 5.39 Impacts will be defined in this OIA as being High, Medium, Low or Neutral, as summarised in Table 5.2. Impacts may be negative (detrimental) or positive (beneficial).



Table 5.2: Criteria for describing impacts and effects on Important Ornithological Features

Impact type	Description
High	High impacts may include those that result in large-scale, permanent changes in an IOF, and likely to change its ecological integrity. These impacts are likely to result in overall changes in the conservation status of a species population or supporting habitat type at the location(s) or geographical scale under consideration.
Medium	Medium impacts may include moderate-scale permanent changes in an IOF, or larger-scale temporary changes, but the integrity of the feature is not affected. This may mean that there are temporary changes in the conservation status of a species-population or supporting habitat type(s) at the location(s) or geographical scale under consideration, but these are unlikely to be irreversible or long-term.
Low	Low impacts may include those that are small in magnitude, have medium-scale temporary changes, and where integrity is not affected. These impacts are unlikely to result in overall changes in the conservation status of a species population or its supporting habitat type(s) at the location(s) under consideration, but it does not exclude the possibility that mitigation or compensation will be required.
Neutral	There is no perceptible change in the ornithological receptor.

- 5.40 Different impacts and their outcomes also have different probabilities of occurring. It is rarely possible to quantify probability accurately in the natural world in the absence of large, long-running data sets, and therefore for the purposes of this OIA, probabilities are simply assessed qualitatively and relatively, using the terms defined in Table 5.3.

Table 5.3: Criteria for categorising the probability of effects occurring

Probability	Description
Certain	It is reasonable to conclude that these effects will occur as a result of the proposals.
Likely	It is reasonable to conclude that these effects are more likely to occur than not occur.
Unlikely	It is reasonable to conclude that these effects are less likely to occur than to occur.

SIGNIFICANCE OF EFFECTS

- 5.41 In accordance with CIEEM (2018), a "significant effect" is one which supports (positive) or undermines (negative) biodiversity conservation objectives for a stated IOF, or for biodiversity generally if this is more relevant to the circumstances being assessed. These significant effects are considered by an ornithological professional to be sufficiently important to warrant explicit assessment and reporting so that a decision-maker is adequately informed of the environmental consequences of a proposed project.



- 5.42 The significance of an effect on an IOF is given with reference to a specific spatial scale, which may or may not be related to the geographical scale used to define the IOF. However, mitigation and compensation solutions may need to be applied so as to ensure outcome consistency with the scale at which the significant effect has been identified.

CUMULATIVE EFFECTS

- 5.43 The effects of the Proposed Development will be assessed in isolation and in combination with predicted effects of other wind farm developments. The theoretical cumulative and in combination assessment will focus on the potential collision risk impacts on SPA species, in the context of the SPA populations. The method to be adopted will follow that used for other recent cumulative impact assessments for the SPA, such as that for Bodinglee Wind Farm, Mill Rig Wind Farm, Lethans Wind Farm, Kype Muir Extension and Bankend rig 3, which were undertaken with advice and support from NatureScot in order to ensure consistency. Schemes to be included in the assessment will be taken from the material provided by NatureScot, on the understanding that the lists provided will include schemes comprising three turbines or more, and located within 2 km of the SPA, including wind farms at application, consented or operational stages, together with those which are or could be subject to an appeal against a recent refusal of permission. Wind farms at scoping stage will not be included.
- 5.44 The collision risk values obtained for the Proposed Development using the recently updated (2024) method for the calculation of ornithological collision risk will then be added to those provided by NatureScot.

POTENTIAL MITIGATION

- 5.45 The baseline results of the ornithology surveys will be taken into consideration when finalising the Site design, and mitigation will be built into the Site design. For example, minimising the placement of turbines within zones of potential elevated collision risk and the avoidance of a zone c. 250 m from the boundary of the SPA, although we may explore with NatureScot the possibility of reducing this when all flight activity data is in.
- 5.46 Construction timings and land management regimes will also be considered.

POTENTIAL SIGNIFICANT EFFECTS

- 5.47 With respect to the potential OIFs relevant to the Site, it is considered likely that all except black grouse will be included in the OIA, with an assigned level of importance to be determined when the Year 2 surveys have been completed. This will include the nearby SPA and SSSI, and the need for a shadow HRA for the SPA, and collision modelling for the Target Species identified through the vantage point surveys as posing a risk of collision.

MATTERS SCOPED OUT OF ASSESSMENT

- 5.48 It is likely that black grouse and species on the Green-list will be scoped out of the OIA.



QUESTIONS FOR CONSULTEES

Do you have any information which would be relevant to the preparation of the EIA in relation to ornithology?

Are you content with, or do you have any comments on, the baseline survey methods and level of survey effort?

Are you content with, or do you have any comments on, the list of potential effects and impact assessment methods?

Do you agree that black grouse and species on the Green-list can be scoped out of the EIA?



6. ECOLOGY

INTRODUCTION

- 6.1 This chapter sets out the proposed approach to the evaluation of ecology interests of the Site and the assessment of effects on ecological features during construction, operation and decommissioning of the Proposed Development.

BASELINE

- 6.2 Please note that when the Site survey work started, a larger study area than the current Site boundary was being considered. Therefore, the ecology plans show a study area greater than the proposed Site boundary.

DESIGNATED SITES

- 6.3 The closest statutory designations to the Site are the Muirkirk Uplands SSSI and the Muirkirk and North Lowther Uplands SPA. Details of the SPA are set out in Chapter 5 Ornithology. As well as the ornithological species covered by the SPA designation, the Muirkirk Uplands SSSI is also designated for its blanket bog and other upland habitat types. The SPA is considered to be an Important Ecological Feature (IEF) of international importance and the SSSI an IEF of National importance, both requiring consideration in the Environmental Impact Assessment Report (EIAR).
- 6.4 A search for non-statutory designated sites within 2 km of the Site boundary identified three sites, the closest of which included:
- a) Glenmuir Water Local Nature Conservation Site (LNCS) c. 270 m north of the Site at the closest point is designated for the variety of woodland habitats it supports, including semi-natural gorge woodland, old plantation, dense scrub and small patches of semi-improved pasture along the Glenmuir Water.
 - b) New Cumnock Wetlands LNCS c. 300 m south of the access track at the southern boundary, designated for its swamp and mire habitats.
- 6.5 An area of woodland listed on NatureScot's Ancient Woodland Inventory (AWI) encroaches into the northern Site boundary. There are also a number of other areas of ancient woodland within 2 km of the Site.
- 6.6 The LNCSs and ancient woodland are considered to be Council level IEFs to be included in the EIAR.
- 6.7 The Proposed Development will not have any direct impacts on designated sites. However, given the proximity of the SPA, SSSI, LNCS and ancient woodland the potential for indirect impacts will be considered in the EIAR, with the SPA screened as part of a Habitats Regulations Assessment (HRA) within the Ornithology Chapter of the EIAR, and the need or otherwise for a full (shadow) HRA determined by that screening process.
- 6.8 Knochshinnoch Lagoons Scottish Wildlife Trust (SWT) Reserve is located 650 m south of the Site. Given its separation distance from the Site no direct or indirect impacts would be likely therefore impacts on the SWT reserve can therefore be scoped out of the EIAR.



HABITATS AND FLORA

- 6.9 Fully details of the habitat survey method, including any limitations, as well as the results can be found in the interim Ecology Technical Report (Appendix 3)

Site surveys

- 6.10 Between June-September 2024, a habitat survey of the Site and a 250 m buffer of this was undertaken using Scottish EUNIS (European Nature Information System). The standard habitat survey approach was "extended" to include a search for invasive non-native species (INNS).
- 6.11 Following the mapping of habitats to Scottish EUNIS, areas considered likely to be Groundwater Dependent Terrestrial Ecosystems (GWDTEs) or Annex 1 habitat types were classified according to the National Vegetation Classification (NVC). The method adopted followed that outlined in Rodwell 2006, by which all habitats present within the Site were classified and mapped according to standard categories.
- 6.12 Peatland condition was assessed at a broad level using the categories given in Annex 1 of NatureScot's standard advice on peatland, carbon-rich soils and priority peatland habitats in development management.

Potential limitations associated with the habitat surveys

- 6.13 Throughout the 2024 survey season, sewage sludge spreading was being carried out across the Study Area, as part of the remediation of abandoned open cast workings. This meant that large tracts of ground through the centre of the Site were covered in recently spread sewage sludge, and there were regular movements through the Site of vehicles and other processing plant associated with this. For health and safety reasons, soft ground where sewage sludge had been recently spread could not be traversed by the surveyors, and there was also a need to avoid being in close proximity to these ongoing remediation works and the processing of the sludge. Where these restrictions occurred, habitats were instead observed from a distance through binoculars. Due to the nature of the ephemeral and sparse vegetation in these areas, this was not judged to be a significant limitation.
- 6.14 In addition, tree planting was occurring or had recently occurred in parts of the Site. Given the very early growth stages of the trees, the habitat code assigned to these parcels related to the dominant ground vegetation. Where newly planted woodland was more established, but still in an early stage, this was classified as such, and the ground layer recorded if considered to be a GWDTE or Annex 1 habitat type.

Results

- 6.15 42 % of the habitats identified on site comprise IEFs likely to be of Council or Local importance, and these will be treated as IEFs in the EIAR. These included habitats with the potential to be considered Annex 1 habitats and GWDTEs. The remaining 58 % habitats recorded were widespread and/or commonplace, considered likely to have importance at the Site or less than Site level. These will therefore be scoped out of the EIAR.
- 6.16 The majority of potential Annex 1 habitats on the Site comprised peatlands, or wet heath on shallower peat. There were areas of M17 within the Site which achieved good condition scores and were considered to be priority peatland communities where impacts have the potential to raise issues of national interest. The majority of the



remaining peatlands at the Site were primarily M20/M25 mosaics on deeper peat, which had been modified by historic grazing and drainage. These priority peatlands are unlikely to raise issues of national interest but could be candidates for measures to offset impacts from the proposed Development.

- 6.17 Although a notable proportion of the Site was classifiable as GWDTE based on the NVC criteria used by SEPA, a number of these habitat types can be fed by a combination of both surface and groundwaters and would not typically be considered habitats of high nature conservation value.

BATS

Baseline

- 6.18 Pre-existing information of records of bat species near the vicinity of the Site was reviewed, including data collected for other wind farm developments within 10 km of the Site. The following surveys were undertaken on site in 2024:
- a) In April 2024 a Preliminary Roost Assessment (PRA) for built structures within 200 m of the Site boundary was undertaken.
 - b) Individual trees across the Site, and within a 30 m buffer, have been assessed for the presence of potential roost features (PRFs) in accordance with the protocol for visual inspection of trees (Collins, 2023).
 - c) Eight static bat detectors were deployed on the Site over three deployment periods to cover the early, core breeding and late summer bat activity periods. (May, June-July, and August-September).
- 6.19 While weather data for the Site itself was not available, full meteorological data from the Lethans Wind Farm Extension mast, located c. 5 km to the east of the Site has been utilised.
- 6.20 At the end of the data collection period, all calls recorded using the bat detectors were tabulated and entered into ECOBAT to assess relative bat collisions risk.
- 6.21 Fully details of the survey methods, including any limitations, as well as the results can be found in the Bat Technical Report (Appendix 4)

Results

- 6.22 The desk-based assessment found records of six bat species within 10 km of the Site Boundary.
- 6.23 Results of the PRA of structures only found one structure within 200 m of the Site at Watsonburn Farm, and it was considered to have low bat roost suitability, only suitable for a small number of bats.
- 6.24 The ground level tree survey identified 41 trees within the Study Area with PRFs. Of these, 34 were rated as PRF and seven as PRF-I, where it could be established from ground level that the PRF would only be suitable for a small number of bats.
- 6.25 Details of the data recorded by the static bat detectors can be found in the Bat Technical Report (Appendix xx). Overall, a total of 67,916 bat passes were recorded across all of the deployments. Of these, 96.5 % were from pipistrelle species (81.3 %



were soprano pipistrelle and 15.2 % were common pipistrelle). *Nyctalus* passes made up 0.9 % of the passes across the Site, with 599 recorded in total. A total of 1,723 *Myotis* (2.5 %) and six (< 0.1 %) brown long-eared bat (BLE) passes were also identified.

- 6.26 The activity levels provided in the ECOBAT output were used to complete the NatureScot collision risk assessment, using both median and maximum percentile values. The collision risk assessment focused on soprano pipistrelle, common pipistrelle and *Nyctalus* bats. *Myotis* and BLE were scoped out of the collision risk assessment due to their lower risk of collision. The overall site-wide median risk category was Low for all three species, but when the maximum risk category was used, the risk was High for soprano pipistrelle, and Medium for common pipistrelle and *Nyctalus* bats. Further collision risk assessment was also carried out for each static location, based on both the median and maximum risk categories.
- 6.27 Based on these results:
- a) Maternity roosts within buildings will not be considered in the EclA and therefore can be scoped out of the EIAR.
 - b) The precautionary principle will be adopted and direct and indirect impacts on tree bat roosts will be considered in the EIAR, in the absence of full aerial inspection surveys for trees recorded as having PRFs.
 - c) Common pipistrelle and soprano pipistrelle should be considered a Local level IEF, for the purposes of the EIAR, and *Nyctalus* bats (Leisler's) should be considered a Council level IEF. The low collision risk of *Myotis* species of bats and BLE mean that they will not need to be considered IEFs and will be scoped out of the EIAR.

OTTER

Baseline

- 6.28 A desk-based review of existing data has been undertaken to identify the presence of protected or notable species in the near vicinity of the Site. A formal otter survey of the Site and a 200 m buffer (where access allowed) has also been undertaken. Full details of the otter survey method, including any limitations, as well as the results can be found in the interim Ecology Technical Report (Appendix 3).

Results

- 6.29 A single record for otter within 2 km of the Site was identified through the desk-based assessment.
- 6.30 The Site surveys identified that almost all of the watercourses inspected offered some form of commuting and foraging habitat for otter, particularly those that were tributaries of the Glenmuir Water to the north of the Site. However, all inspected watercourses lacked suitable features for resting sites such as overhanging sections of bank or tree roots. The exceptions to this were some overhanging tree roots along a watercourse adjacent to the access track near the A76, and potential hollows within the steep cliff edge along the southern perimeter of the western quarry pool within the main Site area.
- 6.31 The watercourses within the main Site tended to be narrow, and many occurred within patches of dense rush or mire habitats. A number of the watercourses located in close



proximity to remediation works had been artificially manipulated, with newly created ditch systems now taking the majority of the flow. Far upstream sections of unnamed tributaries were often only identifiable as flushes in wet ground. No resting sites were recorded within the Study Area, but a total of six spraints were noted, with more frequent sprainting activity seen along an unnamed remediation ditch in the south-east of the Site, and around the perimeter of the western quarry pool.

- 6.32 The finding of otter spraints within the Site indicated that otter were active within the general area, and likely to be using the ground to navigate between preferred hunting areas. The Site watercourses generally lacked features suitable for resting sites but based on the geographical spread of the recorded spraints, it was considered likely that the various burns across the Site were part of the territory of at least one otter. It was therefore likely that otter were also utilising burns where no signs were recorded in 2024, albeit infrequently.
- 6.33 Otter will be considered a Local level IEF in the EIAR.

WATER VOLE

Baseline

- 6.34 In addition to a desk-based assessment to identify the presence of water vole in the near vicinity of the Site, a water vole survey was conducted for the Site and a 50 m buffer (where access allowed). Full details of the water vole survey method, including any limitations, as well as the results can be found in the interim Ecology Technical Report (Appendix 3).

Results

- 6.35 The desk-based assessments identified no pre-existing records of water vole within 2 km of the Site. The field surveys also found no signs of water vole within the Study Area.
- 6.36 Suitable habitat for water vole only occurred in restricted and isolated patches, along sections of watercourse and informal ditches that had extended areas of rushes. Where optimal habitat was noted, this tended to be where watercourses had steep mud banks with suitable cover vegetation, and underground sections with slow flow.
- 6.37 Small vole signs (likely to be field vole) were widespread across the Site.
- 6.38 Based on these results, water vole is not considered an IEF and therefore will be scoped out of the EIAR.

BADGER

Baseline

- 6.39 Pre-existing information in relation to badgers was reviewed, and searches for badger field signs were undertaken in suitable habitats within the Site and a 100 m buffer (where access allowed), as per the survey guidelines provided by Scottish Badgers. Due to the scale of the Site, the surveys concentrated on areas suitable for sett excavation, including woodland habitats and dry slopes.
- 6.40 Full details of the badger survey method, including any limitations, as well as the results can be found in the interim Ecology Technical Report (Appendix 3).



Results

- 6.41 The desk study identified a single road casualty record for badger recorded in 2022 c. 3.5 km west of the Site along the A76. Survey work for High Cumnock Wind Farm in 2012 recorded two disused badger setts c. 500 m to the west of the Site boundary. In addition, a single disused mammal hole was identified adjacent to the access track for the Site, although at that time there was no conclusive evidence that this was being used by badger.
- 6.42 The field survey in 2024 concluded that the Site and 100 m buffer generally comprised habitats unattractive to badger. There were no signs of badgers within the Study Area.
- 6.43 Badgers are considered to be absent from the Site and will therefore be scoped out of the EIAR.

RED SQUIRREL

Baseline

- 6.44 A desk-based search was carried out for records of red squirrel within the last 10 years and located within the Site and a 2 km buffer.
- 6.45 A search for signs of red squirrels was undertaken in 2024 within suitable habitat within the Site and 50 m buffer.
- 6.46 Full details of the method and the results of the red squirrel surveys can be found in appendix 3.

Results

- 6.47 The desk-based assessment found that the closest records of red squirrel to the Site were sightings in New Cumnock from 2016, 2020 and 2021, c. 1.5 km south of the Site.
- 6.48 No confirmed signs of either red or grey squirrel were recorded within the Site or its wider Study Area during the field surveys. Mature woodland cover was almost entirely absent from the majority of the Site, being restricted to three isolated woodland blocks. The species was therefore considered to be absent from the Study Area. Until the recently planted woodland on the Site has matured, red squirrel are not considered to be an IEF and will therefore be scoped out the EIAR.

GREAT CRESTED NEWT

Baseline

- 6.49 Pre-existing data records were checked for the presence of great crested newt (GCN) within the vicinity of the Site.
- 6.50 A GCN Habitat Suitability Index (HSI) has been undertaken for all ponds within 500 m of the turbine envelope parts of the Site boundary, where access was available, using the standard HSI method to derive an HSI score.
- 6.51 All ponds with an HSI score of average and above, and located within 500 m of the potential turbine envelope, then had standard GCN eDNA testing carried out in June 2024. This resulted in 22 ponds being tested. The eDNA samples were taken using



eDNA survey kits provided by ADAS, using the standard eDNA sampling protocol. Samples were then return to ADAS for analysis.

- 6.52 Full details of the GCN survey method, including any limitations, as well as the results can be found in the interim Ecology Technical Report (Appendix 3).

Results

- 6.53 No pre-existing records of GCN were found.

HSI appraisal

- 6.54 A total of 60 ponds were reviewed as part of the HSI appraisal. Of those 60 ponds, a third (20) were no longer present or were not accessible. Out of the remaining 40 ponds, 12 (20 % of the total) had HSI scores indicating excellent suitability for GCN, five had good suitability and 11 had average suitability. Of the less suitable waterbodies, four were scored as having below average suitability and eight had poor suitability.

eDNA sampling

- 6.55 A total of 21 out of the 22 ponds sampled returned a negative GCN eDNA result. Pond 40 returned an indeterminate result due to sediment levels in the sample. However, this pond was amongst a cluster of six ponds, and the other five all returned a negative result. It was therefore assumed that Pond 40 was also likely to be negative.
- 6.56 Although there were a large number of waterbodies at the Site and in the wider Study Area, many had been altered as a result of historic works at the Site and ongoing remediation. It was also possible that those works had also affected the water quality of the waterbodies. A number of waterbodies returned an HSI score of average or above indicating high suitability for GCN but the eDNA survey indicated that the species was at the time of sampling absent across the Site. GCN is not therefore considered to be an IEF and will be scoped out of the EIAR.

FISHERIES

Baseline

- 6.57 A number of data sources have been consulted for pre-existing data relevant to fisheries.
- 6.58 In autumn 2024 fish habitat assessment of watercourses within the Site potentially affected by the proposed Development were undertaken using a modified version of the Scottish Fisheries Coordination Centre (SFCC) (2007) outlined in Hendry and Cragg-Hine, 1997. Full details of the survey method, including any limitations, as well as the results can be found in the Ecology Technical Report (Appendix 3).

Results

- 6.59 Salmon were recorded as historically present on the Glenmuir Water which is approximately 0.55 km in distance hydrologically from the Proposed Development boundary. Salmon were also recorded as historically present on the River Nith and within lower reaches of the Muirfoot Burn. This is approximately 1.45 km in distance hydrologically from the Proposed Development.



- 6.60 Fish habitat quality was rated as Poor or Low at seven out of the ten sampling locations. Moderate habitat quality was recorded at three locations. None of the survey locations featured Good or High fish habitat quality.
- 6.61 Salmonid spawning suitability was rated Not Suitable at nine out of ten locations, and Sub-Optimal at one. None of the survey locations featured Optimal salmonid spawning suitability.
- 6.62 The Proposed Development has limited habitats within the Site boundary with the potential to support fish populations, however the lower reaches of watercourses and watercourses with hydrological links downstream are known/likely to support salmonid populations, these include the Muirfoot Burn within the River Nith catchment and the Glenmuir Water. In the absence of data to confirm presence/absence and population dynamics, these species and their habitats will be considered as IEFs of Local importance and will be included within the EIAR.

OTHER SPECIES

Brown hare

- 6.63 Suitable habitat for brown hare occurred within drier grassland habitats within the Site, particularly along the access track. However, it was considered likely that this species would be present at a density below which survey would produce useful returns. It was therefore agreed during scoping that brown hare surveys would not be practicable.
- 6.64 During the 2024 field surveys, a single sighting of brown hare was made within the western section of the Site at Crawford Hill. This supported the hypothesis that brown hare were present, but at only a low density. Despite the omission from the survey suite, it will still be considered in the EIAR as an IEF of Local importance.

Reptiles

- 6.65 Suitable habitats for all three of common lizard, slow-worm and adder were noted within the Site, including south-facing areas of undergrowth within the drier bog habitats, tussocky grassland and rough pasture, particularly when located in close proximity to shorter grassland or exposed rocks where reptiles may bask. Hibernation suitability for reptiles was generally limited due to the abundance of open ground. However, deadwood piles within Guelt Young Wood offered potential hibernacula, although these were small in size. Rock piles around quarry pools, although offering suitable hibernacula habitat, were generally surrounded by recently remediated ground which would no longer support reptile species. Nevertheless, it was also considered likely that they would be present at a density below which survey would produce useful returns. It was therefore agreed during scoping that reptile survey would not be practicable. During the 2024 surveys, two casual records for common lizard were made, supporting the hypothesis that such species were present at a low density.
- 6.66 Adder, common lizard and slow worm will therefore be included in the EIAR as an IEF of Local importance.

SPECIES SCOPED OUT OF THE ECOLOGICAL IMPACT ASSESSMENT (ECIA)

- 6.67 At this time, the following potential IEFs are considered unlikely to occur within the Site, and therefore will not be covered by the EcIA within the EIAR:

- Invasive non-native species



- Water vole;
- Badger;
- Red squirrel ;
- Great crested newt (assuming no impacts on ponds along the access track);
- Scottish wildcat;
- Pine martin; and
- Freshwater pearl mussel.

6.68 The location of the Site was out with any historic records for the distribution of pine marten. Furthermore, woodland habitats within the Site and wider area were fragmented and isolated, and not of an age suitable to support pine marten.

6.69 Freshwater pearl mussel relies on the presence of salmonid fish for dispersal at the start of their life cycle. Due to the absence of suitable habitat for migratory salmonid fish species within the Site, and general structure and quality of the Site watercourses, it was considered unlikely that freshwater pearl mussel was present within the Site.

PROPOSED SCOPE OF ASSESSEMENT

STATUTORY AND PLANNING CONTEXT

6.70 The compilation of the EcIA will take cognisance of relevant legislation, planning policies, conservation initiatives and general guidance, including:

- The Conservation (Natural Habitats etc.) Regulations 1994 as amended, including amendments made in 2017 with limited relevance to Scotland, and the post-Brexit equivalents of this;
- The Wildlife and Countryside Act (as amended) 1981;
- The Wildlife and Natural Environment Act (Scotland) 2011;
- The Protection of Badgers (Scotland) (as amended) Act 1992;
- The Nature Conservation (Scotland) Act, 2004;
- the Scottish Biodiversity List;
- Policies 3 and 4 of National Planning Framework 4;
- Ayrshire Local Biodiversity Action Plan.

CONSULTATION

6.71 During the EcIA process, consultation will be carried out as required, with organisations such as NatureScot, East Ayrshire Council, and other stakeholders likely to have an interest in the Proposed Development site. Any data obtained from these sources will be used to inform further the EcIA.



POTENTIAL IMPACTS AND THEIR EFFECTS

- 6.72 The EcIA will draw on data collected during the desk study and fieldwork and will consider information gained during the consultation process.
- 6.73 The existing and proposed survey work will provide sufficient information to place the Proposed Development site in context with regard to its important ecological features. This will provide sufficient information to undertake the impact assessment based on the following broad themes:
- 6.74 Potential negative impacts and their resulting effects may include:
- Direct habitat loss, fragmentation, disturbance and damage;
 - Habitat loss, fragmentation and damage for faunal species;
 - Discharge to a waterbody and other freshwater ecological impacts;
 - Disturbance to/ displacement of faunal species;
 - Faunal injury and fatality.
- 6.75 Potential positive impacts and their resulting effects could include:
- Habitat creation and enhancement;
 - Long-term protection for nationally important habitats and/or species.
- 6.76 The assessment of potential impacts will be undertaken against the baseline and the significance of these assessed using standard EIA criteria and professional judgement in line with CIEEM Guidelines for the completion of the EcIA. This approach allows the impacts to be systematically identified and assessed for each aspect and stage of the proposed development according to standard assessment criteria and parameters.
- 6.77 The assessment process will be iterative, drawing on the expertise and experience of not only the project ecologists, but consultees, hydrologists, noise and aerial pollution experts, landscape architects and the wider design team.

ECOLOGICAL IMPACT ASSESSMENT METHODOLOGY

- 6.78 The assessment methodology will be based on the 2018 CIEEM EcIA Guidelines, and can be summarised in six steps:
- identifying and characterising Important Ecological Features (IEFs);
 - identifying and characterising impacts and their effects;
 - identifying measures to avoid and mitigate impacts and their effects;
 - assessing the significance of any residual effects after mitigation;
 - identifying appropriate compensation measures to offset still significant residual effects;



- identifying opportunities for ecological enhancement.

IDENTIFYING IMPORTANT ECOLOGICAL FEATURES (IEFS)

6.79 The sensitivity, value or importance of ecological features can be related to a wide range of ecosystem services that they can provide to the environment, people or wider society. These benefits can include the conservation of genetic diversity, people's enjoyment or understanding of biodiversity, or the health benefits of biodiversity. A summary of an approach to valuing ecological features in Scotland can be found in Table 6.1. The table shows how ecological importance can be ascertained using a combination of statutory measures (legally protected sites and species) and non-statutory but widely accepted measures, such as the presence of notable habitats and species listed in biodiversity lists of local Biodiversity Action Plans (LBAPs). Use can also be made of the Ratcliffe assessment criteria for the selection of sites with nature conservation value (Ratcliffe, 1977) and certain protected species have their own frameworks for the assessment of the importance of on-site populations. All these criteria can vary at different geographical scales.

Table 6.1: An approach to assessing Important Ecological Features (IEFs) in Scotland

Level of sensitivity or importance	Examples (not exhaustive)
International (including European)	An internationally designated site or candidate site (Special Protection Area (SPA), potential Special Protection Area (pSAC), Special Area of Conservation (SAC), candidate Special Area of Conservation (cSAC), potential Special Area of Conservation (pSAC), Ramsar site, Biogenetic Reserve) or an area which NatureScot has determined meets the published selection criteria for such designations, irrespective of whether or not it has yet been notified. A viable area of a habitat type listed in Annex 1 of the Habitats Directive, or smaller areas of such habitat that is essential to maintain the viability of that ecological resource. A regularly occurring population of an internationally important species, i.e., those listed in Annex 1, 2 or 4 of the Habitats Directive.
National	A nationally designated site (SSSI), National Nature Reserve (NNR), Marine Nature Reserve or a discrete area which NatureScot has determined meets the published selection criteria for national designation irrespective of whether or not it has yet been notified. A regularly occurring population of a nationally important species i.e., a priority species listed in the former UK BAP, Scottish Biodiversity List and/or Schedules 1, 5 (S9 (1, 4a, 4b)) or 8 of the Wildlife and Countryside Act, or a UK Red Data Book species.
Council	Non-statutory designated wildlife sites (e.g., LNCSS), and areas of semi-natural ancient woodland greater than 0.25 ha. Viable areas of key habitats identified in local BAPs or smaller areas of such habitats that are essential to maintain the viability of that ecological resource. Any regularly occurring, locally significant population of a species listed as being nationally scarce (occurring in 16-100 10 km squares in the UK) or in a relevant local BAP on account of its rarity or localisation.
Local	Other sites which the designating authority has determined meet the published ecological selection criteria for designation at the local level. Regularly occurring features or small population(s) of species that are scarce within the local area or which appreciably enrich the local area's habitat or species resource.



Level of sensitivity or importance	Examples (not exhaustive)
Site	Commonplace and widespread semi-natural habitats e.g., scrub, poor semi-improved grassland, coniferous plantation woodland and intensive arable farmland. Small numbers of species or small areas of habitat considered to be notable on account of its conservation importance, for example those that are scarce in the local area, those which appreciably enrich the local area's habitat or species resource, or those listed on a relevant LBAP.
< Site	Habitats of little or no ecological value e.g., amenity grassland or hard standing.

IDENTIFYING IMPACTS AND THEIR EFFECTS

- 6.80 Characterising impacts refers to the changes expected in the extent and integrity of an IEF. It takes into consideration the fact that different impacts on different IEFs can result in permanent or temporary effects of differing magnitudes, and this is also dependent on their timing and/or frequency of occurrence, and whether or not they can be reversed.
- 6.81 Impacts will be defined in this EclA as being high, medium, low or neutral, as summarised in Table 6.2. Impacts may be negative (detrimental) or positive (beneficial).

Table 6.2: Criteria for describing impacts and effects on Important Ecological Features

Impact type	Description
High	High impacts may include those that result in large-scale, permanent changes in an IEF, and likely to change its ecological integrity. These impacts are likely to result in overall changes in the conservation status of a species population or habitat type at the location(s) or geographical scale under consideration.
Medium	Medium impacts may include moderate-scale permanent changes in an IEF, or larger-scale temporary changes, but the integrity of the feature is not affected. This may mean that there are temporary changes in the conservation status of a species-population or habitat type at the location(s) or geographical scale under consideration, but these are unlikely to be irreversible or long-term.
Low	Low impacts may include those that are small in magnitude, have medium-scale temporary changes, and where integrity is not affected. These impacts are unlikely to result in overall changes in the conservation status of a species population or habitat type at the location(s) under consideration, but it does not exclude the possibility that mitigation or compensation will be required.
Neutral	There is no perceptible change in the ecological receptor.

- 6.82 Different impacts and their outcomes also have different probabilities of occurring. It is rarely possible to quantify probability accurately in the natural world in the absence of large, long-running data sets, and therefore for the purposes of this EclA,



probabilities are simply assessed qualitatively and relatively, using the terms defined in Table 6.3.

Table 6.3: Criteria for categorising the probability of effects occurring

Probability	Description
Certain	It is reasonable to conclude that these effects will occur as a result of the proposals.
Likely	It is reasonable to conclude that these effects are more likely to occur than not occur.
Unlikely	It is reasonable to conclude that these effects are less likely to occur than to occur.

SIGNIFICANCE OF EFFECTS

- 6.83 In accordance with CIEEM (2018), a "significant effect" is one which supports (positive) or undermines (negative) biodiversity conservation objectives for a stated IEF, or for biodiversity generally if this is more relevant to the circumstances being assessed. These significant effects are considered by an ecological professional to be sufficiently important to warrant explicit assessment and reporting so that a decision-maker is adequately informed of the environmental consequences of a proposed project.
- 6.84 The significance of an effect on an IEF is given with reference to a specific spatial scale, which may or may not be related to the geographical scale used to define the IEF. However, mitigation and compensation solutions may need to be applied so as to ensure outcome consistency with the scale at which the significant effect has been identified.

MITIGATION AND ENHANCEMENT

- 6.85 The EcIA process described above will be used to identify whether or not there are significant ecological effects of the proposed development which will need to be ameliorated. It would not be appropriate at this time to be prescriptive regarding what those effects will be, but it is likely that a number of mitigation and/or enhancement measures will be incorporated into the proposals and/or will form commitments to be secured by Condition where necessary. The requirement for mitigation will be based on the established CIEEM (2018) mitigation hierarchy sequence of "avoid, mitigate, compensate, enhance".



QUESTIONS FOR CONSULTEES

Do you have any information which would be relevant to the preparation of the EIA in relation to ecology?

Are you content with, or do you have any comments on, the baseline survey methods and level of survey effort?

Are you content with, or do you have any comments on, the list of potential effects and impact assessment methods?

Do you agree that the species listed in paragraph 6.67 can be scoped out of the EIA?

Do you have any suggestions for potential biodiversity enhancement measures that could be incorporated into the Proposed Development?



7. ARCHAEOLOGY AND CULTURAL HERITAGE

INTRODUCTION

- 7.1 The cultural heritage of an area comprises archaeological sites, historic buildings, gardens and designed landscapes, historic battlefields and other sites, features or places in the landscape that have the capacity to provide information about past human activity, or which have cultural relevance due to associations with folklore or historic events. Sites of cultural heritage interest may derive some, or all, of that interest from their setting within the wider landscape.
- 7.2 The EIA Report Archaeology and Cultural Heritage Chapter will characterise the historic environment within the Site and in the wider area. Consultation, desk-based research including field visits, a ZTV and setting visits will be used to define proportionate study areas for the assessment. A baseline of designated and non-designated heritage assets will be assembled to assess the potential direct, indirect, and setting effects of the Proposed Development. Where likely significant effects are identified, mitigation measures will be identified.
- 7.3 This chapter of the EIA Scoping Report is intended to identify likely significant effects of the Proposed Development upon the physical fabric and settings of heritage assets within the Site, and likely significant effects on the cultural significance of assets within the wider landscape through development within their setting, which would need detailed consideration through EIA.
- 7.4 Direct and indirect physical effects involve alteration or destruction of the fabric of heritage assets and could result from the construction of the Proposed Development.
- 7.5 Effects on the setting of heritage assets can arise due to the relative scale of proposed turbines or other infrastructure, their potential to detract from understanding of key views from/towards/through or across an asset, or a change resulting in an adverse experience of a heritage asset's cultural significance. This use of the word cultural 'significance' in this context refers to the range of cultural values or interest attached to an asset.
- 7.6 Cultural significance is a quality that applies to all heritage assets and, as defined in Appendix 1, page 175 of the Environmental Impact Assessment (EIA) Handbook (Scottish Natural Heritage (now NatureScot) and HES, 2018), relates to the ways in which a heritage asset is valued both by specialists and the general public. It may derive from factors including the asset's fabric, setting, context and associations. Following National Planning Framework (NPF) 4 'Policy Principles', the analysis of a heritage asset's cultural significance aims to identify its 'special characteristics' which should be protected, conserved or enhanced. Such characteristics may include elements of the asset's setting, which is defined in Section 1 of HES guidance (2016, updated 2020) as "*the way in which the surroundings of a historic asset or place contribute to how it is experienced, understood and appreciated*".
- 7.7 As part of this Scoping Report, a Stage 1 Setting Assessment has been carried out. The purpose of Stage 1 assessment is to appraise, propose and agree with consultees the heritage assets that may be affected by the Proposed Development requiring further detailed assessment in the EIA Report Archaeology and Cultural Heritage Chapter. The Stage 1 Setting Assessment considers all heritage assets within defined study areas to identify whether it is likely that their cultural significance could be affected through development within their setting. The iterative design process will aim



to minimise adverse impact upon the heritage assets that it is agreed may be affected to avoid significant adverse effects.

- 7.8 The scoping layout is thus considered a ‘worst case’, and the final layout presented in the EIA, following implementation of mitigation measures by design based on initial assessment, will be the subject of impact assessment in the EIA Report Archaeology and Cultural Heritage Chapter.
- 7.9 To assess the significance of the effect of the Proposed Development upon cultural heritage, the importance of each heritage asset is assessed against the potential magnitude of change upon its cultural significance using a reasoned matrix-style approach.
- 7.10 Historic landscape is not treated as a heritage asset for the purposes of this assessment except where a defined area of landscape has been designated for its cultural heritage interest. It is recognised that all landscapes have a historic dimension, and this will be considered as part of the assessment of Landscape Character (covered in the EIA Report Landscape and Visual Impact Assessment (LVIA) Chapter). Furthermore, although any effects on the cultural significance and importance of heritage assets due to change in their setting are likely to be visual in nature, the assessment of these visual effects is distinct from the assessment of visual change in the LVIA. The assessment of effects on setting may be informed by visualisations prepared as part of the LVIA but the conclusions reached regarding visual change in the setting of a heritage asset are distinct.
- 7.11 The EIA Report Archaeology and Cultural Heritage Chapter will be prepared by Headland Archaeology Ltd. Headland is a Registered Organisation with the Chartered Institute for Archaeologists (CIfA) and abides by its standards and codes of conduct. As part of the RSK Group, Headland Archaeology is formally recognised as an Historic Environment Service Provider with the Institute of Historic Building Conservation (IHBC), an externally audited status which confirms our work is carried out in accordance with the highest standards of the profession.

LEGISLATION, POLICY, AND GUIDANCE

- 7.12 It is proposed that the EIA Report Archaeology and Cultural Heritage Chapter will be carried out with reference to the following legislation, policy and guidance:

LEGISLATION

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.
- The Electricity Act 1989.
- The Ancient Monuments and Archaeological Areas Act 1979.
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.
- The Historic Environment Scotland Act 2014.



POLICY

- NPF4 Part 1 A National Spatial Strategy for Scotland 2045 and NPF4 Part 2 National Planning Policy (The Scottish Government, February 2023) Policy 7: Historic assets and places.
- Historic Environment Policy Scotland (HEPS) (HES, 2019).
- East Ayrshire Council Local Development Plan 2 (LDP2) (adopted April 2024): Policy 4.2 Place and Environment – Historic Environment.
- Dumfries and Galloway LDP2 (adopted October 2019): Historic Environment Policies HE1- HE8.

GUIDANCE

- Historic Environment Scotland Circular (HES, 2019).
- PAN 2/2011: Planning and Archaeology (Scottish Government).
- IEMA/CIfA/IHBC Principles of Cultural Heritage Impact Assessment in the UK (2021).
- Designation Policy and Selection Guidance (HES 2019).
- Our Past, Our Future: The Strategy for Scotland's Historic Environment (HES 2023).
- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists (CIfA 2020).
- Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (CIfA 2020).
- Managing Change in the Historic Environment (MCHE): Setting (HES 2016, updated 2020), and any other relevant Managing Change in the Historic Environment guidance.
- Environmental Impact Assessment (EIA) Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland (NatureScot and HES, 2018).

PROPOSED SCOPE OF ASSESSMENT

CONSULTATION

- 7.13 The Site lies within East Ayrshire however the Outer Study Area (OSA) encompasses heritage assets within the Dumfries and Galloway Council area.
- 7.14 It is proposed that the following stakeholders will be consulted in relation to the assessment:
- Historic Environment Scotland (HES);



- The West of Scotland Archaeology Service (WoSAS), statutory historic environment advisors to East Ayrshire Council; and
- Dumfries and Galloway Council.

STUDY AREAS

7.15 Overlapping study areas have been used for the identification of heritage assets that may be affected by the Proposed Development:

- the Site Boundary, to identify potential direct and indirect (physical) impacts; and
- the OSA based on a bare earth ZTV to identify assets beyond the Site that may be affected through development within their setting.

7.16 Within the OSA, heritage assets are included in the assessment based on the level of importance assigned to them to ensure that all likely significant effects are recognised. The overlapping OSA reflects that the more important the asset, the more likely significant effects could be generated over further distances, as follows:

- Up to 20 km from proposed turbines: World Heritage Properties, Category A Listed Buildings, Inventory Gardens and Designed Landscapes, and Scheduled Monuments;
- Up to 10 km Inventory Historic Battlefields and all non-designated heritage assets in East Ayrshire. The assessment will identify non-designated heritage assets which are classified as of certain or probable national importance as indicated by the WoSAS non-statutory register (NSR). In addition, non-designated heritage assets of national importance as indicated by the Dumfries and Galloway NSR will be considered, including non-inventory gardens and designed landscapes (NIDL);
- Up to 5 km from proposed turbines: Conservation Areas, Category B Listed Buildings, and non-designated heritage assets of regional importance as indicated by the Dumfries and Galloway NSR; and
- Up to 2 km from proposed turbines: Category C Listed Buildings.

7.17 In addition, beyond the OSA as defined above, consideration has been given to whether any other designated asset which is within the ZTV and considered exceptionally important and/or sensitive to visual change within its setting, and/or where long-distance views from or towards the asset are thought to contribute to cultural significance. In the case of this assessment, high importance designated heritage assets located beyond the 20 km OSA considered in the Stage 1 Setting Assessment all lie out with the ZTV (see Gazetteer: Appendix 5).

7.18 The baseline has been screened (and will be agreed with the relevant consultees and stakeholders) to identify any assets of particular sensitivity or importance. Criteria for the identification of assets of particular sensitivity or importance is based on the approach set out by HES in MCHE: Setting (2016, updated 2020) which lists a range of factors which might form part of the setting of a heritage asset as follows:

- *“Current landscape or townscape context;*



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

DATA SOURCES TO INFORM THE EIA BASELINE CHARACTERISATION

Desk Based Assessment

7.19 A Desk-Based Assessment will be conducted to establish the baseline condition of the Site. The principal source of information will be the WoSAS Historic Environment Record (HER), supplemented by relevant published documentary and cartographic material as appropriate, including sources of aerial photography. Various other sources will also be consulted for the collation of data, including but not limited to:

- Designation data downloaded from HES;
- HER data, digital extract from WoSAS and Dumfries and Galloway Council;
- The National Record of the Historic Environment (NRHE), including the Canmore database and associated photographs, prints/drawings and manuscripts held by HES;
- LIDAR data from the Scottish Remote Sensing Portal;
- Conservation Area Character Appraisals;
- Historic Landscape Assessment data;
- The National Collection of Aerial Photography;



- Geological data available online from the British Geological Survey;
- Historic maps held by the National Library of Scotland;
- Unpublished maps and plans held by the National Records of Scotland;
- Relevant internet resources, including Google Maps, Google Earth, Bing satellite imagery and PastMap;
- Readily available published sources and unpublished archaeological reports.
- ZTV / cumulative ZTV; and
- Findings of other environmental topics (LVIA, peat depth, ground conditions, noise and vibration).

Field Visit

- 7.20 A field visit will be undertaken to record site characteristics, any visible archaeology and geographical / geological features which may have a bearing on previous land use and archaeological survival, as well as those which may constrain subsequent archaeological investigation. Known heritage assets identified through desk-based assessment will be visited to record their location, extent and significance. Proposed infrastructure locations where a potential direct impact could occur will be inspected for hitherto unknown heritage assets. The location and extent of all assets will be checked or recorded with a handheld (i.e., navigation grade) geographical positioning system.
- 7.21 Heritage assets in the wider study area (to be determined following agreement with statutory consultees) will be visited in order to assess likely significant effects upon their settings.

Stage 1 Setting Assessment

- 7.22 A 'Stage 1' setting assessment of cultural heritage assets has been completed as part of the scoping process. This approach identifies likely significant effects on the settings of heritage assets from an initial desk-based appraisal of data from HES, the HER and consideration of current maps and aerial images available via online sources. The methodology adopted for the identification and assessment of potential effects on setting follows the approach set out by HES in MCHE: Setting (2016, updated 2020) and Scottish Natural Heritage (now NatureScot) and HES in the EIA Handbook (2018).
- 7.23 The MCHE: Setting guidance sets out three stages in assessing the impact of development on the setting a heritage asset or place as follows:
- *"Stage 1: Identify the historic assets that might be affected by a development;*
 - *Stage 2: Define and analyse the setting by establishing how the surroundings contribute to the ways in which the historic asset or place is understood, appreciated and experienced; and*



- *Stage 3: Evaluate the likely significant effect of the proposed changes on the setting, and the extent to which any negative impacts can be mitigated.”*

7.24 The Stage 1 Setting Assessment methodology has considered each heritage asset in the OSA in turn to identify heritage assets in the ZTV that have a wider landscape setting that contributes to their cultural significance and whether it is likely that cultural significance would be negatively impacted by the Proposed Development. The Stage 1 Setting Assessment is presented in full (see Gazetteer: Appendix 5) and supported by wireline visualisations (Appendix 6). A digital version of the ZTV used for the Stage 1 Setting Assessment is available to consultees on request.

7.25 The assessment of the scoping layout at this stage is considered a ‘worst case’ for the identification of heritage assets that may be affected through development within their setting. As the iterative design process will aim to minimise adverse impacts upon the heritage assets, the ultimate effects of the planning application design will fall within the ‘Rochdale envelope’ parameters considered during the scoping process.

EXISTING BASELINE CONDITIONS

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

- HES designations GIS datasets, February 2025;
- NRHE data comprising the Canmore database, February 2025;
- WoSAS and Dumfries and Galloway HER data provided digitally in December 2024.

Site Boundary

7.27 There are no designated heritage assets within the Site Boundary.

7.28 There are 10 non-designated heritage assets (NDAs) known within the Site Boundary (Table 7.1), eight of which are recorded on WoSAS HER and two which have been added to the gazetteer as part of research for this Scoping chapter.

Table 7.1: Known NDAs within the Site

Ref	Name	Description	Easting	Northing
12851	Watsonburn / Glen / NMRS NS61NW15 & NS61SE7	Road	263890	617220
46675	Watsonburn	Sheepfold	263490	616930
46676	Watson Burn	Sheepfold	264560	616180
46678	Watsonburn	Sheepfold	264150	616050
46679	Millstone Knowe	Industrial; Coal Pits; Enclosure	264400	616770
46682	Watsonburn	Industrial; Bell Pit	263950	616770
46758	Watsonburn, Coal Road	Road	264100	616800



61511	Edge Hill	Bell Pit; Colliery; Enclosure; Field Boundary; Pit; Rig And Furrow; Road; Sheepfold	264000	617000
HA1	Sheepfold	Sheepfold identified on the First edition Ordnance Survey (OS) map	263309	618588
HA2	Well	Well identified on the First edition OS map	264465	616671

- 7.29 A substantial portion of the Site has been the subject of open cast mining historically, which has reduced the archaeological potential in these areas for any remains other than those potentially associated with mining.

Outer Study Area

- 7.30 Within 2 km of the Site boundary there is one Scheduled Monument, one Category B Listed Building, one Category C Listed Building and 116 NDAs (five of which are recorded on the WoSAS NSR as of probable national importance).
- 7.31 Within 2-5 km of the Site boundary there are two Conservation Areas (which contain nine Category B and 24 Category C Listed Buildings which are accounted for in the Stage 1 Assessment), one Category A Listed Building, 24 further Category B Listed Buildings and 249 NDAs (eight of which are recorded on the WoSAS NSR as of certain national importance with nine of probable national importance, and one of which is recorded on the Dumfries and Galloway NSR as of national importance).
- 7.32 Within 5-10 km of the Site boundary there is one Inventory Garden and Designed Landscape (including six Category B Listed Buildings which are accounted for in the Stage 1 Assessment), four Scheduled Monuments, five Category A Listed Buildings, and 635 NDAs (three of which are recorded on the WoSAS NSR as of certain national importance with nine of probable national importance, and six of which are recorded on the Dumfries and Galloway NSR as of national importance plus two NIDL).
- 7.33 Within 10-20 km of the Site boundary there are two Inventory Garden and Designed Landscapes, 26 Scheduled Monuments, and 17 Category A Listed Buildings.
- 7.34 Beyond the 20 km OSA two Category A Listed Buildings and two Category B Listed Buildings located within Inventory Gardens and Designed Landscapes are accounted for in the Stage 1 Assessment.
- 7.35 There are no Properties in Care, World Heritage Properties or Inventory Battlefields within the OSA.

DESCRIPTION OF LIKELY SIGNIFICANT EFFECTS

- 7.36 To assess the effect of the Proposed Development upon cultural heritage, the significance of any effect is examined through comparison of the importance of each heritage asset against the potential magnitude of change upon it. Effects on cultural heritage can arise through direct physical effects, indirect effects, or effects on setting, and cumulative effects:
- Direct physical effects describe those development activities that directly cause damage to the fabric of a heritage asset. Typically, these activities are related to construction works and will only occur within the Site.



- Indirect effects describe secondary processes, triggered by the Proposed Development, that lead to the degradation or preservation of heritage assets. For example, changes to hydrology may affect archaeological preservation, and changes to the setting of a building may affect the viability of its current use and thus lead to dereliction.

An effect on the setting of a heritage asset occurs when the presence of a development changes the surroundings of a heritage asset in such a way that it affects (positively or negatively) the understanding, appreciation or experience of the cultural significance of that asset. Visual effects are most commonly encountered in relation to setting assessment, but other environmental factors such as noise, light or air quality can be relevant in some cases. Setting effects may be encountered at all stages in the life cycle of a development from construction to decommissioning, but they are only likely to lead to significant effects during the prolonged operational phase of the Proposed Development.

- Effects from cumulative developments will also be considered. Cumulative impacts can relate to the physical fabric or 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.

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

POTENTIAL MITIGATION

PRIMARY MITIGATION

- 7.38 Data from desk-based and field-based sources will be gathered in a GIS and the cultural heritage team will work throughout the EIA process with colleagues and consultees to understand potential effects and provide input into design to address them.
- 7.39 Project design will consider likely significant effects of the Proposed Development on the setting and cultural significance of any heritage assets in the OSA identified during Stage 1 Setting Assessment. For example, the aim of the design would be to ensure that the Proposed Development does not dominate heritage assets that were intentionally constructed historically to be prominent landscape features, and will seek to maintain key intentional sightlines between, to, from or across associated and contemporary monuments, or designed vistas. It is acknowledged that there are other factors which might form part of the setting that contributes to the cultural significance of a heritage asset (as outlined in MCHE: Setting (HES 2016, updated 2020), presented above).



ADDITIONAL (SECONDARY AND TERTIARY) MITIGATION

- 7.40 Onshore wind energy project infrastructure typically has a relatively small footprint compared to the overall application boundary with scope for micro siting to avoid direct physical impacts to archaeological remains during construction.
- 7.41 Precautionary measures such as fencing off heritage assets during construction works may be employed to avoid accidental impacts.
- 7.42 Where potential direct effects are identified, evaluation methodologies may be employed (such as intrusive works) to better understand the extent and cultural significance of archaeological remains.
- 7.43 Adverse effects may be mitigated by an appropriate level of survey, excavation, recording, analysis and publication of the results, in accordance with a written scheme of investigation (per NPF4 Policy 7 Historic assets and places Criterion (o), PAN2/2011 Planning and Archaeology sections 25-27, and East Ayrshire Council LDP2 Policy 4.2).

RECEPTORS/MATTERS SCOPED INTO FURTHER ASSESSMENT

CONSTRUCTION

- 7.44 It is anticipated that the known NDAs identified within the Site will be avoided by design and significant direct or indirect (physical) impacts during construction are not therefore considered likely.

OPERATION

- 7.45 As part of this Scoping Report, a Stage 1 Setting Assessment has been conducted and presented in full in a Gazetteer (Appendix 5). The purpose of this part of the Scoping Report is to propose and agree with consultees the heritage assets whose settings may be affected by the Proposed Development, and which will require further detailed assessment in the cultural heritage chapter of the EIA Report.
- 7.46 The Stage 1 Setting Assessment methodology follows the approach set out in MCHE: Setting (2016, updated 2020) and Appendix 1 of the EIA Handbook (Scottish Natural Heritage (now NatureScot) and HES (2018)). The methodology has considered each heritage asset in the OSA in turn to identify heritage assets in the ZTV that have a wider landscape setting that contributes to their cultural significance and whether it is likely that cultural significance would be impacted by the Proposed Development. Where heritage assets are located outwith the ZTV, viewpoints within the ZTV which may be a key view toward the heritage asset and the Site are considered.
- 7.47 The Stage 1 Setting Assessment undertaken for this EIA Scoping Chapter has identified seven heritage assets for which wireline visualisations (Wireline Viewpoints 1-7) have been generated to aid the assessment as it is considered the wider landscape contributes to their cultural significance.
- 7.48 Of all heritage assets within the OSA, four are proposed for detailed assessment in the EIA Report (in bold text in Table 7.2) as it is considered there is a potential for their cultural significance to be affected by the Proposed Development. (Upon review of Wireline Viewpoints 2, 6 and 7, significant effects are not considered likely in relation to these assets, and it is proposed that these are not considered further through EIA. Similarly, all other heritage assets in the OSA are proposed to be scoped out of further



detailed setting assessment at EIA stage. Proportionate assessment reasoning and justification is provided in the Gazetteer (Appendix X).

- 7.49 Refer to Table 7.2 for a list of the heritage assets and corresponding wirelines which are subject of the Stage 1 Setting Assessment. Wirelines are provided in Appendix 6.

Table 7.2: Stage 1 Setting Assessment results

Wireline	Asset Ref	Name	Status	Detailed Assessment Proposed in EIA
Viewpoint 1	SM3311	Kyle Castle, 200m E of Dalblair	Scheduled Monument	Yes
Viewpoint 2	CA65	Lugar	Conservation Area	No
Viewpoint 3	LB14246	Martyrs Parish Church, New Cumnock	Category B Listed Building	Yes
Viewpoint 4	LB44604 / 53553	Glaisnock House, Holmhead	Category B Listed Building / NIDL	Yes
Viewpoint 5	GDL00149 / LB14413	Dumfries House	Inventory Garden and Designed Landscape / Category A Listed Building + 11 further Listed Buildings within GDL boundary	Yes
Viewpoint 6	LB14273	Sorn Castle	Category A Listed Building	No
Viewpoint 7	LB948	Auchinleck House	Category A Listed Building	No

- 7.50 During the EIA process, where the Stage 1 Setting Assessment and scoping responses identify the potential for a significant effect, the relevant affected heritage assets will be visited to define baseline conditions and identify key viewpoints.
- 7.51 Following scoping, further consultation with national and regional curators HES, WoSAS and Dumfries and Galloway Council will be undertaken as necessary to agree the specific visualisations required to support the EIA. Visualisations will be used in tandem with the ZTV to understand the likely nature of change in the setting of heritage assets and will be prepared to illustrate changes to key views where potentially significant effects are identified to support the EIA Report submission.

CUMULATIVE IMPACTS

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



RECEPTORS/MATTERS SCOPED OUT OF FURTHER ASSESSMENT

- 7.53 Other than the four heritage assets identified in Table 2, all other heritage assets in the OSA are proposed to be scoped out of further detailed setting assessment at EIA stage. Proportionate assessment reasoning and justification is provided in the Gazetteer (Appendix 5).
- 7.54 Construction phase setting effects will be temporary and are not considered to be significant in EIA terms due to their very short duration. Construction phase setting effects are therefore proposed to be scoped out of the assessment.
- 7.55 The extent of ground disturbance associated with decommissioning will not extend beyond the construction footprint and so decommissioning effects on heritage assets within the Site Boundary will not occur. Any residual operational phase setting effects will be reversed. Decommissioning effects are therefore proposed to be scoped out of the assessment.

PROPOSED ASSESSMENT METHODOLOGY

- 7.56 To assess the significance of the effect of the Proposed Development upon cultural heritage, the importance of each heritage asset is assessed against the potential magnitude of change upon it using a reasoned matrix-style approach.

IMPORTANCE OF RECEPTOR

- 7.57 The importance of a heritage asset is the overall value assigned to it based on its cultural significance, reflecting its statutory designation or, in the case of non-designated assets, the professional judgement of the assessor.

Table 7.3: Criteria for Assessing the Importance of Heritage Assets

Importance	Criteria
Very High	Assets valued at an international level, e.g. World Heritage Properties and other assets of equal international importance that contribute to international research objectives.
High	Assets valued at a national level, e.g. Scheduled Monuments, Category A Listed Buildings, Inventory Gardens and Designed Landscapes, Inventory Battlefields, Historic Marine Protected Areas, some conservation areas and non-designated assets that meet the relevant criteria for designation in the opinion of the assessor. Category B or C-listed buildings where the existing designation does not adequately reflect their value, in the opinion of the assessor.
Medium	Assets valued at a regional level, e.g. Category B Listed Buildings, some conservation areas and non-designated assets of similar value in the opinion of the assessor. Category C-listed buildings where the existing designation does not adequately reflect their value, in the opinion of the assessor.
Low	Assets valued at a local level, e.g. Category C Listed Buildings, some conservation areas and non-designated assets of similar value in the opinion of the assessor.

Source: NatureScot & HES 2018, Environmental Impact Assessment Handbook, v5 Appendix 1, Figure 2

- 7.58 Heritage Assets are defined as “Features, buildings or places that provide physical evidence of past human activity identified as being of sufficient value to this and future



generations to merit consideration in the planning system” (NatureScot & HES 2018, EIA Handbook, v5, p.122). Thus, any feature which does not merit consideration in planning decisions due to its cultural significance may be said to have negligible heritage importance.

MAGNITUDE OF IMPACT

- 7.59 The magnitude of an impact is a measure of the degree to which the cultural significance of a heritage asset will potentially change as a result of the Proposed Development (NatureScot & HES 2018, EIA Handbook, v5 Appendix 1, para 42).
- 7.60 Conclusions of the assessed magnitude of impacts is a product of the consideration of the elements of an asset and its setting that contribute to its cultural significance and the degree to which the Proposed Development would change these contributing elements. The assessment therefore reflects the varying degrees of sensitivity of different assets to change brought about by different types of development.
- 7.61 This definition of magnitude and assessment methodology applies to likely effects resulting from change in the setting as well as likely physical effects on the fabric of an asset.
- 7.62 The magnitude of an impact resulting from change within setting is not a direct measure of the visual prominence, scale, proximity or other attributes of the Proposed Development itself, or of the extent to which the setting itself is changed. Moreover, it is necessary to consider whether, and to what extent, the characteristics of the setting which would be changed contribute to the asset’s cultural significance (NatureScot & HES 2018, EIA Handbook, v5 Appendix 1, paras 42 and 43).

Table 7.4: Criteria for Assessing the Magnitude of Impacts on Cultural Significance of Heritage Assets

Magnitude of Impact	Criteria
High Beneficial	Preservation of the asset in situ where it would be completely or almost completely lost in the do-nothing scenario.
Medium Beneficial	Changes to key elements of the asset's fabric or setting that result in its cultural significance being preserved, where they would otherwise be lost, or restored.
Low Beneficial	Changes that result in elements of the asset's fabric or setting that detract from its cultural significance being removed.
Negligible / No Impact	Changes to fabric or setting that leave significance unchanged.
Low Adverse	Changes to the elements of the fabric or setting of the heritage asset that contribute to its cultural significance such that this is slightly altered.
Medium Adverse	Changes to the elements of the fabric or setting of the heritage asset that contribute to its cultural significance such that this is substantially altered.
High Adverse	Changes to the fabric or setting of a heritage asset resulting in the complete or near complete loss of its cultural significance, such that it may no longer be considered a heritage asset.

Source: NatureScot & HES 2018, Environmental Impact Assessment Handbook, v5 Appendix 1, Figure 1



SIGNIFICANCE OF EFFECT

- 7.63 The significance of an effect ('EIA significance') on the cultural significance of a heritage asset, resulting from a direct or indirect physical effect or an effect on its setting is assessed by combining the magnitude of the impact and the importance of the heritage asset.
- 7.64 Effect significance conclusions are expressed in the impact assessment as 'Beneficial' or 'Adverse'. Beneficial effects are those that preserve, enhance, or better reveal the cultural significance or special interest of heritage assets. Adverse effects are those that detract from or reduce cultural significance or special interest of heritage assets.
- 7.65 Major and Moderate effects are regarded as 'significant' in EIA terms, while Minor and Negligible effects are 'not significant'.
- 7.66 Conclusions will also be expressed in terms of the relevant Policy tests.

Table 7.5: Criteria for Assessing the Significance of Effects on Heritage Assets

Importance of Receptor	Magnitude of Impact			
	High	Medium	Low	Negligible / No Impact
Very High	Major	Major	Moderate	Minor / None
High	Major	Moderate	Minor	Negligible / None
Medium	Moderate	Minor	Minor	Negligible / None
Low	Minor	Minor	Negligible	Negligible / None



QUESTIONS FOR CONSULTEES

The Zone of Theoretical Visibility (ZTV) for the scoping layout used for the Stage 1 Setting Assessment in this Scoping Chapter is available as a digital shapefile to consultees on request. Please provide contact details for this to OnPath directly, with confirmation whether consultees wish to request any further digital datasets to be provided to aid their scoping opinion?

Do consultees agree with the proposals for 'Receptors/Matters Scoped Out' in the Cultural Heritage assessment for the EIA Report?

Are consultees content with the proposed Outer Study Area limits presented in this Scoping Report?

Are there any other relevant consultees other than HES, WoSAS and Dumfries and Galloway Council who should be contacted with respect to the Cultural Heritage assessment?

Do consultees wish to request any further specific heritage assets are assessed for operational setting effects in the EIA Report other than the four heritage assets identified from the Stage 1 Setting Assessment included in this EIA Scoping Report (summary listed below)?

- SM3311 Kyle Castle, 200m E of Dalblair (Scheduled Monument)
- LB14246 Martyrs Parish Church, New Cumnock (Category B Listed Building)
- LB44604 / 53553 Glaisnock House, Holmhead (Category B Listed Building and NIDL)
- GDL00149 / LB14413 Dumfries House (Inventory Garden and Designed Landscape / Category A Listed Building + 11 further Listed Buildings within GDL boundary)



8. HYDROLOGY, GEOLOGY AND SOILS (INCLUDING PEAT)

INTRODUCTION

- 8.1 This section sets out the proposed scope of the EIA Report in relation to the potential significance effects during the construction and operational phases of the Proposed Development on geology (including soils and peat), hydrology and hydrogeology.

BASELINE

- 8.2 A desktop study will be undertaken within the Site. The desk study will include an overall appraisal of hydrology and ground conditions for input to the EIA Report chapter. It will also include an initial risk map for the Site, identifying potential or actual constraints, and those areas requiring further consideration. The following activities will be undertaken to inform the desktop study:
- a) Review of published data and maps;
 - b) Consultation with SEPA, East Ayrshire Council, and the British Geological Survey (BGS) to obtain baseline data;
 - c) Identification of solid and surface geologies;
 - d) Identification of surface water features, catchments and GWDTes;
 - e) Identification of data on public and private abstractions and supplies, and risk assessment of these; and Collation of flood plain information, water quality data and groundwater vulnerability information.
- 8.3 The information obtained within the desktop study will be ground-truthed and refined via field surveys which will include:
- a) General site walkover to confirm desktop study information and watercourse crossings;
 - b) Peat probing within accessible areas of the Site to define the peat extent and depth across the Site and inform design

HYDROLOGY AND HYDROLOGY

- 8.4 The hydrological context of the site is heavily influenced by the historic opencast workings. The topography of Airds Hill is such that upland watercourses drain to the north and south. To the north, the Avisyard Burn, Coal Burn, Berry Burn, Pittairn Burn and Shiel Burn drain to the Glenmuir Water and ultimately to the River Ayr and Firth of Clyde, while to the south the Muirfoot Burn drains to the River Nith and ultimately to the Solway.
- 8.5 Any new built development has the potential to impact on the water environment through the altering of hydrological routes and connectivity or through pollution from construction processes. Best practice will be used in developing access and cable routes to maintain flow routes and to isolate works from the water environment through appropriate mitigation.



PRIVATE WATER SUPPLIES

- 8.6 All PWS's in Scotland must be routinely tested in accordance with the Private Water Supplies (Scotland) Regulations 2006. Under the 2006 Act, Local Authorities are required to prepare and maintain a register of PWSs in their area. The local authority will be contacted as part of an assessment of any private water supplies in the area. A review of Scottish Water plans will also be undertaken to identify any possible private supplies in the vicinity of the site. In the event that private supplies are identified as part of a stage 1 assessment, further assessment will be undertaken to determine the nature of the supply and any risk posed before mitigations measures are developed.

GEOLOGY (INLCUDING PEAT AND SOILS)

- 8.7 NatureScot's Carbon and Peatland 2016 map is a high-level predictive tool which provides an indication of the likely presence of peat, detailing areas of carbon-rich soils, deep peat and priority peatland habitat.
- a) Class 0 – Mineral soil – Peatland habitats are not typically found on such soils.
 - b) Class 1 – All vegetation cover indicates priority peatland habitat; all soils are carbon-rich soils and deep peat. Nationally important carbon-rich soils, deep peat and priority peatland habitat i.e. land covered by peat-forming vegetation or vegetation associated with peat formation. Likely to be of high conservation value.
 - c) Class 2 - Most of the vegetation cover indicates priority peatland habitat; all soils are carbon-rich soil and deep peat. Nationally important carbon-rich soils, deep peat and priority peatland habitat i.e. land covered by peat-forming vegetation or vegetation associated with peat formation. Potentially high conservation value and restoration potential.
 - d) Class 3 – Vegetation cover does not indicate priority peatland habitat but is associated with wet and acidic soil types; most soils are carbon-rich soils, with some areas of deep peat.
 - e) Class 4 – Area unlikely to be associated with peatland habitat or wet and acidic soils; area unlikely to include carbon-rich soils.
 - f) Class 5 – No peatland vegetation.
- 8.8 A review of the map indicates that most of the site is identified as Class 0 or 5, and therefore not likely to be associated with peatland. Around 20% of the site is mapped as class 3 while 5% is identified as class 1. Much of the mapped Class 3 peatland has been disturbed by opencast activity.



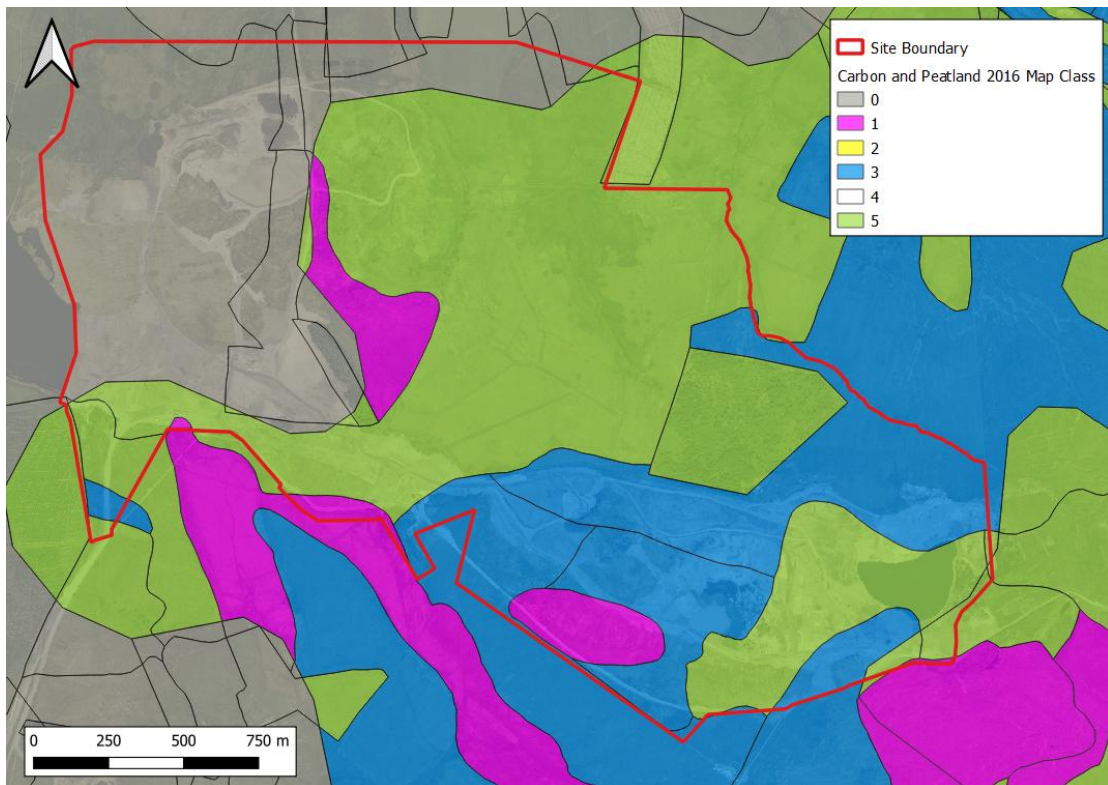


Figure 8.1 – Extract from NatureScot's Carbon and Peatland 2016 Map PEAT PROBING

PEAT PROBING

- 8.9 It was proposed to undertake Phase 1 peat probing on 100m grid across the Site, surveying peat depth where there was either vegetation cover or bare peat, excluding areas of exposed mineral soil. However, when the peat probing was carried out on site it was possible to probe the whole Site due to ground conditions in parts of the Site associated with the site restoration works. Figure 8.2 below summaries the phase 1 peat probing that has been undertaken on site.

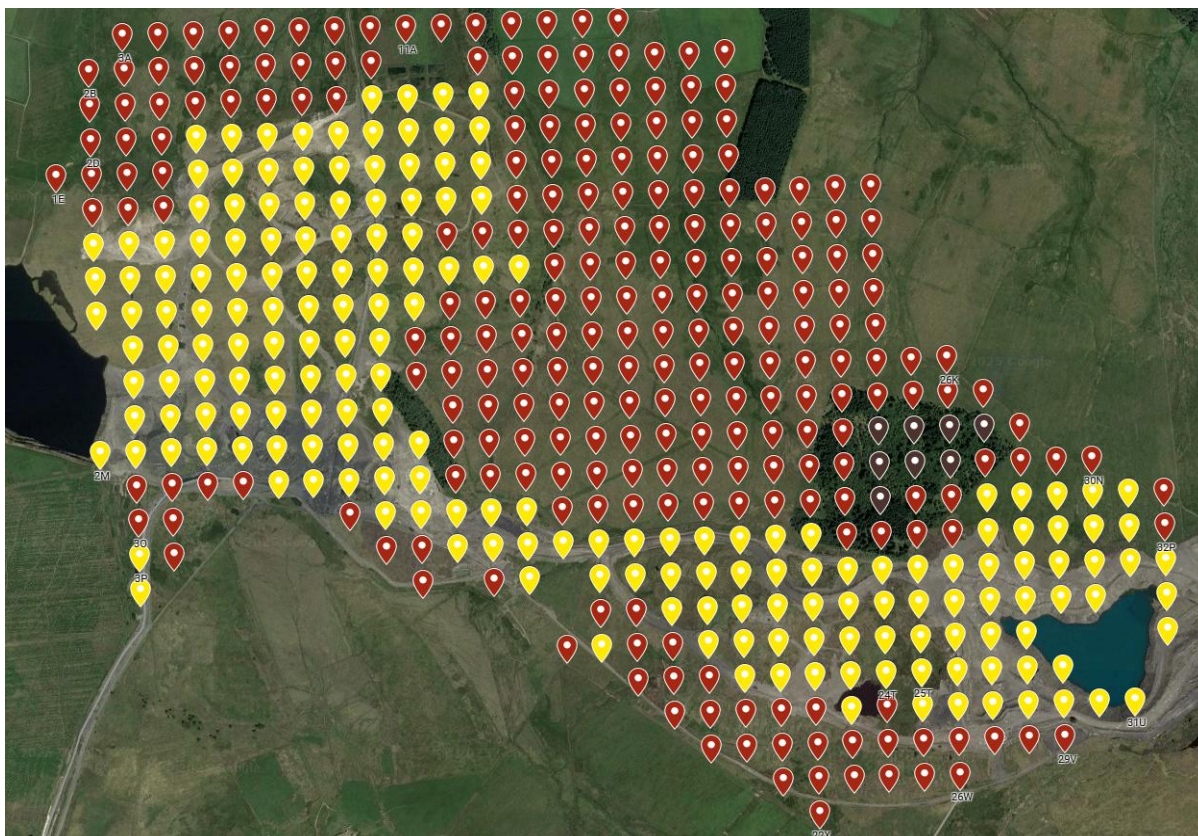


Figure 8.2 – Phase 1 Peat Probing

8.10 Figure 8.2 Legend

- a) Red - Completed peat probe within natural ground.
- b) Yellow - Unable to probe due to ground conditions. Identified as made ground through visual inspection.
- c) Brown - unable to complete due to forestry density.

8.11 Where suitable, extendable fibreglass peat probes with a steel tip were used, to measure the full depth of organic soil/peat and to record the likely underlying substrate based on the sound and feel of the steel tip on the substrate and from the rate of resistance from the probe.

8.12 Where made ground was exposed and identified and peat probes could not be used a visual assessment was made to confirm the absence of natural peat surface. The site process for assessment was carried out as follows:

- a) Visual inspection and comparison with satellite imagery of area suspected of being made ground.
- b) Walk on to area of suspected made ground – where safe to do so – to view made ground underfoot and confirm the unsuitability of peat probing.

- c) Once identified as made ground through a combination of the above, walk around identified area to confirm extent of made ground.
- 8.13 Further assessment of peat depths and made ground interaction will be assessed during the development phase to provide interpolation of the site environment.
- 8.14 The findings of the Phase 1 peat probing will be used to inform the infrastructure layout with the aim of reducing and mitigating the developments impact on Peat. During the design phase, once turbine and infrastructure layouts are outlined, a more detailed Phase 2 peat probing exercise will be carried out, targeted to the infrastructure layouts and informed by the Phase 1 probing information.
- 8.15 The peat assessment will consider the risk of peat slides occurring on the Site while identifying suitable controls and appropriate methodologies that can be employed during the construction and commissioning to mitigate any risks identified. The final design of the proposed Development will also take account of this work to avoid impacting upon these areas wherever possible.

PROPOSED SCOPE OF ASSESSMENT

- 8.16 The potential effects of the Proposed Development on ground conditions and the water environment will be assessed by completing a desk study and field investigations to establish the baseline followed by an impact assessment which will be presented in the EIA Report.
- 8.17 The study area for peat and soils will be within the Site Boundary. The geological, hydrological and hydrogeological wider study area will extent to 500m from the Site Boundary.
- 8.18 The assessment will:
 - a) Inform the placement of turbines and associated infrastructure to minimise impact on peat and hydrogeological and hydrological features. Turbines, and associated infrastructure, except for at water crossing points, will be kept up to 50m from watercourses.
 - b) Assess the potential effects on soils, peat and geology
 - c) Consider peat slide risk
 - d) Determine likely effects on the hydrological and hydrogeological regime
 - e) Assess potential effects on water dependent habitats
 - f) Identify mitigation measures including adoption of best practice construction techniques.
- 8.19 The EIA Report is likely to be supported by the following appendices
 - a) Peat Landslide Hazard and Risk Assessment
 - b) Peat Condition Assessment and Management Plan
 - c) Outline Construction and Environmental Management Plan



QUESTIONS FOR CONSULTEES

Do you have any information which would be relevant to the preparation of the EIA in relation to Geology, hydrology and Hydrogeology?

Are you content with, or do you have any comments on, the baseline survey methods and level of survey effort?

Are you comfortable with the approach to peat probing on-site given the ground conditions and historic use of the site?



9. NOISE

INTRODUCTION

- 9.1 Noise will be emitted during the construction, operation, and decommissioning phases of the Proposed Development. This section provides a summary of the noise effects anticipated for each phase and, where appropriate, details the proposed assessment work.

EXISTING CONDITIONS

- 9.2 The Site is located within a semi-rural location. There are a number of scattered residential properties around the Proposed Development with the closest residential properties being to the immediate north, northwest and south of the Site (approximately 1 km from the nearest turbine).
- 9.3 There are a number of operational, consented and proposed wind farm developments surrounding the Site, as described in Chapter 2 of this Scoping Report.
- 9.4 A number of background noise assessments have already been undertaken in the area. In 2012, TNEI undertook the background noise surveys for the then proposed High Cumnock and Garleffan wind farms, both of which included noise monitoring locations located in proximity to the Proposed Development.

CONSULTATION

- 9.5 Direct consultation has already been undertaken by TNEI on the behalf of OnPath Energy with the Environmental Health Department at East Ayrshire Council (EAC) with a letter dated 11/12/24. The detailed response was prepared by ACCON in a letter dated 03/01/2025. The consultation was undertaken principally to agree on the re-use of the background noise measurements obtained as part of the noise assessments undertaken for High Cumnock and Garleffan wind farms.
- 9.6 Subject to a suitable reanalysis of the previously measured datasets to allow for the higher hub height of the Proposed Development, and the provision of justification on the selection of background noise measurement data between the two surveys where a location was the subject of both surveys, agreement was obtained to re-use the previously measured datasets.
- 9.7 The approach presented herein relating to the use of ETSU-R-97 and the IOA GPG to assess operational wind turbine noise was agreed during the consultation process. It was also agreed that decommissioning noise can be scoped out of the assessment.
- 9.8 Although TNEI proposed to use a daytime total fixed minimum noise limit of 40 dB, ACCON were of the view that this should be 35 dB. The justification given for the lower level was the relatively low background noise levels measured at 4 m/s wind speeds as part of the Garleffan noise survey and the limits proposed in two neighbouring applications, The Drum and Greenburn.

ASSESSMENT METHODOLOGIES

LEGISLATION, POLICY AND GUIDANCE



9.9 The noise assessment for the Proposed Development will use the following combination of guidance and assessment methodologies:

- National Planning Framework 4, (Scottish Government, 2023)¹;
- Planning Advice Note (PAN) 1/2011: 'Planning and Noise' (Scottish Government, 2011)²;
- Onshore wind: Policy Statement 2022 (Scottish Government 2022)³
- Web Based Renewables Advice: 'Onshore Wind Turbines' (Scottish Government, 2014)⁴;
- ETSU-R-97 'The Assessment and Rating of Noise from Wind Farms' (NWG, 1996)⁵;
- ISO 9613-2:2024 'Acoustics – Attenuation of sound during propagation outdoors Part 2: General method of calculation' (ISO, 2024)⁶;
- Institute of Acoustics (IOA) 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (IOA GPG, 2013)⁷;
- BS 5228-1: 2009+A1:2014 'Code of practice for noise and vibration control on construction and open developments - Noise'⁸;

ASSESSMENT METHODOLOGY

Construction Noise

9.10 A construction noise assessment will be undertaken to determine the potential noise impacts during the construction of the wind turbines and ancillary infrastructure for the Proposed Development only. The construction noise assessment will be undertaken in accordance with BS 5228-1: 2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites - Noise'. The assessment will consider the temporary noise effects of construction on the nearest identified Noise Sensitive Receptors (NSRs).

Operational Noise

9.11 The Scottish Government's Planning Advice Note PAN1/2011 'Planning and Noise' refers to the 'Onshore Wind Turbines' web-based document which in turn states that ETSU-R-97 'The Assessment and Rating of Noise from Windfarms' should be used by Planning Authorities 'to assess and rate noise from wind energy developments until

¹ Scottish Government (2023). National Planning Framework 4

² Scottish Government (2011). PAN 1/2011 Planning and Noise Scotland

³ Scottish Government (2022). Onshore wind: policy statement 2022

⁴ Scottish Government (2014) Web Based Renewables Advice: 'Onshore Wind Turbines' [Online] Available From <https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/> [Accessed 30th September 2023]

⁵ The Working Group on Noise from Wind Turbines (1996). ETSU-R-97 The Assessment and Rating of Noise From Wind Farms. UK: Energy Technology Support Unit

⁶ ISO (2024). ISO 9613-2:2024 Acoustics – Attenuation of Sound during Propagation Outdoors: Part 2 – General Method of Calculation. Geneva: International Organization for Standardisation.

⁷ IOA (2013). A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'. UK: Institute of Acoustics.

⁸ British Standard BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites' – Part 1: Noise



such time that an update is available.’ The web-based document also refers to the Institute of Acoustics ‘A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise’ (IOA GPG) as a source, which provides:

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

9.12 In February 2023, WSP published ‘A review of noise guidance for onshore wind turbines’ (WSP, 2023) (‘WSP BEIS report’). The report, which was subsequently re-issued as version 5 in September 2023, was commissioned by (the former) UK Government Department for Business, Energy & Industrial Strategy (BEIS). The primary aim of the report was to review current guidance in relation to wind farm noise assessment and make a recommendation as to whether the guidance required updating. The WSP BEIS report concluded that current guidance would benefit from further review and recommended updates in a number of areas.

9.13 The UK Government Department for Energy Security and Net Zero (DESNZ) has recently issued a tender seeking support to update ETSU-R-97. At the present time there are no set timescales for such an update to be published or adopted. In relation to the guidance that should be used to assess the Proposed Development, the Scottish Government Guidance is clear; the Onshore Wind Policy Statement 2022 states:

‘3.7.1. ‘The Assessment and Rating of Noise from Wind Farms’ (Final Report, Sept 1996, DTI), (ETSU-R-97) provides the framework for the measurement of wind turbine noise, and all applicants are required to follow the framework and use it to assess and rate noise from wind energy developments.’

‘3.7.4. Until such time as new guidance is produced, ETSU-R-97 should continue to be followed by applicants and used to assess and rate noise from wind energy developments.’

9.14 Therefore, in line with the recommendations contained within PAN1/2011, operational wind farm noise from the Proposed Development will be assessed in line with ETSU-R-97 and the IOA GPG.

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

9.16 ETSU-R-97 recommends that wind farm noise for the quiet daytime periods should be limited to 5 dB(A) above the prevailing background or a fixed minimum level within the range 35 - 40 dB $L_{A90,10min}$, whichever is the higher. The precise choice of criterion level within the range 35 – 40 dB(A) depends on a number of factors, including the number of dwellings in the neighbourhood of the wind farm (relatively few dwellings suggest a figure towards the upper end), the effect of noise limits on the number of kWh generated (larger sites tend to suggest a higher figure) and the duration and level of exposure to any noise. These factors will be taken into account with justification for deriving suitable noise limits included in 1.20 – 1.22 below, and in the noise assessment.



- 9.17 An exception to the setting of both the quiet daytime and night-time fixed minimum limit occurs where a property occupier has a financial involvement with the Proposed Development. In that case the fixed minimum limit can be increased to 45 dB $L_{A90,10min}$ or the prevailing background noise L_{A90} plus 5 dB, whichever is the greater for both the quiet daytime and night-time periods.
- 9.18 The background noise measurements obtained as part of the noise assessments for High Cumnock and Garleffan wind farms will be used to determine background noise levels for the Proposed Development. A suitable reanalysis of the previously measured datasets to account for the higher hub height of the Proposed Development will be undertaken.
- 9.19 The noise assessment for the Proposed Development will be undertaken in three stages:
- Determine the 'Total ETSU-R-97 Noise Limits' which are applicable to the operation of all schemes in the area;
 - Undertake a cumulative assessment (where required) to determine whether predictions from all cumulative schemes meet the 'Total ETSU-R-97 Noise Limits'; and
 - Derive a set of Site-Specific Noise Limits (for the Proposed Development) and undertake predictions to determine whether the Proposed Development can operate within the Site-Specific Noise Limits.
- 9.20 Whilst it is noted that it is the preference of ACCON, on behalf of EAC, that the 'Total ETSU-R-97 Noise Limits' for the assessment be based on 35 dB during the daytime period; it is proposed that the assessment be based on a Total ETSU-R-97 Noise Limit of 40 dB during the daytime period, with a 43 dB noise limit during the night-time period. There were two justifications given by ACCON for the 35 dB daytime limit. The first one referred to the measured background noise levels, measured as part of the Garleffan application, being relatively low at wind speeds of 4 m/s. It is worth noting that this reference relates to a receptor where background noise levels were generally lower than the other background noise datasets recorded. However, the cumulative impacts at this receptor are not a key consideration due its location to the south of the site. Conversley, at the receptors for which cumulative impacts will be a key consideration, such as those to the north to the proposed development, the background noise levels are generally higher, particularly at wind speeds where the turbines will be operating at their maximum noise output.
- 9.21 The second justification given by ACCON was that The Drum and Greenburn were consented with a 35 dB noise limit. However, at the time of writing The Drum has not been consented and Greenburn was given an apportionment of a daytime 40 dB Total ETSU-R-97 noise limit, as is being sought here. This is also true of other wind farms consented in EAC such as Hare Craig [22/0811/PP], North Kyle [ECU00001950], Lethans [ECU00001856], and Lethans Extension [ECU00002221], which were all consented since 2015. The exception to this is Overhill [20/0425/PP], however this was due to the simplified ETSU-R-97 noise criteria of 35 dB being used in the absence of background noise measurements to assess this development. The three factors to be considered when determining the daytime fixed minimum limit are outlined in 9.16 and would support the higher limit of 40 dB, as discussed below in 1.22.



- 9.22 A Total ETSU-R-97 Noise Limit of 40 dB is deemed appropriate during the daytime as it is noted that if The Drum Wind Farm, which at the time of writing is in planning, were to be approved, then the whole ETSU-R-97 Noise Limit could be granted to The Drum Wind Farm at several receptors which are shared with the Proposed Development. This would be unduly restrictive to the renewable energy production as it would, in effect, result in no remaining noise headroom for the operation of the Proposed Development. If a Total ETSU-R-97 Noise Limit of 40 dB were to be accepted, as was accepted for a number of developments within EAC, then this would allow the two developments to co-exist at these shared receptors without unduly restricting renewable energy production. This would be with operational turbine noise still remaining within acceptable levels. The number of receptors for which this higher limit is required is also relatively low.
- 9.23 The guidance contained in the IOA GPG will be used to establish suitable Site Specific Noise Limits which fully take account of the proportion of the Total ETSU-R-97 Noise Limits which has been allocated to, and can realistically be used by, existing operational wind farms in the area.
- 9.24 The noise assessment will include predictions of likely wind turbine noise levels across a range of wind speeds to demonstrate compliance with the Total ETSU-R-97 and Site-Specific Noise Limits.
- 9.25 A cumulative noise assessment will be undertaken in order to consider the consented, operational and proposed (in planning) wind farms within the vicinity of the Proposed Development. The assessment will be undertaken in accordance with ETSU-R-97 and the IOA GPG.

LIKELY SIGNIFICANT EFFECTS

Potential Impacts Scoped In

- 9.26 Where noise levels resulting from the construction or operation of the Proposed Development are likely to be above the relevant limit levels, there is the potential for significant effects to occur.
- 9.27 Careful site design which considers the potential for noise impacts to occur will be implemented throughout all stages of the design of the Proposed Development.

Issues Scoped Out

Vibration

- 9.28 Given the nature of construction activities proposed and the relative distances from residential receptors, the risk of ground borne vibration impacting on residential receptors is considered very low. As such a vibration assessment is not proposed and this will be scoped out of the EIAR.

Decommissioning Noise

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



Low-Frequency Noise

- 9.30 A study, published in 2006 by acoustic consultants Hayes McKenzie on the behalf of the Department of Trade and Industry (DTI), investigated low frequency noise from wind farms. This study concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines.
- 9.31 In February 2013, the Environmental Protection Authority of South Australia published the results of a study into in infrasound levels near wind farms. This study measured infrasound levels at urban locations and rural locations with wind turbines close by, and rural locations with no wind turbines in the vicinity. It found that infrasound levels near wind farms are comparable to levels away from wind farms in both urban and rural locations. Infrasound levels were also measured during organised shutdowns of the windfarms; the results showed that there was no noticeable difference in infrasound levels whether the turbines were active or inactive.
- 9.32 Bowdler et al., (2009) concluded that:
- “...there is no robust evidence that low frequency noise (including ‘infrasound’) or ground-borne vibration from wind farms generally has adverse effects on wind farm neighbours”.*
- 9.33 During a planning Appeal (PPA-310-2028, Clydeport Hunterston Terminal Facility, approximately 2.5 km south-west of Fairlie, 9 Jan 2018), the health impacts related to low frequency noise associated with wind turbines were considered at length by the appointed Reporter (Mr M Croft). The Reporter considered evidence from Health Protection Scotland and the National Health Service. In addition, he also considered low frequency noise surveys undertaken by the Appellant and the Local Authority both of which demonstrated compliance with planning conditions and did not identify any problems attributable to the turbine operations; some periods with highest levels of low frequency noise were recorded when the turbines were not operating.
- 9.34 The Reporter concluded that:
- The literature reviews by bodies with very significant responsibilities for the health of local people found insufficient evidence to confirm a causal relationship between wind turbine noise and the type of health complaints cited by some local residents.
 - The NHS’s assessment is that concerns about health impact are not supported by good quality research.
 - Although given the opportunity, the Community Council failed to provide evidence that can properly be set against the general tenor of the scientific evidence.
- 9.35 Low-frequency noise and infrasound was considered in the WSP/ BEIS report (September 2023). The report considered a number of studies which investigated claimed links between adverse health symptoms and infrasound emissions from wind turbines. The report notes on page 114 the following:
- ‘It has been demonstrated in controlled experiments, including the involvement of participants self-reporting to be sensitive to wind turbine infrasound, that exposure to infrasound at levels representative of wind turbine immissions at dwellings is not associated with physiological or psychological health effects, whereas the expectation of effects from being exposed to wind turbine infrasound, and positive or negative messages influencing that expectation, can affect health symptom reporting.*



Overall, the findings from the existing evidence base indicate that infrasound from wind turbines at typical exposure levels has no direct adverse effects on physical or mental health and reported symptoms of ill-health are more likely to be psychogenic in origin.

It is expected that further evidence from ongoing studies into wind turbine infrasound effects will emerge soon, in particular from the NHMRC studies in Australia. However, based on the existing scientific evidence, it does appear probable that the above findings will not be contradicted by newer evidence.'

- 9.36 Since the publication of the report, the study that was granted funding by the National Health and Medical Research Council of Australia (NHMRC) was presented in the Environmental Health Perspectives (EHP) journal, which was published by the United States National Institute of Environmental Health. The study⁹ aimed to test the effect of exposure to 72 hours of infrasound (designed to simulate a wind turbine infrasound signature) exposure on human physiology, particularly sleep; it concluded that:

'Our findings did not support the idea that infrasound causes WTS¹⁰, High level, but inaudible, infrasound did not appear to perturb any physiological or psychological measure tested in these study participants.'

- 9.37 It is therefore not considered necessary to carry out specific assessments of low frequency noise and infrasound and it is proposed that these are scoped out of the EIAR.

Amplitude Modulation

- 9.38 In its simplest form, Amplitude Modulation (AM), by definition, is the regular variation in noise level of a given noise source. This variation (the modulation) occurs at a specific frequency, which, in the case of wind turbines, is defined by the rotational speed of the blades, i.e. it occurs at the rate at which the blades pass a fixed point (e.g. the tower), known as Blade Passing Frequency.
- 9.39 A study was carried out in 2007 on behalf of the Department for Business, Enterprise and Regulatory Reform (BERR) by the University of Salford, which investigated the incidence of noise complaints associated with wind farms and whether these were associated with AM. The study defined AM as aerodynamic noise from wind turbines with a greater degree of fluctuation than normal at blade passing frequency. Its aims were to ascertain the prevalence of AM on UK wind farm sites, to try to gain a better understanding of the likely causes, and to establish whether further research into AM is required.
- 9.40 The study concluded that AM had occurred at only a small number (4 of 133) of wind farms in the UK, and only for between 7% and 15% of the time. It also stated that, the causes of AM are not well understood, and that prediction of the effect was not currently possible.
- 9.41 This research was updated in 2013 by an in-depth study undertaken by Renewable UK, which has identified that many of the previously suggested causes of AM have little or no association to the occurrence of AM in practice. The generation of AM is based upon the interaction of a number of factors, the combination and contributions of which are unique to each site. With the current state of knowledge, it is not possible to predict whether any particular site is more or less likely to give rise to AM, and the

⁹ The Health Effects of 72 Hours of Simulated Wind Turbine Infrasound: A Double-Blind Randomized Crossover Study in Noise-Sensitive, Healthy Adults. Available at The Health Effects of 72 Hours of Simulated Wind Turbine Infrasound: A Double-Blind Randomized Crossover Study in Noise-Sensitive, Healthy Adults - PMC (nih.gov)

¹⁰ WTS stands for Wind Turbine Syndrome which is a term for adverse human health effected related to the proximity of wind turbines.



incidence of AM occurring at any particular site remains low, as identified in the University of Salford study.

- 9.42 The WSP/ BEIS report discusses AM, and on page 116 states that:

'At present, it seems evident that reliable predictions of AM in the context of development planning and noise assessment guidance are unlikely to be practically feasible in the near future.'

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

QUESTIONS FOR CONSULTEES

- 9.44 Can the consultees confirm that they agree with the proposed assessment methodologies, specifically a total daytime ETSU-R-97 noise limit of 40 dB, and the use BS 5228 to assess construction noise for the wind farm?
- 9.45 Can consultees agree that assessment of vibration, decommissioning noise, low frequency noise, infrasound and amplitude modulation be scoped out of the EIA?

QUESTIONS FOR CONSULTEES

Can the consultees confirm that they agree with the proposed assessment methodologies, specifically a total daytime ETSU-R-97 noise limit of 40 dB, and the use BS 5228 to assess construction noise for the wind farm?

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



10. SHADOW FLICKER

INTRODUCTION

- 10.1 Under certain combinations of geographical position, times of day and year, wind speed and wind direction, the sun may pass behind a wind turbine rotor and cast a shadow over the windows of neighbouring buildings. When the blades rotate and the shadow passes a window to a person within that room, the shadow appears to flick on and off; this effect is known as ‘shadow flicker’. It occurs only within buildings where the flicker appears through a window opening and only buildings within 130 degrees either side of north relative to a turbine can be affected. Narrow windows are affected to a lesser degree than wider windows as the length of time a shadow falls across a narrow window is less.

LEGISLATION, POLICY AND GUIDANCE

- 10.2 The key guidance that will inform the design and assessment approach is:
- Web Based Renewables Advice: ‘Onshore Wind Turbines’ (Scottish Government, 2014)¹¹;
 - Update of UK Shadow Flicker Evidence Base (Parsons Brinckerhoff, 2010)¹².

ASSESSMENT METHODOLOGY

- 10.3 The Onshore Wind Turbines web-based document, published by the Scottish Government, states that, as a general rule, flicker effects have been proven to occur only within ten rotor diameters of a wind turbine. The Guidance states:

“The seasonal duration of this effect (Shadow Flicker) can be calculated from the geometry of the machine and the latitude of the potential site. Where this could be a problem, developers should provide calculations to quantify the effect. In most cases however, where separation is provided between wind turbines and nearby dwellings (as a general rule 10 rotor diameters), “shadow flicker” should not be a problem. However, there is scope to vary layout / reduce the height of turbines in extreme cases.”

- 10.4 There is no standard for the assessment of shadow flicker in the UK and there are no guidelines which quantify what exposure levels would be acceptable.
- 10.5 An assessment will be undertaken to determine the potential for the Proposed Development to cause shadow flicker effects at the nearest sensitive receptors. This will involve an assessment of all sensitive receptors located within ten rotor diameters and 130 degrees either side of north from the final turbine locations. The modelling software will be used to model and quantify the level of such effects based on the specific relationship between the wind turbines and properties, along with the characteristics of those properties.

MITIGATION

¹¹ Scottish Government (2014) Web Based Renewables Advice: ‘Onshore Wind Turbines’ [Online] Available From <https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/> [Accessed 30th September 2023]

¹² Parsons Brinckerhoff (2010) Update of UK Shadow Flicker Evidence Base [Online] Available From <https://www.gov.uk/government/publications/update-of-uk-shadow-flicker-evidence-base> [Accessed 26th February 2025]



- 10.6 If shadow flicker did result and if any unacceptable impacts could not be overcome through the design/layout of the Proposed Development appropriate mitigation measures will be provided. There are several mitigation measures that can be put in place to reduce impacts. These include screening or blocking the flicker through the planting of trees or switching the turbine(s) off during periods when conditions are such that shadow flicker effects occur.

CUMULATIVE EFFECTS

- 10.7 No cumulative assessment for Shadow Flicker is proposed due to the separation distances from other nearby schemes.

QUESTIONS FOR CONSULTEES

Do you agree with the proposed methodology for assessing shadow flicker?

Do you agree that if no sensitive receptors are found to be located within ten rotor diameters and 130 degrees either side of north from the final turbine locations shadow flicker can be scoped out of the EIA?



11. ISSUES SCOPED OUT OF EIA

INTRODUCTION

- 11.1 It is proposed that the following topics are 'scoped out' of the EIA as following baseline assessments and our experience of working on similar projects it is not believed that they will result in likely significant effects. It is worth noting that this does not mean that 'scoped out' topics will not be covered in the forthcoming planning application completely, they will just not be covered in the EIA Report.

CLIMATE CHANGE

- 11.2 As a renewable energy project, the proposed Development is likely to result in significant carbon savings. However, it is acknowledged that the proposed Development will give rise to some carbon emissions through its construction. A carbon balance calculation will be undertaken for the proposed Development using the Scottish Governments Carbon Calculator. This will calculate the expected carbon savings over the lifetime of the Development. It will be submitted as an appendix to the EIA Report.

Climate resilience

- 11.3 The proposed Development will be inherently designed to reduce adverse climate change effects by offsetting the production of carbon dioxide through use of renewable sources to generate electricity. It is considered that the Proposed Development's vulnerabilities and resilience to climate change can be scoped out of the EIA. None of the identified climate change trends could affect the proposed Development, with the exception of increased windstorms. Braking mechanisms installed on turbines allow them to be operated only under specific wind speeds and should severe windstorms be experienced then the turbines would be shut down. Climate change is not expected to have a significant effect on the proposed Development, and this topic can therefore be scoped out.

QUESTIONS FOR CONSULTEES

Do you agree that Climate Change can be scoped out of the EIA?

ACCESS, TRAFFIC AND TRANSPORTATION

- 11.4 The majority of vehicle movements to the Site will be during construction and decommissioning and are likely to consist of abnormal load vehicles for delivery of turbine components, heavy goods vehicles, light goods vehicles and cars. During the operational phase only a small number of vehicles will attend the Site on an infrequent basis to undertake inspections and maintenance activities.
- 11.5 Access to the Site will be via the A76 from a westerly direction. While the existing Site access from the roundabout off the A76 will be utilised for general construction traffic, a new Site entrance to ensure larger components can get onto Site will be created directly off the A76 approximately 1km west of the roundabout.
- 11.6 It is anticipated that wind turbine components will be delivered to either King George V Docks in Glasgow or Ayr Docks and transported by road to the Site via a series of



abnormal load movements. Depending on which dock the turbines are delivered to the route to the Site would be via the M8, M73, M74, M77/A77 and A76 trunk roads or the A79, A719, A77 and A76. These are the same routes that will be used for Lethans and Lethans Extension Wind Farms.

- 11.7 The 'Guidelines for the Environmental Impact of Road Traffic' sets out the following thresholds.
- a) Highway links where traffic will increase by more than 30% (or where the number of HGV's will increase more than 30%); and
 - b) Any other specifically sensitive areas where traffic flows have increased by 10% or more.
- 11.8 Where predicted increases in traffic flows are lower than these thresholds, the guidelines suggest the significance of effect can be stated to be low or not significant.
- 11.9 The Traffic and Transport Assessments for both Lethans and Lethans Extension, both of which are larger schemes than that proposed at Airds Hill, concluded that there would be no significant residual effect from construction traffic in isolation or cumulatively with other developments. For Lethans Extension, the worst-case scenario predicted a 5.5% increase in total traffic and 17.5% increase in HGV traffic on the A76. This was calculated on the basis of 100% of the stone being imported to Site. These levels of increase were considered negligible and therefore not found to be significant.
- 11.10 As Airds Hill is a smaller development than Lethans Extension and taking the above into consideration it is not anticipated that it will result in significant effects on the local road network. Therefore access, traffic and transportation will be scoped out of the EIA. Due to the differing stages of the Developments and the current grid connection dates it is not anticipated that Airds Hill will be getting constructed at the same time as Lethans or Lethans Extension. Therefore, there will be no likely significant cumulative effects as a result of the Airds Hill, Lethans or Lethans Extension.
- 11.11 Despite this topic being scoped out of the EIA, a report will be submitted with the planning application which assess the effect of vehicle movements to and from the Site associated with the construction, operation and decommissioning phase of the Proposed Development.

QUESTIONS FOR CONSULTEES

Do you agree that Access, Traffic and Transportation can be scoped out of the EIA?

AVIATION AND RADAR

- 11.12 The effects of wind turbines on aviation interests have been widely publicised but the primary concern is one of safety and not environmental effects. There are two dominant scenarios that may lead to objections from aviation stakeholders:
- a) Physical Obstruction: Turbines can present a physical obstruction at or close to an airfield or in the military Low Flying environment; and



- b) Radar/Air Traffic Services: Turbine clutter appearing on radar display can affect the safe provision of air traffic services as it can mask unidentified aircraft from the air traffic controller and/or prevent them from accurately identifying aircraft under their control.

11.13 The aviation facilities likely to be impacted by the Proposed Development are:

- a) National Air Traffic Services En-Route Plc. (NERL) Lowther Hill Radar.
- b) Prestwick Airport Primary Surveillance Radar (PRS).
- c) MoD Low Flying; and
- d) Glasgow Airport and Prestwick Airport Instrument Flight Procedures (IFPs).

11.14 Based on our understanding of the effect of wind turbines on aviation infrastructure in this area, we believe that industry standard mitigation solutions can be agreed and implemented such that the proposed Development will have no residual significant effects on aviation. Therefore, aviation and radar will be scoped out of the EIA.

11.15 Despite this topic being scoped out of the EIA an Aviation Assessment of the proposed Development will be undertaken and submitted with the planning application in order to assess the impact of the Site on aviation infrastructure and set out mitigation as required. Planning conditions will be proposed as part of the planning application to ensure that any mitigation is delivered.

11.16 Due to the height of the turbines, greater than 150m, the turbines will require to be lit with visible aviation lighting. Details of this will be set out in the description of development section of the EIA Report and its impact assessed as part of the LVIA.

QUESTIONS FOR CONSULTEES

Do you agree that Aviation and Radar can be scoped out of the EIA?

TELECOMMUNICATIONS, TELEVISION AND UTILITIES

11.17 Wind farms have the potential to interfere with electro-magnetic signals and utilities passing above ground, and physically with existing infrastructure above and/or below ground. To determine the potential impact of the proposed Development on telecommunication links and utilises, a desk-based study and consultation with Ofcom, telecommunication providers as appropriate, and water, gas and electricity utilities providers is being undertaken.

11.18 With regards to the potential for interference with local television reception, following the switchover to digital television transmission throughout the UK, the potential for wind turbine developments to impact on television reception has been greatly reduced.

11.19 The results of the consultation will be taken into account in the Site design process to ensure that there are no effects on telecommunications or utilities. A review of both the interface mechanisms and methodology for Fresnel Zone interaction, Diffraction and Reflection will be carried out to ensure thorough assessment of constraints. If any links do exist within the development area, then the turbines will be designed to ensure suitable buffer distances are applied.



- 11.20 The proposed Development will therefore not likely result in any significant effects on telecommunications, television or utilities, as such these topics are to be scoped out of the EIA.

QUESTIONS FOR CONSULTEES

Do you agree that Telecommunications, television and Utilities can be scoped out of the EIA?

FORESTRY

- 11.21 While the Site is located within an area of largely re-instated land which was previously subject to open-cast mining operations, there are areas of woodland present on Site extending to 132ha. There are two areas of mature commercial conifer blocks totalling 22ha and an area of establishing commercial forestry planted in 2000 over an area of 110ha.
- 11.22 Areas of woodland will need to be felled for the construction and operation of the wind farm including areas for access tracks, turbine foundations and other infrastructure. Further woodland may also need to be felled for wind yield and other technical reasons. The structure of the woodlands may therefore change, resulting in a potential loss of woodland area.
- 11.23 There is a presumption against permanent woodland removal within the UK unless it addresses other environmental concerns or delivers additional and clearly defined public benefits. The Scottish Government's "Control of Woodland Removal Policy" (2009) sets out the assessment requirements and compensatory measures which should be considered when removing woodland cover.
- 11.24 In line with the Control of Woodland Removal Policy, any loss of woodland as a result of the proposed Development will be compensated for either on or off-site. The proposed Development is unlikely to have a significant residual effect on forestry and therefore it is proposed that Forestry is scoped out of the EIA.
- 11.25 A Forestry Assessment will be submitted alongside the planning application which will provide details of the existing tree cover over the Site, the impact of the proposed Development on the forestry baseline and the requirements for compensatory planting. The effects of the proposed Development relating to forest felling and restocking would be assessed in the relevant chapters of the EIA Report, including Landscape and Visual, Ecology, Ornithology, Hydrology and Soils. Traffic movements associated with timber removal will be taken into account in the Traffic and Transport Assessment.

QUESTIONS FOR CONSULTEES

Do you agree that Forestry can be scoped out of the EIA?

SOCIO-ECONOMICS

- 11.26 Based on our experience of delivering wind farms for the past 20 years and our commitment as a company to maximise the benefits of our developments in the communities which they are located, it is anticipated that the proposed Development will have a net positive socio-economic benefit. It is proposed that socio-economic benefits are scoped out of the EIA and a separate statement on Socio-Economic Benefits



is provided as part of the planning application documents. Details will also be provided within the application on the community benefits associated with the proposed Development.

QUESTIONS FOR CONSULTEEES

Do you agree that Socio-Economics can be scoped out of the EIA?

TOURISM

- 11.27 The link between onshore wind and the tourism sector has been subject to research over the years and there is no evidence to support the suggestion that the presence of a wind farm results in a significant adverse effect on tourism. The 2021 Bigger Economic Study (Wind Farms & Tourism Trends in Scotland: Evidence from 44 Wind Farms) analysed 44 wind farm case studies in Scotland and found no evidence of a link between wind farm development and trends in tourism employment at the level of the Scottish economy, across local authority areas nor in the locality of wind farm sites.
- 11.28 Tourism assessments for onshore wind farms over the last two decades have found no adverse effects assessed as significant in terms of the EIA regulations. There is therefore no reason to expect significant effects on tourism as a result of the proposed Development. It is therefore proposed that tourism is scoped out of the EIA.
- 11.29 The potential effects on visual amenity for tourism and recreation locations will be fully assessed in the EIA Report as part of the landscape and visual assessment.

QUESTIONS FOR CONSULTEEES

Do you agree that Tourism can be scoped out of the EIA?

HUMAN HEALTH AND SAFETY

- 11.30 In line with the requirements of the EIA Regulations, the assessments undertaken as part of the EIA will consider human receptors such as local residents and construction workers. Therefore, the effects of the proposed Development in relation to health and population will, where relevant, be considered in the chapters/ technical appendices, such as noise, hydrology and visual impact. Given that the effects of the proposed Development on population and human health will be addressed within the respective chapters / technical appendices, and mitigation measures stated to address any significant adverse effects, a separate Health Impact Assessment is not considered to be necessary and is not proposed.

ICE THROW

- 11.31 The maximum potential distance for ice falling from a turbine can be approximated using the formula $1.5 \times (\text{blade diameter} + \text{hub height})$. For the proposed Development the maximum distance from a turbine where ice could be expected to fall is therefore in the region of up to 500m. The risk to public safety is therefore considered to be very low because the distance to from the turbines to the nearest public road, residential property or core path is greater than 500m.



- 11.32 Warning signs will be placed at the Sites main entrance and throughout the Site to alert the public to the issue. No detailed assessment is proposed as part of the EIA.

QUESTIONS FOR CONSULTEES

Do you agree that a separate Human Health Impact Assessment is not required?

RISK OF MAJOR ACCIDENTS AND/OR DISASTERS

- 11.33 Due to nature of the proposed Development, the risk of a major accident or disaster is considered to be extremely low. A risk assessment process will be followed by the Principal Designer during the design stage as part of the requirements of the Construction (Design and Management) Regulations 2015. This will ensure that all potential risks are identified at an early stage and appropriate mitigation is implemented.
- 11.34 During the operational stage, routine maintenance inspections will be completed to ensure complaint operation of the wind farm.
- 11.35 Health and Safety during all phases of the proposed Development will be subject to relevant legislation and best practice. Cognisance will be made to the Wind Turbine Safety Rules, Fourth Edition and Safety On Guidance. Site inductions, risk assessments, and method statements will all be put in place. As such there is no further requirement for Health and Safety to be assessed within the EIA and it is proposed that it is scoped out of further assessment.
- 11.36 The risk of a major accident could be increased by the probability of a natural disaster; however, the proposed Development is not located within an area known for natural disasters such as floods, hurricanes, tornadoes, volcanic eruptions, earthquakes or tsunamis. Given the historic land use of the Site, the geology section of the EIA Report will consider the ground conditions and their suitability in relation to the proposed Development.
- 11.37 None of the identified climate change trends will affect the proposed Development with the exception of increased windstorms. Brake mechanisms installed on turbines allow them to be operated only under specific wind speeds and should severe windstorms be experienced then the turbines would be shut down. Although an unlikely event in the area, the brake mechanisms could also apply to a hurricane scenario.
- 11.38 It is considered likely that no significant effects will arise due to major accidents and natural disasters as a result of the proposed Development, and this topic can be scoped out of the EIA.

QUESTIONS FOR CONSULTEES

Do you agree that Risk of Major Accidents and/or Disasters can be scoped out of the EIA?



WASTE

- 11.39 A Site Waste Management Plan (SWMP) will detail how waste streams are to be managed, following the Waste Hierarchy of prevention, reuse, recycle, recover and as a last resort, disposal to landfill. The SWMP will be agreed and implemented prior to construction commencing onsite. Therefore, it is not considered necessary for waste to be assessed further within the EIA and is scoped out for further assessment.

QUESTIONS FOR CONSULTEES

Do you agree that Waste can be scoped out of the EIA?

AIR QUALITY

- 11.40 The proposed Development is not considered likely to give rise to significant effects on air quality. The main impacts would be limited to dust from construction works and exhaust emissions from fixed and mobile construction plant and construction vehicles. An outline Construction and Environmental Management Plan (CEMP) will be submitted with EIA Report which will include general pollution control measures for air quality.

- 11.41 The contributions of exhaust emissions from construction vehicles would be below current air quality objectives. Air quality will therefore be scoped out of the EIA.

QUESTIONS FOR CONSULTEES

Do you agree that Air Quality can be scoped out of the EIA?



12. SUMMARY OF TOPICS SCOPED IN AND OUT

TOPIC	TO BE INCLUDED IN EIA	NOTES
Landscape and visual impact		
Ornithology		Habitats Regulations Assessment will also be submitted
Ecology		
Archaeology and Cultural Heritage		
Hydrology, Geology and Soils		
Noise		
Shadow flicker		At this stage it is anticipated that shadow flicker will form part of the EIA, however if it is found that there are no sensitive receptors located within ten rotor diameters and 130 degrees either side of north from the final turbine locations this will be removed from the scope of the EIA
Climate change		A carbon calculator calculation using the Scottish Governments online model will be submitted with the application
Access, Traffic and Transport		A Traffic and Transport Assessment will be submitted with the application which will assess the impact of the Proposed Development on the surrounding road network.
Aviation and Radar		An Aviation Assessment will be submitted with the application which will assess the impact of the Proposed Development on aviation infrastructure and set out details of the mitigation as required.



Telecommunications, Television and Utilities		Any links will be shown on constraint plans submitted with the application.
Forestry		A Forestry Assessment will be submitted with the application which will provide details of the existing tree cover over the Site, the impact of the Proposed Development on the forestry baseline and the requirements for compensatory planting.
Socio-economics		A Socio-Economic Report and a statement on Community and Public benefits will be submitted with the planning application.
Tourism		
Human Health and Safety		
Risk of major accidents and/or disasters		
Waste		
Air Quality		



13. QUESTIONS FOR CONSULTEES

INTRODUCTION

Q1 - Do you have any information which would be relevant to the preparation of the EIA for Airds Hill Wind Farm?

Q2 - Are any their sites missing from the cumulative sites listed in table 4.2 (please see chapter 4) that should be taken into consideration as part of the Airds Hill EIA?

LANDSCAPE AND VISUAL IMPACT

Q3 - Do you agree with the proposed Study Areas?

Q4 - Do you agree with the proposed viewpoint locations and night-time visualisation locations?

Q5 - Do you agree with the matters to be scoped out?

Q6 - Are there any other wind farms you are aware of within the 20 km study area to be included the cumulative assessment?

ORNITHOLOGY

Q7 - Do you have any information which would be relevant to the preparation of the EIA in relation to ornithology?

Q8 - Are you content with, or do you have any comments on, the baseline survey methods and level of survey effort?

Q9 - Are you content with, or do you have any comments on, the list of potential effects and impact assessment methods?

Q10 - Do you agree that black grouse and species on the Green-list can be scoped out of the EIA?

ECOLOGY

Q11 - Do you have any information which would be relevant to the preparation of the EIA in relation to ecology?

Q12 - Are you content with, or do you have any comments on, the baseline survey methods and level of survey effort?

Q13 - Are you content with, or do you have any comments on, the list of potential effects and impact assessment methods?

Q14 - Do you agree that the species listed in paragraph 6.67 can be scoped out of the EIA?



ARCHAEOLOGY AND CULTURAL HERITAGE

Q15 - The Zone of Theoretical Visibility (ZTV) for the scoping layout used for the Stage 1 Setting Assessment in this Scoping Chapter is available as a digital shapefile to consultees on request. Please provide contact details for this to OnPath directly, with confirmation whether consultees wish to request any further digital datasets to be provided to aid their scoping opinion?

Q16 - Do consultees agree with the proposals for 'Receptors/Matters Scoped Out' in the Cultural Heritage assessment for the EIA Report?

Q17 - Are consultees content with the proposed Outer Study Area limits presented in this Scoping Report?

Q18 - Are there any other relevant consultees other than HES, WoSAS and Dumfries and Galloway Council who should be contacted with respect to the Cultural Heritage assessment?

Q19 - Do consultees wish to request any further specific heritage assets are assessed for operational setting effects in the EIA Report other than the four heritage assets identified from the Stage 1 Setting Assessment included in this EIA Scoping Report (summary listed below)?

- SM3311 Kyle Castle, 200m E of Dalblair (Scheduled Monument)
- LB14246 Martyrs Parish Church, New Cumnock (Category B Listed Building)
- LB44604 / 53553 Glaisnock House, Holmhead (Category B Listed Building and NIDL)
- GDL00149 / LB14413 Dumfries House (Inventory Garden and Designed Landscape / Category A Listed Building + 11 further Listed Buildings within GDL boundary)

GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

Q20 - Do you have any information which would be relevant to the preparation of the EIA in relation to Geology, hydrology and Hydrogeology?

Q21 - Are you content with, or do you have any comments on, the baseline survey methods and level of survey effort?

Q22 - Are you comfortable with the approach to peat probing on-site given the ground conditions and historic use of the site?

NOISE

Q23 - Can the consultees confirm that they agree with the proposed assessment methodologies, specifically a total daytime ETSU-R-97 noise limit of 40 dB, and the use BS 5228 to assess construction noise for the wind farm?



Q24 -Can consultees agree that assessment of vibration, decommissioning noise, low frequency noise, infrasound and amplitude modulation be scoped out of the EIA?

SHADOW FLICKER

Q25 - Do you agree with the proposed methodology for accessing shadow flicker?

Q26 - Do you agree that if no sensitive receptors are found to be located within ten rotor diameters and 130 degrees either side of north from the final turbine locations shadow flicker can be scoped out of the EIA?

ISSUES SCOPED OUT

Q27 - Do you agree that Climate Change can be scoped out of the EIA?

Q28 - Do you agree that Access, Traffic and Transportation can be scoped out of the EIA?

Q29 - Do you agree that Aviation and Radar can be scoped out of the EIA?

Q30 - Do you agree that Telecommunications, television and Utilise can be scoped out of the EIA?

Q31 - Do you agree that Forestry can be scoped out of the EIA?

Q32 - Do you agree that Socioeconomics can be scoped out of the EIA?

Q33 - Do you agree that Tourism can be scoped out of the EIA?

Q34 - Do you agree that a separate Human Health Impact Assessment is not required?

Q35 - Do you agree that Risk of Major Accidents and/or Disasters can be scoped out of the EIA?

Q36 - Do you agree that Waste can be scoped out of the EIA?

Q37 - Do you agree that Air Quality can be scoped out of the EIA?

