



# Carrick Windfarm

## Scoping Report

May 2020

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## Executive Summary

ScottishPower Renewables (UK) Limited, trading as ScottishPower Renewables (SPR) intends to apply to the Scottish Government Energy Consents Unit (ECU) for consent under Section 36 of the Electricity Act 1989 to construct and operate a windfarm (hereafter referred to as the Proposed Development) at Carrick Forest, South Ayrshire. The Site, which occupies an area of approximately 3811.41 hectares (ha), is situated within the north of Galloway Forest Park; in existing commercial forestry owned and managed by Forestry and Land Scotland (FLS).

The Proposed Development is anticipated to comprise up to 17 wind turbines, with a maximum height to blade tip of 200 metres (m), with associated infrastructure, including the potential for co-located technologies (e.g. energy storage). The Proposed Development constitutes a Schedule 2 development as classified by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (the EIA Regulations). Therefore, it is the intention of SPR to submit an Environmental Impact Assessment Report (EIAR) along with the application for consent. The overarching aim of this Scoping Report is to identify the potential significant effects and to identify the topics and/or receptors which can be scoped-out of the EIAR. As per Regulation 12 of the EIA Regulations, the Applicant is seeking to confirm the 'Scoping Opinion' with the ECU and key consultees.

This Scoping Report summarises the preliminary work conducted to date, including, where relevant, the consultation undertaken to date. For each aspect a description of the assessment methodology and project limitations and assumptions has been presented. A preliminary assessment of the baseline conditions has been undertaken and the sensitive receptors and potential significant effects have been identified. These initial assessments were conducted using desk-based study and/or recently conducted field surveys. The effects deemed not to be significant have been summarised.

This Scoping Report has been issued to the ECU in support of a request for a Scoping Opinion under Regulation 12 of the EIA Regulations. Several key questions are posed, and responses are requested to inform the detailed assessment for each aspect of the EIAR in conjunction with on-going consultation with statutory and non-statutory consultees throughout the assessment process.

# 1 Introduction

## 1.1 The Proposal

1. ScottishPower Renewables (SPR) is part of the ScottishPower group of companies operating in the UK under the Iberdrola Group, one of the world's largest integrated utility companies and a world leader in wind energy. SPR (hereafter referred to as "the Applicant") now only produces 100% green electricity – focusing on wind energy, smart grids and driving the change to a cleaner, electric future. The company is investing over £4.6 million every working day to make this happen and is committed to speeding up the transition to cleaner electric transport, improving air quality and over time, driving down bills to deliver a better future, quicker for everyone.
2. The Applicant is at the forefront of the development of the renewables industry through pioneering ideas, forward thinking and outstanding innovation. Its ambitious growth plans include expansion of its existing onshore wind portfolio, investment in new large scale solar deployment and innovative grid storage systems including batteries. The company is also delivering the Iberdrola Group's offshore windfarms in the Southern North Sea off East Anglia.
3. With over 40 operational windfarms, the Applicant manages all its sites through its world leading Control Centre at Whitelee Windfarm, near Glasgow.
4. The Applicant is proposing to submit an application to the Scottish Ministers under Section 36 of the Electricity Act 1989<sup>1</sup> to construct and operate a windfarm, located in South Ayrshire (hereafter referred to as 'the Proposed Development'), see **Figure 1.1 Site Location, Appendix A**.
5. The Proposed Development is anticipated to comprise of up to 17 wind turbines with a maximum height to blade tip of 200 metres (m) using co-located renewable energy technology such as energy storage.

## 1.2 Need for EIA

6. The Proposed Development falls within Schedule 2 of the EIA Regulations<sup>2</sup> and as such requires the submission of an EIAR.

## 1.3 Purpose of Scoping Report

7. The Applicant is seeking confirmation of the scope of assessments to be included in the EIAR, from the Scottish Ministers and key consultees by requesting a Scoping Opinion under Regulation 12 of the EIA Regulations. This Scoping Report provides the following information to inform the Scoping Opinion, as stated in the EIA Regulations:
  - A description of the location of the development, including a plan sufficient to identify the land;
  - A brief description of the nature and purpose of the development and its potential significant effects on the environment; and
  - Such other information or representations as the developer may wish to provide or make.

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<sup>1</sup> HM Government (1989). The Electricity Act. Available at: <http://www.legislation.gov.uk/ukpga/1989/29/contents>

<sup>2</sup> HM Government (2017). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: <http://www.legislation.gov.uk/ssi/2017/101/contents/made>

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8. The aim of the scoping process is to identify key environmental issues at an early stage, to ensure that the scope of the EIAR is sufficient to assess the elements which have the potential to cause significant environmental effects. Equally, the scoping process is intended to ensure that the EIA is proportionate and therefore seeks to confirm the aspects that can be scoped-out of the EIAR.
9. As a key form of early engagement, this Scoping Report also includes questions to consultees to promote positive, focussed early consultation in the EIA process.

### 1.4 Assumptions and Limitations

10. This Scoping Report is based on environmental and design information available at the point of authorship, including 3rd party data. Assumptions specific to an environmental topic are stated in the relevant section below.
11. Any assumptions or limitations that remain as the EIA concludes will be stated in the EIAR.

## 2 Project Description

### 2.1 Purpose of the Development

12. Onshore windfarm developments are viewed as key contributors to achieving the UK Government's renewable energy targets and the drive to reduce UK carbon emissions in line with current targets. The need for such development is underpinned by the Government's plans to restrict the use of all coal-fired power stations by 2023 and to cease operation by 2025, resulting in the need for over a quarter of the UK's energy generation to be replaced in this period. The UK's climate change ambitions are amongst the highest in Europe and require an 80% reduction in carbon dioxide emissions by 2050.
13. By 2050 we are also likely to use considerably more electricity than we do today. This is driven by trends such as the growth in electric vehicle ownership, which has rapidly increased and is set to continue rising with the abolition of new diesel and petrol cars by 2040. In 2019, the Scottish Government was the first government in the world to formally declare a climate emergency. As part of the plan to address this, the Scottish Government has an ambitious energy strategy and has set targets to generate the equivalent of 100% of Scotland's electricity demand and 11% of non-electrical heat demand from renewable sources by 2020<sup>3</sup>. Furthermore, the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 commits the Scottish Government to achieving 'net zero' emissions by 2045. The UK Energy Roadmap<sup>4</sup> and The UK Low Carbon Transition Plan<sup>5</sup> highlights onshore wind as a key contributor to achieving the UK Government's renewable energy targets and transition to a low carbon energy system. Onshore wind is also the cheapest form of low carbon electricity generation in the UK<sup>6</sup> and is shown to have local and national economic benefits; over the lifetime of SPR's eight operational onshore windfarms commissioned in 2016-2017 in south west Scotland<sup>7</sup>, £1,276 million gross value the UK and £297 million local value will be added<sup>8</sup>.

### 2.2 Site Description

14. The Application Site, hereafter referred to as "the Site" is located within Carrick Forest, a commercial forest owned and managed by Forestry and Land Scotland (FLS) in south west Scotland, as illustrated in **Figure 1.1 Site Location, Appendix A**. The Site is within the administrative area of South Ayrshire Council. The surrounding area is rural with land largely being used for forestry and agriculture. The Site occupies an area of approximately 3811.41ha and is drained by tributaries of the River Stinchar catchment (which flows through the centre of the Site), Water of Girvan (which flows to the north and east of the Site) and Palmullen Burn (which flows along the north of the Site).
15. The land use within the Site is predominantly commercial forest and rough grazing, with a 275kV overhead ScottishPower transmission line passing through the centre of the Site. There is also a

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<sup>3</sup> Scottish Government (2019). Annual Energy Statement. Available at: <https://www.gov.scot/publications/annual-energy-statement-2019/pages/3/>

<sup>4</sup> HM Government (2013). The UK Renewable Energy Roadmap. Available at: <https://www.gov.uk/government/collections/uk-renewable-energy-roadmap>

<sup>5</sup> HM Government (2009). The UK Low Carbon Transition Plan. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/228752/9780108508394.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228752/9780108508394.pdf)

<sup>6</sup> BVG Associates (2018). The Power of Onshore Wind. Available at: <https://bvgassociates.com/the-power-of-onshore-wind/>

<sup>7</sup> Black Law Extension (a), Black Law Extension (b), Dersalloch, Ewe Hill 1, Ewe Hill2, Glen App, Hare Hill Extension, Killgallioch.

<sup>8</sup> BVG Associates (2017). Economic benefits from onshore wind farms.

Scottish Water pipeline running through the Site connecting to Loch Bradan, a public water supply to the east of the Site Boundary. The Site lies within the north of Galloway Forest Park<sup>9</sup>, which provides a range of recreational opportunities and which includes the Galloway Dark Skies Park<sup>10</sup>. Linfern Loch is located within the northern part of the Site and is owned by a 3<sup>rd</sup> party. The loch has historically been used for fishing, however FLS have not issued fishing permits since 2016.

16. The Site lies between 200-490m above ordnance datum (AOD), the highest point is the northern slope of Penbrick Hill (499m AOD), the summit of which lies just outside the Site Boundary to the south west. A Wild Land Area (WLA)<sup>11</sup> lies 629.40m to the south east of the Site Boundary. It consists of a range of steep hills, including Merrick which at 843m is the highest mainland hill in the south of Scotland. Together, with several other hills over 600m in height, these steep hills form a ridge with spurs between the tops of Shalloch on Minnoch and Benyellary, collectively known as 'The Range of the Awful Hand'.
17. The Site is within the United Nations Educational, Scientific and Cultural Organization (UNESCO) Galloway and South Ayrshire Biosphere Reserve transition area and buffer area but it is out with the core area. The area in the south of the Site is deep peat. FLS has historically undertaken bog restoration (The Eldrick Hill Blanket Bog Restoration) in this part of the Site funded by the Peatland Action Fund and undertake in 2014. The designated site of Auchalton Site of Special Scientific Interest (SSSI), cited for lowland grassland, is within 5 kilometres (km) of the Site. Merrick Kells Special Area of Conservation (SAC) and SSSI, cited for their blanket bog habitats, are also within 5km; however, these features are not hydrologically linked to the Proposed Development. Knockgardner SSSI and Blair Farm SSSI are within 5km and are cited for geological features.
18. There are no residential properties within the Site, however there are a number of residential properties in proximity to the Site. The nearest settlement is Straiton, approximately 4.6km to the north. There are four core paths which cross the Site, SA 1, SA 47, SA 49 and SA 56 and National Cycle Route 7 pass through the north western corner of the Proposed Development and form part of the western boundary of the Site. These are shown on, **Figure 2.1 Environmental Context and Figure 2.2 Local Environmental Constraints, Appendix A.**
19. As with most commercial forestry sites there is a comprehensive network of internal forestry roads connecting to the wider road network. There are a number of local 'consultation routes' used for timber extraction as identified by the Timber Transport Forum, in close proximity to the Proposed Development.
20. The location of the Proposed Development is within an area which has several existing, and proposed, windfarm developments. These include operational sites such as Hadyard Hill Windfarm approximately 3.6km to the west and Dersalloch Windfarm approximately 3.5km to the north east of the Site. Clauchrie Windfarm is located approximately 3.5km to the south west and was submitted to planning in December 2019. These proposals can be seen on **Figure 2.3 Windfarm Developments Within the Study Area, Appendix A.**

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<sup>9</sup> Galloway Forest Park is a forest park operated by FLS. Available at: <https://forestryandland.gov.scot/visit/forest-parks/galloway-forest-park>

<sup>10</sup> Dark Sky Park –a place with exceptionally dark night skies and a place where people have committed to keeping these skies dark, by controlling light pollution. Available at: <https://forestryandland.gov.scot/visit/forest-parks/galloway-forest-park/dark-skies>

<sup>11</sup> SNH (2017). Merrick Wild Land Area. <https://www.nature.scot/sites/default/files/2017-11/Consultation-response-Description-of-Wild-Land-Merrick-July-2016-01.pdf>

## 2.3 Proposed Development

### 2.3.1 Design Components

21. The Proposed Development is anticipated to comprise of up to 17 wind turbines with a maximum height to blade tip of 200m. Opportunities are being explored to include co-located technologies as part of the Proposed Development, such as energy storage. The feasibility and inclusion of any such additional technology will be defined through the design process and, if proposed, will be included in the EIAR as part of the proposal and considered, where relevant, in the assessments. The Site Boundary (**Figure 1.1 Site Location, Appendix A**) defines the area within which planning permission is sought and will contain all aspects of the Proposed Development requiring express consent.
22. Constraints mapping was used to help define the area available for wind turbines during the conceptual design phase within the Site Boundary. The physical and environmental constraints (both on and off-site) were identified through desk study and field work completed to date. The constraints information was mapped within Geographic Information Systems (GIS) and the area which was not identified as constrained comprises the Developable Area. A preliminary layout of the turbine locations is shown on **Figure 2.4 Indicative Layout, Appendix A**.
23. In addition to the wind turbines, the Proposed Development is anticipated to also include the following ancillary components and related infrastructure:
- Crane hardstandings and laydown areas adjacent to each wind turbine;
  - Power cables linking the wind turbines laid in trenches underground, including cable markers;
  - A control building including substation, energy storage facility, parking, and a small storage compound;
  - Permanent and temporary power performance assessment (PPA) anemometry masts;
  - Meteorological mast;
  - Communication masts;
  - Close circuit television (CCTV) mast(s);
  - Health and Safety and other directional signage;
  - New and upgrade of existing access tracks, passing places and turning heads;
  - Borrow pits; and
  - Temporary construction compound(s).

### 2.3.2 Embedded Mitigation

24. Embedded mitigation relates to measures inherent in the design of the Proposed Development. Throughout the iterative design process, environmental constraints will be one of the key factors which shape the design of the Proposed Development. As baseline information is collected and potential impacts identified, these will be factored into the design, via workshops, in parallel with other engineering and technical constraints. Therefore, mitigation in the form of design to avoid or reduce environmental impacts will be inherent from the outset.

### 2.3.3 Construction

25. It is expected that the construction period of the Proposed Development will be up to 18 months, planned to commence in 2023. Site restoration will be programmed and carried out to allow restoration of disturbed areas progressively and as early as possible during the construction period.

### 2.3.4 Operation and Maintenance

26. There is no proposal to limit the lifetime of the Proposed Development. Therefore, the assessment of potential effects on all environmental aspects considers the operational phase of the Proposed Development without time limitations. Should decommissioning of any of the Proposed Development be required, e.g. as a result of failure of a wind turbine beyond economic repair, any effects would be of lesser magnitude than those resulting from the construction phase of the Proposed Development and, as such, effects associated with the decommissioning phase have been **scoped-out** of further assessment. Should consent be granted, it is anticipated that there would be a condition which would deal with the requirement to remove turbines if they become non-operational for a defined period of time.

### 2.3.5 Environmental Management

27. Through the identification of potential impacts, the EIAR will set out measures to avoid, prevent, reduce or where necessary offset significant adverse effects. Where appropriate, these measures will also be accompanied by monitoring commitments intended to monitor their effectiveness. The EIAR will be accompanied by an Outline Construction Environment Management Plan (CEMP), which will specify measures that would be implemented during construction to protect the environment. The guidance document 'Good Practice during Windfarm Construction, 2019<sup>12</sup>, will inform the EIAR and Outline CEMP.

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<sup>12</sup> SNH (2019). Good Practice during Windfarm Construction. Available at: <https://www.nature.scot/guidance-good-practice-during-wind-farm-construction>.

## 3 Approach to EIA

### 3.1 General Approach

28. EIA and reporting will be undertaken in line with the EIA Regulations and current good practice guidance including:

- Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guides to Delivering Quality Development (2016)<sup>13</sup>, Shaping Quality Development (2015)<sup>14</sup>, and Delivering Proportionate EIA (2017)<sup>15</sup>; and
- Scottish Natural Heritage (SNH), 2018 Environmental Impact Assessment Handbook<sup>16</sup>.

29. The results of the EIA will be presented in an EIAR, which will contain the information specified in Regulations 4,5 and Schedule 4 of the EIA Regulations. It will be undertaken by 'competent experts' with evidence of the competence of those responsible for the preparation of the EIA set out in the EIAR.

30. A detailed overview of the guidance and methodology adopted for each technical study is provided within the respective technical chapters of this Scoping Report (**Sections 5-13**).

### 3.2 Consultation Strategy

31. Stakeholder consultation is an important component of the EIA process. To inform the EIAR, consultation will be undertaken with statutory and non-statutory consultees to identify relevant baseline information and key issues or concerns that these consultees wish to raise. It is further envisaged that consultation will continue throughout the EIA process, for example to discuss proposed mitigation and/or environmental enhancement measures.

32. Public consultation is an important element of the EIA and the overall planning process. Due to the Government guidance in line with the recent COVID-19 pandemic, face-to-face consultation is unfortunately not possible at present and may not be permitted for the foreseeable future. The Scottish Government has brought forward regulations during this period (The Town and Country Planning (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020) which replaces the requirement for a physical, face-to-face public event with an alternative, online version.

33. SPR is committed to undertaking meaningful and wide-reaching consultation and is therefore currently identifying suitable alternative methods of engagement ahead of any potential online event. At this stage, these are expected to include formats such as utilising mail drops, use of this website and the project mailbox to distribute information and respond to the public and phone calls and virtual meetings with Community Council members. Consideration is being given to ensure that engagement methods reflect varying levels of access to technology.

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<sup>13</sup> Institute of Environmental Assessment and Management (IEMA) (2016). Delivering Quality Development. Available at: <https://www.iema.net/assets/newbuild/documents/Delivering%20Quality%20Development.pdf>

<sup>14</sup> IEMA (2015). Environmental Impact Assessment Guide to Shaping Quality Development. Available at: [https://www.iema.net/assets/uploads/iema\\_guidance\\_documents\\_eia\\_guide\\_to\\_shaping\\_quality\\_development\\_v7.pdf](https://www.iema.net/assets/uploads/iema_guidance_documents_eia_guide_to_shaping_quality_development_v7.pdf)

<sup>15</sup> IEMA (2017). Delivering Proportionate EIA. A collaborative strategy for enhancing UK Environmental Impact Assessment Practice. Available at:

[https://www.iema.net/assets/uploads/iema\\_guidance\\_documents\\_eia\\_guide\\_to\\_shaping\\_quality\\_development\\_v7.pdf](https://www.iema.net/assets/uploads/iema_guidance_documents_eia_guide_to_shaping_quality_development_v7.pdf)

<sup>16</sup> SNH (2018). Environmental Impact Assessment Handbook. Available at: <https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf>

### 3.3 Baseline Conditions

34. Environmental effects as a result of the Proposed Development will be described in the EIAR in relation to the extent of changes to the existing baseline environment. The baseline conditions are the existing environmental characteristics and conditions. This information will be obtained via a combination of desk-top studies and field surveys.

### 3.4 Assessment of Effects

35. The proposed assessment methodologies for each topic are described in **Sections 5-13** of this Scoping Report and are based upon the requirements of the EIA Regulations, relevant current industry guidance and professional judgement and experience. However, each assessment will comprise the following key steps:

- Determine the sensitive receptors to be considered and establish their level of sensitivity;
- Identify the potential effects of the Proposed Development and what the magnitude of change would be;
- Consideration of whether the potential impact could be avoided, reduced, mitigated, offset or compensated for; and
- Assessment of the significance of residual effects following consideration of any mitigation, based upon the **sensitivity of receptor** and the **magnitude of impact**. A matrix approach to the assignment of the **level of significance** will be followed and defined in the EIAR.

### 3.5 Mitigation Measures

36. Further to the embedded mitigation described in **Section 2.3.2**, where the EIA identifies potential significant adverse environmental impacts, mitigation measures will be proposed where practicable to avoid, reduce, offset or compensate the associated effects. Such measures would be implemented during construction and/or operation of the Proposed Development. Each technical chapter will detail the measures proposed to mitigate identified significant adverse effects. A schedule of all the mitigation commitments documented in the EIAR will be provided for ease of reference, including monitoring where relevant.

37. In addition, enhancement measures may be incorporated into the design to maximise environmental benefits, where possible.

### 3.6 Cumulative Effects

38. The EIAR will include an assessment of cumulative effects in line with the EIA Regulations. It will consider two types of cumulative effects:

- **In-combination effects:** The combined effect of the Proposed Development together with other reasonably foreseeable developments on a common receptor; and
- **Effects Interactions:** The combined or synergistic effects on a particular receptor which may collectively cause a more significant effect than individually. A theoretical example is the culmination of disturbance from dust, noise, vibration, artificial light, human presence and visual intrusion on sensitive fauna (e.g. certain bat species) adjacent to a construction site.

39. The assessment will be undertaken in line with current guidance including SNH Guidance on Assessing the Cumulative Impact of Onshore Wind Energy Developments<sup>17</sup> and other applicable current guidance as appropriate.
40. Development proposals that should be included in a cumulative assessment will be agreed with the ECU in conjunction with key stakeholders through the Scoping Opinion and subsequent stakeholder consultation as necessary. The requirements will differ for different technical assessments and may include existing, as well as proposed windfarm developments. For other forms of development, it is proposed that they are limited to developments which are classified as EIA development and which have planning applications submitted, approved or are under construction, and are located within a 10km radius of the Site.

### 3.7 Scoping the Assessment

41. Whilst this Scoping Report seeks to establish the overall framework for the EIA in relation to the technical topics and associated effects, iterative re-scoping will be undertaken through the EIA process and consulted on, as required.

### 3.8 Consideration of Alternatives

42. The EIAR will present the main alternatives considered relevant to the Proposed Development including aspects such the location, nature, scale and design principles/parameters.
43. Consideration of potential alternatives will be undertaken throughout the iterative design process, with early consideration ensuring that risks and challenges at a later stage are minimised and potential environmental effects avoided where possible.

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<sup>17</sup> SNH (2012). Guidance-Assessing the cumulative impact of onshore wind energy developments (2012). Available at: <https://www.nature.scot/guidance-assessing-cumulative-impact-onshore-wind-energy-developments>

## 4 Planning Policy Context

44. A Planning Policy section is not required within the EIAR by the EIA Regulations, as the purpose of an EIA is not to assess compliance with the Development Plan policy, but to ensure the decision maker, in this case the Scottish Government, when deciding to grant planning permission for a project, does so in the full knowledge of potential significant effects.
45. A Planning Statement will accompany the Section 36 application and will include an assessment of the Proposed Development's compliance with National Planning and Energy Policy and the Development Plan policy.
46. Local and national policy, where relevant to the assessment of potential significant effects, will be set out in the technical chapters of the EIAR. For example, where policy identifies that an environmental aspect, such as a particular habitat or landscape component, is of particular value, this will be taken into account, typically in consideration of its sensitivity to change, when assessing the significance of effects. This is different from assessing the compliance of the Proposed Development with policies that set out how decisions on development consent should be made.
47. The information provided in the EIAR will demonstrate how the requirements of Schedule 9 of the Electricity Act have been met and this will be reported in the Planning and Policy Statement.

## 5 Landscape and Visual

### 5.1 Consultation

48. At this stage, no consultation on Landscape and Visual matters has been undertaken with South Ayrshire Council.
49. As part of ongoing Ornithological consultation with SNH, they provided the following comments relating to Landscape and Visual issues via email to Arcus Consultancy Services (Ornithological chapter author) on the 6<sup>th</sup> February 2020. No turbine layout and therefore co-ordinates existed at the time of that consultation.

**Table 5.1: Summary of Consultation with SNH to Date**

Topic	SNH Summarised Comments	Response to consultation location within this Scoping Report
Merrick Wild Land Area	<i>"The Proposed Development would be situated approximately 3km north of the Merrick Wild Land Area (WLA). Therefore, we advise that a Wild Land Assessment should be undertaken at scoping stage and, if necessary scoped into the LVIA. If it is scoped-out, then we advise that the Landscape and Visual Impact Assessment (LVIA) should contain justification for this."</i>	Section 5.1.9: Wild Land Area Assessment
Night Time Lighting	<p><i>"Please note that turbines of 150m or taller would require visible lighting. Therefore, we advise that, should the proposed turbines be 150m or taller, a night time lighting assessment should also be carried out to take account of the Galloway Dark Skies Park as well as the Merrick WLA, which is at its core."</i></p> <p><i>The requirement for aviation lighting of turbines is a fairly recent issue for the wind energy sector and we have limited experience of assessing the effects and understanding the impacts. Nonetheless, the effects of aviation lighting could be significant in some locations and should be fully assessed.</i></p> <p><i>Wind turbines tend to be located in areas which contain limited artificial lighting. Darkness and dark skies in these areas may be valued by many people, a proportion of whom may be actively seeking out and enjoying good views of the night sky. Turbine lights can be seen over considerable distances, with some clearly visible at 20-30km. A flashing effect can also occur, depending on wind direction, as turbine blades pass in front of the nacelle-mounted lighting. Turbine lighting could therefore adversely affect people's experience and enjoyment of darkness and dark skies, and of sunset and sunrise views (noting that turbine lights are switched on before dusk and off after dawn). As a result, we recommend that these effects</i></p>	Section 5.1.10: Night-time Assessment

Topic	SNH Summarised Comments	Response to consultation location within this Scoping Report
	<p><i>should be carefully assessed, and that mitigation is employed wherever possible.</i></p> <p><i>Assessment of the landscape and visual effects of turbine lighting is a relatively new practice. The extent of the lighting assessment study area for LVIA should be informed by the Zone of Theoretical Visibility (ZTV) map and an understanding of the nature of the likely effects. As a starting point we highlight advice in our existing landscape guidance, however our advice is evolving, and we advise that the LVIA-related lighting assessment should include:</i></p> <ul style="list-style-type: none"> <li><i>- Clear information on the positions and intensity of lighting proposed and, if only certain turbines are to be lit (e.g. due to a mix of turbine heights), a plan showing which turbines (numbered turbines) would be lit;</i></li> <li><i>- Production of a ZTV map which shows the areas from which the nacelle and tower lights may be seen;</i></li> <li><i>- Annotation of the positions of turbine lighting (including intermediate tower lights) on all wirelines from every viewpoint;</i></li> <li><i>- A table which lists how many lit turbines will be visible from each viewpoint; and</i></li> <li><i>- Written assessment based on fieldwork for all relevant viewpoints (i.e. with potential visibility of lighting, and where effects may be significant). In a worst case scenario this may involve all viewpoints, but judgement should be applied to ensure the assessment remains focused on likely significant effects. The assessment should take into account the baseline darkness and artificial lighting characteristics and people's likely use of different areas during darkness and low light (dusk/dawn) conditions. In some cases, there may be the need to select some of the LVIA assessment viewpoints on the basis of the turbine lighting impacts, as opposed to day-time visual effects. Edge of settlement locations are likely to be better lighting assessment viewpoints, compared with locations within towns and villages (i.e. given the influence of existing street lighting, etc.)"</i></li> </ul>	
Night time visualisations	<i>"Night-time visualisations from a limited number (we suggest two or three) of representative viewpoints. These may be</i>	Section 5.1.10: suggested night

Topic	SNH Summarised Comments	Response to consultation location within this Scoping Report
	<i>selected on the basis of sensitivity or regular usage during low-light conditions.”</i>	time visualisation locations.

50. Throughout the EIA process, it is anticipated further consultation will be undertaken with SNH and South Ayrshire Council as appropriate.

## 5.2 Baseline Conditions

51. The Site is located within South Ayrshire, and within proximity to the administrative boundaries of East Ayrshire to the east and Dumfries and Galloway to the south/south east.

52. The Site lies between 200-490m above ordnance datum (AOD), the highest point is the northern slope of Penbrick Hill (499m AOD), the summit of which lies just outside the Site Boundary to the south west.

53. As shown in **Figure 5.1 Landscape Character Areas, Appendix A**, the Site lies predominantly within the “Foothills with Forestry” and “Southern Uplands”<sup>18</sup> Landscape Character Types (LCTs), covering the north western fringes of the Carrick Forest. The landscape of the Site is large-scale and extends across the rugged moorland uplands of Eldrick Hill and Balloch forest plantation to the north and extends across undulating forested foothills to the north west known as the Carrick Plantation.

54. A number of watercourses and small lochs are found across the Site, some of which drain into the River Girvan. Those of note include the River Stinchar through the centre of the Site and Aldinna Loch to the south. Linfern Loch lies within the wider Site but is excluded from the Site Boundary.

55. Landcover across the Site is predominantly mature coniferous woodland, which dominates much of the northern part of the Site, punctuated by pockets of open elevated moorland. This type of landcover is seen at the low rounded hills of The Pilot (386m AOD) and Knockinculloch (356m AOD) to the north west. In contrast, open moorland slopes can be seen at Carrick Hills in the southern part of the Site including aforementioned Pinbreck Hill and Eldrick Hill to the south west.

56. The Site is located within Galloway Forest Park and the Galloway Dark Skies Park and partially within the Galloway Dark Skies Park Core Area. Approximately 5km south is the Galloway Hill Regional Scenic Area and less than 1km to the south is the Merrick WLA. Landscape Designations are shown in **Figure 5.2 Landscape Designations, Appendix A**. The Site is also located at the edge of the buffer and transition zones of the Galloway and Southern Ayrshire UNESCO Biosphere which has a wide remit including the conservation of landscape and commitment to address climate change and is shown in **Figure 2.2 Environmental Context, Appendix A**.

<sup>18</sup> SNH (2020). Scottish Landscape Character Types map and Descriptions. Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

57. The overhead transmission line (the Northern Ireland-Scotland Interconnector) passes through the south east of the Site at the higher location to the south of the Stinchar Valley. This feature marks the transition from coniferous plantation to rugged moorland north of Eldrick Hill. A wooden pole overhead transmission line, connecting Hadyard Hill Windfarm to the electricity transmission network at Maybole, runs parallel to the forested north western boundary of the Site crossing the southern facing slopes of Barony Hill and Cairn Hill.
58. The Site is generally isolated from main transport routes. The A77 lies approximately 8.5km to the north west and north, and the A713 lies approximately 10km to the north east. Between these main roads and the Site, the network of minor roads provide access to houses and farmsteads including the B741, B7203 and the B7045. The Site includes a series of unnamed tracks associated with access and maintenance.
59. In contrast the Site has accessible recreational access. National Cycle Network (NCN) 7 passes through and close to the Site as it follows the minor road network between Crosshill and Glentool. A number of South Ayrshire core paths run through the Site. Although located outside of the Site Boundary, Linfern Loch has historically been used as a recreational fishing loch with users accessing it through the Site and obtaining permits from FLS. As previously mentioned, FLS have not issued fishing permits since 2016.
60. The closest settlements to the Site are the villages of Barr to the west, Daily to the north west and Straiton to the north within 5km. There are a number of relatively isolated individual houses and farmsteads located within 5km. The small town of Maybole is located approximately 8km to the north west.

### 5.3 Sensitive Receptors

61. On review of the baseline information, the following key sensitives will be considered in the LVIA and cumulatively.

#### 5.3.1 Landscape Receptors

62. The LVIA will consider the potential for effects of the Proposed Development on landscape character and landscape as a resource.
63. SNH's 2019 Landscape Character Assessment<sup>19</sup> will be used to inform the baseline landscape character assessment of the Site and Study Area. As shown on **Figure 5.1 Landscape Character Area, Appendix A**, the Site lies within the following SNH LCT:

- 76 Foothills – Ayrshire;
- 72 Pastoral Valleys – Ayrshire;
- 81 Southern Uplands – Ayrshire;
- 83 Rugged Upland – Ayrshire; and
- 82 Southern Uplands with Forest.

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<sup>19</sup> SNH (2020). Scottish Landscape Character Types map and Descriptions. Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

<sup>18</sup> South Ayrshire Council (2019). South Ayrshire Local Development Plan 2. Available at: <https://south-ayrshire.maps.arcgis.com/apps/MapJournal/index.html?appid=625cabea01334611a6b6c01079c08c78>

64. In addition to the SNH LCAs, consideration will be given to the landscape character types defined in the 2018 South Ayrshire Landscape Wind Capacity Study<sup>20</sup>. This study provides 20 local LCTs within South Ayrshire specifically relating to wind turbine development. The Site lies within the following South Ayrshire LCTs:

- 17c Foothills with Forest and Windfarm – northern section of the Site and to the north;
- 13 Intimate Pastoral Valley – within the Site to the middle western section and to the west as well as north east outside Site;
- 21 Rugged Uplands, Lochs and Forest – within southern section of Site and to the south;
- 12 Middle Dale – to the north west; and
- 17b Foothills with Forest west of Doon Valley.

65. The above listed receptors will be assessed as they are likely to experience direct effects in relation to the Proposed Development. In addition to the above, landscape receptors within the 30km Study Area experiencing in-direct effects will also be assessed.

66. The 2018 South Ayrshire Landscape Wind Capacity Study Updated 2018<sup>21</sup> also sets out the importance of Landmark Hills and their setting as a consideration in the assessment of windfarm schemes. Figure 4 of the study provides a comprehensive list of all Landmark Hills in the area, with the following playing a key role in the assessment of the Proposed Development:

- Glenalla Fell (north of the Site);
- Barony Hill (north of the Site);
- Craig of Dalwhine (west of the Site); and
- Carrick Forest Hills (south, south east and east of the Site).

### 5.3.2 Landscape Designations

67. A full list of national and local designations within the Study Area will be provided in the EIAR. The LVIA will consider the potential for effects of the Proposed Development on these landscape designations where there are anticipated effects.

68. The following designations are considered key for the assessment as these are located either within the Site or the immediate context:

- Merrick WLA;
- Galloway Forest Dark Skies Park Core Area;
- Galloway Forest Park; and
- Galloway Hills - Dumfries and Galloway Regional Scenic Area.

69. The Galloway and Southern Ayrshire Biosphere will not be assessed as a receptor within the LVIA as it is a non-statutory designation with no formal planning status. However, the effect of the Proposed Development on the landscape values and qualities will be considered in relation to the assessment on the WLA and other designations which lie within the Biosphere boundaries. The South Ayrshire Council Environment and Climate Change Chapter of the LDP2<sup>18</sup> provides a section on Landscape Quality Policy. Local Landscape Areas (LLA) are shown on a plan within LDP2, these replace the

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<sup>20</sup> Carol Anderson Landscape Associates (2018). South Ayrshire Landscape Wind Capacity Study Updated 2018. Available at: <https://www.south-ayrshire.gov.uk/planning/documents/south%20ayrshire%20landscape%20wind%20capacity%20study%20-%20final%20august%202018.pdf>

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previously referred to South Ayrshire “Scenic Area” as set out in Section 2, Issue 8: Local Landscape Areas. Those of relevance to the Site include:

- Water of Girvan Valley;
- High Carrick Hills; and
- Stinchar Valley.

### 5.3.3 Visual Receptors

70. A preliminary Study Area of 45km radius from the outermost turbines is proposed for the LVIA, as recommended in SNH guidance for turbines over 150m to blade tip<sup>22</sup>. **Figure 5.3 ZTV, Appendix A** illustrates that, due to topography, potential visibility of the Proposed Development is largely focussed to the north and west with much of the visibility limited to within 20km radius, becoming more scattered out to 30km. To the east and south east visibility is limited beyond 15km. Longer distance views look to be possible towards the west, across the Firth of Clyde towards the Isle of Arran though it is anticipated that these will be dependent on very clear visibility conditions and such long distance that significant effects are not expected. It should also be noted that the ZTV does not include the extensive forestry which surrounds the Site and within the Study Area, so in reality visibility is likely to be further reduced.
71. As such, it is proposed that the assessment focusses on a Study Area of a 30km radius from the outmost turbines for effects upon landscape character and on visual amenity.
72. The following viewpoints are suggested based upon initial review of the ZTV, desktop study, existing knowledge of the area, previous feasibility study information and review of nearby windfarm submissions. Based on current information, it is proposed that photomontages will be provided for those viewpoints identified in **Table 5.2**; key cumulative viewpoints are also identified within the table. These may be subject to change depending on the final development layout. Where necessary, illustrative wirelines (without baseline photography) from viewpoints within the wider ZTV will be created to inform the assessment.
73. An analysis of sequential effects upon users of roads and recreational routes within the Study Area will also be undertaken. As illustrated on **Figure 5.3 Landscape Designations, Appendix A** this will include NCN7, Cornish Hill Trail, Carrick Forest Drive Trail, and Old Road through Straiton Heritage Path, and local roads, A77 and A713.

**Table 5.2 Proposed Viewpoint Locations**

Viewpoint No.	Name	Approximate Grid	Distance from Nearest turbine	Reason for Inclusion
1*	Minor Rd. near Cornish Hill	239431 594806	2.8km	South Ayrshire LLA Sequential route near edge of Merrick WLA Galloway Dark Skies Park Core Area

<sup>22</sup> SNH (2017). Visual Representation of Windfarms Version 2.2.

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Viewpoint No.	Name	Approximate Grid	Distance from Nearest turbine	Reason for Inclusion
2*	NCN7 east of Doughty Hill	232926 596738	2km	South Ayrshire LLA, Sequential route and recreational users of NCN7.
3*	Minor road between Tairlaw and Glentool	235319 590625	6.8km	Sequential route and recreational users of NCN7, Galloway Dark Skies Park Core Area
4*	Minor road between Dailly and Barr	229370 597577	4.4km	South Ayrshire LLA, Sequential route.
5*	Shalloch on Minnoch	240452 590707	7.2km	South Ayrshire LLA, Hilltop location within WLA, Galloway Dark Skies Park Core Area, Galloway Dark Skies Park,, Galloway Forest Park.
6*	Straiton Cemetery	238309 604413	5.6km	South Ayrshire LLA, Edge of Straiton settlement, Edge of Straiton Conservation Area, Core Path and people visiting Straiton Cemetery.
7*	Hazelwood Ave, Dailly	227197 601261	6.6km	South Ayrshire LLA, settlement.
8*	Colonel Hunter Blair Monument	239207 603941	5.2km	South Ayrshire LLA, Local landmark, Recreational receptors, people visiting Colonel Hunter Blair Monument.
9	Kirkmichael Road, Crosshill	232999 606588	7km	South Ayrshire LLA,

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Viewpoint No.	Name	Approximate Grid	Distance from Nearest turbine	Reason for Inclusion
				Crosshill Settlement, Edge of Cross Hill Conservation Area.
10*	Maybole Road, Kirkmichael	233907 608862	9.2km	Kirkmichael settlement Edge of Kirkmichael Conservation Area.
11*+	North Threave	224473 604109	10.2km	Minor road in elevated position above Stinchar Valley and farmstead.
12*+	Auchensoul Hill	226398 594548	8.4km	South Ayrshire LLA, Recreational receptors, Auchensoul Hill, Landmark Hill.
13*+	A77 near Maybole	229167 609558	10.8km	Maybole settlement, recreational receptors of Maybole Golf Club, proximity to Maybole Conservation Area.
14	Craigengillan Dark Sky Observatory	247380 602290	9.4km	Dark Sky Park Observatory, Craigengillan Garden and Designed Landscape.
15+	Merrick	242757 585521	12.8km	Galloway Hills Scenic Area, Merrick WLA, Galloway Forest Park, Dark Sky Buffer Zone.
16	Merrick Drive, Bellsbank	247974 604300	10.8km	Bellsbank settlement.
17*+	A713 east of Loch Doon	251702 599890	12.8km	Galloway Hills Scenic Area,

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Viewpoint No.	Name	Approximate Grid	Distance from Nearest turbine	Reason for Inclusion
				Sequential route within RSA, recreational views across Loch Doon.
18*+	A713 and B742 Road Junction	237915 616724	17.4km	Sequential route.
19*+	Brown Carrick Hills	228356 615954	17.5km	South Ayrshire LLA, Recreational receptors, Landmark Hill.
20+	Knockdolian summit	211326 584804	26.3km	South Ayrshire LLA, Views along River Stinchar Valley, Knockdolian Landmark Hill.
21+	Chimorie Cairn	220563 576607	25.6km	Residents.
22+	Blackcraig Hill	264741 606403	27.1km	Recreational route and Hilltop location.

Note:

\* indicates photomontages proposed

+ indicates key cumulative viewpoint

## 5.4 Mitigation

74. The primary form of mitigation for landscape and visual effects is through the iterative design of the layout of the turbines and infrastructure. Landscape and visual considerations, including the location and appearance of the Proposed Development in relation to the existing windfarm baseline will play a major role in the design of the Proposed Development. The baseline analysis and initial field surveys will identify the key potential sources of landscape and visual effects, which will inform the design process. This will include:

- The particular landform and landscape context of the Site;
- The existing landscape and visual baseline of the Study Area;
- Potential effects on landscape and visual receptors;
- A range of environmental and technical constraints which limit the Developable Area; and
- National and local planning policy and guidance.

75. The design will be continually reconsidered as it develops, to prevent and reduce potential landscape and visual effects. A clear set of design objectives will be established based on best practice

guidance, including the SNH publication *Siting and Designing Windfarms in the Landscape*<sup>23</sup>. Design development will be set out in detail in the design strategy that will form part of the EIAR.

## 5.5 Issues Scoped-Out

### 5.5.1 Landscape Character

76. All LCTs within the proposed Study Area that do not have any or very minimal potential visibility of the Proposed Development will be **scoped-out** of the assessment. In addition, LCTs with potential visibility will be **scoped-out** if a combination of distance and intervening landscape cover and built form (not included within the ZTV model) reduces the potential for any significant effects. This will be determined through site work and desk study.

### 5.5.2 Landscape Designations

77. Due to the distance from the Proposed Development, minimal potential visibility illustrated on **Figure 5.3 ZTV, Appendix A** and also qualities which relate to aspects or views unrelated to the Site, the following landscape designations are proposed to be **scoped-out** of the LVIA:

- Culzean Castle and Country Park;
- Culzean Castle Garden and Designed Landscape; and
- Dumfries House Garden and Designed Landscape.

### 5.5.3 Visual Receptors

78. The following visual receptors will be **scoped-out** of the LVIA due to none or limited potential visibility of the Proposed Development:

- Dunure;
- Girvan and Girvan Beach;
- St Johns Town of Dalry;
- New Cumnock;
- Cumnock;
- Auchinleck;
- Barhill;
- Drongan;
- Southern Upland Way;
- Glentroll Visitor Centre; and
- Bruces Stone.

## 5.6 Potential Significant Effects

79. The construction and operation of the Proposed Development has the potential for significant effects on:

- Landscape fabric caused by changes to the physical form of the landscape and its elements;
- Landscape character caused by changes in the key characteristics and qualities of the landscape;
- Designated landscapes caused by changes to their special qualities; and
- Visual amenity which would be caused by changes in the appearance of the landscape.

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<sup>23</sup> SNH (2017). *Siting and Designing Wind Farms in the Landscape*, Version 3a.

## 5.7 Assessment Methodology

80. The LVIA will establish potential significant effects of the Proposed Development on the landscape resource and visual amenity, in accordance with 'Guidelines for Landscape and Visual Impact Assessment: Third Edition' (Landscape Institute and IEMA, (2013) ('GLVIA3')<sup>24</sup>. Other sources of guidance and references, which will be used in the LVIA will be industry standards. The exact documents used will be set out in more detail in the EIAR. Local planning policy and guidance will also be reviewed in the EIAR.
81. The LVIA will be supported by wirelines and photomontages from the agreed viewpoint locations. Key operational, consented and in-planning windfarms visible from each of the viewpoints will be shown on the wireframes (where turbine data is available). All visualisations will be produced in accordance with SNH Visual Representation of Windfarms Version 2.2<sup>25</sup>. Proposed forestry felling and ancillary elements will be illustrated on viewpoints within approximately 5km of the Proposed Development as it is considered that from more distant viewpoints these elements would be largely indiscernible within the wider view.
82. A list of proposed representative viewpoints to be included in the LVIA is presented above in **Table 5.2** and shown on **Figure 5.3 ZTV, Appendix A**. These have been chosen based on knowledge of the area, previous feasibility study information and review of nearby windfarm submissions.

### 5.7.1 Cumulative LVIA (CLVIA)

83. The assessment of cumulative effects will be an integral part of the LVIA given the Proposed Development is in close proximity to several large windfarms. The CLVIA will be carried out in accordance with SNH's Assessing the Cumulative Impact of Onshore Wind Energy Developments (March 2012)<sup>26</sup> and will include operational, consented and valid in planning applications. The LVIA will consider the potential effects of the addition of the Proposed Development to the existing landscape against a baseline that includes existing windfarms and those under construction. The CLVIA will consider the potential additional effects of the Proposed Development against a baseline that includes consented but not yet built windfarms, windfarms that have undetermined planning applications, and any windfarm proposals that have been refused but are being appealed. Windfarm sites that are in scoping will only be included if they are in close proximity to the Site and have potential to create significant cumulative effects with the Proposed Development.
84. At this stage a ZTV for cumulative assessment has not yet been produced. As per best practice, windfarms within an initial 60km radius to the Site will be considered and through analysis of ZTVs and desk-based study the windfarms with most potential to create significant cumulative landscape and visual effects will be included within the assessment. At this stage, based on the Proposed Development's initial ZTV it is anticipated that 20km will be appropriate for assessment of significant cumulative effects, though this will be established following appropriate desktop and field studies.
85. The 20km radius Cumulative Study Area proposed may be refined further in order to identify the windfarms most likely to lead to cumulative significant effects with the Proposed Development. Wind turbines with a blade tip height of 50m or less and single turbine developments beyond 5km of the Site will not be considered as it is anticipated that these will be unlikely to contribute to any significant cumulative effects. The draft list of cumulative sites is shown on **Figure 2.3 Windfarm Developments**

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<sup>24</sup> Landscape Institute and IEMA (2013). Guidelines for Landscape and Visual Impact Assessment: Third Edition'.

<sup>25</sup> SNH (2017). Visual Representation of Windfarms Version 2.2.

<sup>26</sup> SNH (March 2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments.

**Within the Study Area, Appendix A** where it can be seen that a large proportion of the developments fall along a north east to south west band either side of the Site. In close proximity sits the application Clauchrie windfarm to the south west, with the operational Hadyard Hill and Dersalloch windfarms to the north west and north respectively. The precise scope of the CLVIA and final list of wind energy developments to be included in the CLVIA will be agreed with consultees.

### 5.7.2 Residential Visual Amenity Assessment (RVAA)

86. A detailed assessment of potential visual effects on residential properties within an approximately 2km Study Area (measured from the nearest proposed turbines) will be undertaken in accordance with the Landscape Institute's Residential Visual Amenity Assessment (RVAA) - Technical Guidance Note 2/19<sup>27</sup> and presented as a separate technical appendix. This will include the production of a ZTV for the 2km Study Area to identify properties with theoretical visibility of the Proposed Development, and an assessment based upon professional judgement, supported by fieldwork, photography, aerial imagery and wirelines. The RVAA will consider the primary orientation of the properties, distance and direction to the Proposed Development, intervening topography, proportion of available view occupied by turbines, and the baseline situation at the property.

### 5.7.3 Wild Land Area Assessment (WLAA)

87. The Merrick Wild Land Area lies within 1km of the Site Boundary, with the scoping layout turbines approximately 3km at the closest distance. The ZTV (**Figure 5.3**) illustrates that potential visibility within the WLA is limited to the northern portion, south west of Sheil Hill, and along some of the higher summits and ridges within the northern part of the WLA, with very little visibility from south of Merrick.

88. Taking into account SNH's response via the Ornithology consultation (06/02/2020), it is acknowledged that further assessment is required to ascertain the potential for significant effects on the wild land qualities. This further assessment will consider the limited overall intervisibility with the Site but also acknowledging the close proximity, and whether the Merrick WLA could be **scoped-out** of the EIAR. It is proposed to discuss the approach with SNH following the Scoping Opinion.

### 5.7.4 Night-time Assessment

89. As the Proposed Development's turbines are over 150m tall, they will be classed as en-route aviation obstacles and require lighting in accordance with Article 222 of the Air Navigation Order, as modified by the Civil Aviation Authority (CAA) Policy Statement on Lighting of Onshore Wind Turbine Generators in the United Kingdom with a Maximum Blade Tip Height at or In Excess of 150m Above Ground Level (CAA, June 2017). The EIAR will consider the landscape and visual implications of turbine lighting. This will be presented as a separate technical appendix to the LVIA.

90. It is important to note that the assessment will not be a technical lighting assessment based on quantitative measurements of light levels but relies on professional judgement of what the naked human eye can reasonably perceive in the context of the baseline situation with regard to existing sources of artificial lighting. This will be informed by the production of ZTVs of the proposed lighting heights and extent of lighting intensity. In addition to this, photomontages from viewpoints with photography taken at dusk or dawn, in line with SNH guidance<sup>28</sup>, will be included. Based on the findings from other recent windfarm planning submissions, it is considered that it is difficult to perceive landscape character in the darkness, and whilst at dusk/dawn the lighting may be visible, lighting

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<sup>27</sup> Landscape Institute (2019). Residential Visual Amenity Assessment (RVAA) - Technical Guidance Note 2/19.

<sup>28</sup> SNH (2017). Visual Representation of Windfarms Version 2.2.

levels can be adjusted so that it would not be at high intensity until darkness. As such the effects of aviation lighting on the landscape character will not be assessed.

91. To consider the potential effect on visual receptors who would be sensitive to views at night (and also as safe locations to obtain dusk/dawn photography) the following viewpoints are proposed:

- Viewpoint 3: Minor Road between Tairlaw and Glentrool;
- Viewpoint 7: Hazelwood Ave, Dailly; and
- Viewpoint 14: Craigengillan Dark Sky Observatory.

## 5.8 Limitations and Assumptions

92. The assumptions and limitations set out below have been encountered during the production of this scoping report. Any further assumptions and limitations encountered during the assessment process will be set out in the EIAR.

### 5.8.1 Limitations

- The wind turbine layout that the scoping proposals are based on is not final, and therefore there is potential for the type, number, or extent of landscape and visual receptors to change for the EIAR;
- A site survey has not been carried out to date;
- Proposed viewpoints have not been verified in the field; therefore, viewpoint coordinates are indicative; and
- A detailed cumulative site search has not been undertaken yet and as such the list of sites to be included in the CLVIA will be updated for the EIAR.

### 5.8.2 Assumptions

93. It has been assumed that further consultation with the consultees will be undertaken during the LVIA process to confirm any outstanding information following the Scoping Opinion.

#### Question 1:

Do you agree with the Landscape and Visual proposed approach for baseline collection, prediction of effects and significance assessment?

#### Question 2:

Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, including cumulative effects?

#### Question 3:

Are the proposed viewpoint locations acceptable, including for night-time assessment?

#### Question 4:

Are there any other scoping or in planning windfarm sites, in addition to those illustrated, to consider as part of the cumulative assessment?

#### Question 5:

Has the consultee identified any further landscape or visual receptors to be considered within the assessment (e.g. where potential significant effects may occur)?

**Question 6:**

Do you agree with the landscape and visual receptors proposed to be scoped-out?

**Question 7:**

Are there any other relevant consultees who should be consulted with respect to the LVIA?

**Question 8:**

Do you have any comments on Wild Land Assessment, noting further consultation is required on its inclusion?

## 6 Ecology

### 6.1 Consultation

94. To date, a preliminary desk-based review of relevant ecological information for the Site and surrounding area has been undertaken. As part of the desk study to inform the Ecological Impact Assessment (EclA), a consultation exercise to obtain additional data on ecological information within the Site and wider surrounding area will also be undertaken. This will include consultation with the following organisations:

- SNH;
- South West Scotland Environmental Information Centre (SWSEIC);
- Scottish Badgers;
- Ayrshire Bat Group/Bat Conservation Trust Scotland Branch;
- Ayrshire Rivers Trust;
- Saving Scotland's Red Squirrels;
- Forestry and Land Scotland;
- Botanical Society of Britain and Ireland; and,
- Any other relevant organisation identified through the course of the EIAR. For the full list of consultees proposed as part of the EIAR, please refer to **Appendix C**.

### 6.2 Baseline Conditions

95. Freely downloadable corporate datasets were searched for information regarding the presence of statutory designated sites of nature conservation interest within 2km of the Site. SSSI, National Nature Reserves (NNR) (collectively referred to as 'nationally designated sites') or locally designated sites (e.g. Local Nature Reserve (LNR), Local Wildlife Site (LWS)) were identified using the SNH Site Link Portal<sup>29</sup>. This search was extended to 10km for non-avian Natura 2000 sites (SAC) and Wetlands of International Importance (Ramsar sites) (collectively referred to as 'internationally designated sites').

96. The only internationally designated site for nature conservation within 10km of the Site is Merrick Kells SAC (and SSSI). Located approximately 5km to the south, this SAC is designated for acid peat-stained lakes and ponds, acidic scree, blanket bog, clear water lochs with aquatic vegetation and poor to moderate nutrient levels and its important population of European otter *Lutra lutra*.

97. The only nationally designated site for nature conservation within 2km of the Site is Auchalton SSSI which is located approximately 1.4km to the north and is designated for its lowland neutral grassland habitat.

98. The Site is also located within the Galloway and South Ayrshire Biosphere Reserve, which is a non-statutory site designated by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in recognition of the area's landscape, wildlife, cultural heritage and learning opportunities.

99. Sections of forest within the Site Boundary are noted on the Semi-natural Ancient Woodland Inventory (AWI).

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100. The more detailed desk-based study exercise will involve searches for ecological information relevant to the Site as well as a review of ecological data and reports associated with any other existing or proposed developments in the nearby surrounding area.
101. Bat activity surveys commenced at the Site in autumn 2019 and are programmed to continue over the spring and summer periods of 2020. Results from the activity surveys undertaken in the autumn of 2019 confirmed the presence of five species; common pipistrelle, soprano pipistrelle, brown long-eared, Natterer's and Daubenton's bats, of which soprano pipistrelle bats were the most commonly recorded.
102. To further inform the ecological baseline conditions, the following surveys will be undertaken across the Site and within appropriate survey buffers for each receptor/species group.

**Table 6.1 Summary of Surveys to Inform the Ecological Baseline Conditions**

Survey	Purpose	Survey Area
National Vegetation Classification (NVC) survey	To record detailed botanical composition of habitats of particular conservation interest (e.g. potential Ground Water Dependent Terrestrial Ecosystems (GWDTE) and Annex I habitats of the EU Habitats Directive etc.) in line with standard NVC technique and in accordance with GWDTE guidance <sup>30</sup> .	Within 250m of each wind turbine location, access routes and borrow pits.
Otter and water vole <i>Arvicola amphibius</i> survey	A search for signs of otters and water voles and their resting places (holts/couches or burrows), in line with Chanin (2003) <sup>31</sup> and Dean <i>et al</i> (2016) <sup>32</sup> respectively.	Up to 200m upstream and downstream of watercourse access crossing locations and within 200m from each wind turbine location.
Great crested newts <i>Triturus cristatus</i> surveys	Surveys will involve a combination of habitat suitability assessment <sup>33</sup> , eDNA sampling <sup>34</sup> and presence/absence surveys <sup>35</sup> , based on recent historical FLS positive eDNA records within the Site.	All ponds and other small waterbodies within at least 250m of turbines and access tracks.
Red squirrel <i>Sciurus vulgaris</i> and pine marten	A search for suitable habitat and field signs of red squirrel and pine marten and their breeding sites (dreys and dens). Surveys will	Within at least 100m from each wind turbine location and along

<sup>30</sup> Scottish Forestry (2020). Scottish Forestry open data. Available at: <https://open-data-scottishforestry.hub.arcgis.com/>

<sup>31</sup> Chanin P (2003). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough

<sup>32</sup> Dean, M., Strachan, R., Gow, D. and Andrews R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds. Fiona Matthews and Paul Chanin. The Mammal Society, London.

<sup>33</sup> Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.

<sup>34</sup> UK Government's Great crested newts: surveys and mitigation for development projects website (<https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects>).

<sup>35</sup> English Nature (2001). Great crested newt mitigation guidelines. August 2001.

Survey	Purpose	Survey Area
<i>Martes martes</i> survey	follow good practice guidance for red squirrel <sup>36</sup> and pine marten <sup>37</sup> survey guidance.	the access tracks, including rocky outcrops.
Badger <i>Meles meles</i> survey	A search for suitable habitat and field signs of badger and their setts will be undertaken following published survey guidance <sup>38</sup> .	Within at least 100m of each wind turbine location and along the access tracks.
Bat habitat suitability and activity surveys	Surveys to identify features (e.g. trees and built structures, etc.) considered to offer suitable roosting habitat for bats and key commuting and foraging routes, in line with Collins (2016) <sup>39</sup> and bat activity surveys using static bat detectors following bat survey guidance for onshore wind turbines (SNH, 2019 <sup>40</sup> ).	Habitat suitability assessment within 200m plus blade length (~75m) of wind turbines, and deployment of bat detectors distributed across representative habitat throughout the Site as prior determination of turbine layout.
Fish habitat suitability walkover survey	To identify habitat suitability primarily for salmonid species by assessing characteristics up and down stream of watercourses, in line with Scottish Fisheries Coordination Centre (SFCC) (2007) <sup>41</sup> and updated guidance on the SFCC website.	All watercourses crossed by access tracks and within up to 200m of each wind turbine.

<sup>103.</sup> In addition to the above field surveys, a habitat suitability assessment for reptiles and amphibians, to be informed by the NVC surveys, will be undertaken. This assessment will identify areas most suitable to support these receptors up to 250m from the wind turbine locations and access tracks. These surveys will determine whether additional surveys are required and will be used to inform design of Proposed Development.

### 6.3 Sensitive Receptors

<sup>104.</sup> Based on the information provided in **Section 2** and **Section 6.2**, the following potential sensitive ecological receptors have been identified:

- **Merrick Kells SAC** – while the Site is sufficiently far away from, and is not hydrologically connected to this designated site for the Proposed Development to affect its habitat interests, the wide ranging nature of otter territories means that individuals associated with the SAC could potentially forage and/or commute along watercourses within the Site;

<sup>36</sup> Forestry Commission (2009). Practical techniques for surveying and monitoring squirrels.

<sup>37</sup> The Mammal Society (2012). UK BAP Mammals Interim Guidance for Survey Methodologies, Impact assessment and Mitigation. The Mammal Society. Southampton.

<sup>38</sup> Scottish Badgers (2018). Surveying for Badgers Good Practice Guidelines.

<sup>39</sup> Collins J. (ed.) (2016). Bat Surveys for Professional Ecologists, Good Practice Guidelines (3rd Edition). The Bat Conservation Trust, London.

<sup>40</sup> SNH (2019). Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.

<sup>41</sup> Scottish Fisheries Coordination Centre. (2007). Habitat Survey manual.

- **Galloway and South Ayrshire Biosphere Reserve** – the Proposed Development could have impacts on the flora and fauna associated with the Site which could potentially pose adverse effects on the general wildlife and biodiversity interests of the Biosphere Reserve;
- **Linfern Loch, and the River Stinchar and Water of Girvan catchments** – the Site is hydrologically connected to the loch which is located in the centre of the Site, while watercourses within the Site drain into the River Stinchar and Water of Girvan;
- **Habitats on Site including GWDTE** - the Site includes potentially sensitive habitats such as small pockets along forest rides, particularly marshy grassland, flush and spring, blanket bog as well as AWI habitat;
- **Otters** – Linfern Loch and watercourses present within the Site including tributaries associated with the River Stinchar and Water of Girvan, and adjacent terrestrial habitat potentially used by otters, which may potentially be associated with Merrick Kells SAC;
- **Water vole** – the Site crosses several drains, ditches and burns potentially utilised by water vole;
- **Red squirrel** - the Site contains coniferous woodland habitat potentially utilised by red squirrel for shelter and foraging;
- **Pine marten** - the Site contains coniferous woodland habitat potentially utilised by pine marten for shelter and foraging;
- **Badger** – the Site contains potentially suitable habitat for badgers including for sett excavation;
- **Bats** – the Site comprises woodland habitat potentially utilised by bats for foraging, commuting or roosting. There are also a small number of buildings immediately surrounding the Site which may be used for roosting;
- **Fish** – the Site crosses watercourses connected to Linfern Loch, River Stinchar and Water of Girvan which may potentially support salmonid species;
- **Reptiles** – the Site potentially provides suitable habitat for protected reptile species including common lizard *Zootoca vivipara*; and
- **Amphibians** – wet habitats of the Site provide potential breeding and foraging habitat for amphibian species, possibly including great crested newts.

#### 6.4 Mitigation

105. Significant effects upon ecological receptors will be avoided or minimised where possible through the conceptual design process. Good practice working methods such as the employment of an Ecological Clerk of Works (ECoW), pre-construction protected species surveys/checks, implementation of setback/buffer zones, pollution prevention measures and sensitive timing of works during construction and operation of the Proposed Development would also be implemented where necessary.

106. Where potential significant effects cannot be mitigated against, measures to prevent and reduce these will be proposed and be set out in the EIAR.

#### 6.5 Issues Scoped-Out

107. In light of the characteristics of the Proposed Development, the prevailing habitats and geographical location, it is considered appropriate to **scope out** the following species/groups from the EclA.

- **Merrick Kells SAC (habitat invertebrates)** – the SAC is sufficiently distant away from and the lack of hydrologically connectivity means that the SAC's habitat interests are not expected to be affected.
- **Auchalton SSSI** – the Site is sufficiently distant from and is not hydrologically connected to this designated site for the Proposed Development to affect its notified habitat interest (lowland neutral grassland).

- **Freshwater invertebrates (including freshwater pearl mussel *Margaritifera margaritifera*):** subject to information obtained in the desk study and observations made during the fish habitat suitability assessment, it is not anticipated that freshwater pearl mussels will be present to pose a constraint to the Proposed Development. No construction activities associated with the Proposed Development will occur within 10m of watercourses or waterbodies and appropriate mitigation measures will be adopted to protect watercourses.
- **Terrestrial invertebrates:** subject to information obtained in the desk study and incidental observations made during programmed surveys, it is not anticipated that terrestrial invertebrate would pose a significant constraint to the Proposed Development.

## 6.6 Potential Significant Effects

108. Potential effect pathways have been identified for both the construction and operational phases of the Proposed Development in relation to the sensitive receptors identified in **Section** Error! Reference source not found. Error! Reference source not found.

109. In the absence of any mitigation, anticipated potential effect pathways during construction of the Proposed Development are:

- **Habitat loss and degradation** – habitat loss and degradation could occur as a result of the felling of woodland, construction of access tracks, pollution and disruption of hydrological pathways, which could also result in temporary and permanent effects to the Linfern Loch which is hydrologically connected to a large area of the Site, including GWDTEs;
- **Disturbance and displacement** - construction of the Proposed Development has the potential to disturb ecological receptors or displace them from otherwise suitable habitat within and immediately adjacent to the Site; and
- **Injury or direct mortality** - construction activity has the potential to injure or kill protected and notable species of conservation concern, particularly slow moving or cryptic species including reptiles and amphibians. In addition, during felling and excavation activities bats, red squirrels and water voles could be killed or injured.

110. Anticipated potential effect pathways during operation are:

- **Injury and mortality** - the operation of wind turbines could pose a collision and barotrauma risk to bats;
- **Disturbance and displacement** – the operation of wind turbines and activities associated with Site maintenance has the potential to disturb protected and notable species of conservation concern or displace them from otherwise suitable adjacent habitat.

111. It is considered that in the absence of mitigation, all of the impact pathways identified above have the potential to result in significant adverse effects on ecological receptors.

112. An assessment of the cumulative effects of the Proposed Development in conjunction with other proposed developments will also be undertaken.

## 6.7 Assessment Methodology

113. The EclA will be completed in accordance with the Chartered Institute of Ecological and Environmental Management's (CIEEM) EclA guidance<sup>42</sup>. The assessment will use the ecology

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<sup>42</sup> CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland. Version 1.1.

baseline, as informed by the desk study, consultation and field surveys, to identify the sensitive receptors that could potentially be affected by the construction or operation of the Proposed Development. Each receptor will be assigned a geographic level of importance based on its national and local conservation status and population/assemblage trends and other relevant criteria (including size, naturalness, rarity and diversity). Details of the Proposed Development will then be used to assess what level of impact each receptor is likely to experience and whether or not the resulting effects will be beneficial or adverse, significant or negligible, and temporary or permanent.

### 6.8 Limitations and Assumptions

114. This Scoping Report was prepared prior to consultation or the majority of field survey being undertaken and therefore the ecological baseline conditions may change based upon the responses from consultees and collection of field survey data.

#### **Question 9:**

Do you agree with the Ecology proposed approach for baseline collection, prediction of effects and significance assessment?

## 7 Ornithology

115. This Chapter sets out the proposed approach to the assessment of potential effects on ornithology, during both construction and operation of the Proposed Development.

### 7.1 Consultation

116. Consultation has been undertaken with SNH via email communication throughout ornithological surveys regarding the suitability of the field survey scope. A summary of consultation undertaken to date is outlined in **Table 7.1**.

**Table 7.1: Summary of Consultation with SNH to Date**

Topic	SNH Summarised Comments	Arcus Summarised Responses and Actions
Nightjar	<i>"We are also inclined to specifically mention nightjar. We do not know if they are present within the site itself but they are believed to be spreading slowly within other forests to the south which are going through felling operations."</i> (22/02/2019)	Targeted nightjar surveys are planned for Year 2.
Vantage Points (VPs)	<i>"View-sheds identified by GIS do not factor in the presence of trees. Depending on how far any VP is from the nearest stand of trees, visibility will be restricted at various heights depending on distance from the vantage point. The statement that "Surveys have confirmed that visibility is good for these locations, with no issues of forestry recorded" does not fully explain how tree heights have been factored in? Can you confirm that the view sheds (down to 30m) are visible from all vantage points?"</i> (23/07/2019)	Yes, all viewsheds are visible from all VP locations. This has been ground-truthed by surveyors after being analysed using GIS.
Brown and Shepherd (Breeding Bird) Survey	<i>"The Brown &amp; Shepherd method was designed for open ground habitats. We are assuming that you will adapt it, if need be, to arrive at a survey method that is suitable to the very mixed habitats at this site."</i> (22/02/2019)	<i>"Yes, the approach will be a modified Brown and Shepherd Method<sup>43</sup>, carried out in accordance with SNH guidance."</i> (28/06/2019)
Winter Surveys	<i>"The hen harrier flights suggest the possibility of a nearby roost so further survey work to clarify this should be considered. It would also be beneficial for you to contact the relevant raptor study group who may have information on nearby winter roosts."</i> (23/07/2019)	Winter Walkover Surveys undertaken during 2019/20 will aim to identify any hen harrier roosts within the Survey Area.

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<sup>43</sup> Brown, A.F. and Shepherd, K.B (1993). A method for censusing upland breeding waders. *Bird Study* 40: 189-195.

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118. Technical Reports detailing the results of the first year of field surveys have also been provided to SNH for comment (January 2020). In SNH's response dated 6th February, they noted that their previous ornithology comments/advice had been taken on board and that they would provide further advice when they are formally consulted on the application by ECU/South Ayrshire Council.
119. Further consultation will be undertaken with SNH as well as other stakeholders, such as the Royal Society for the Protection of Birds (RSPB) and the Dumfries and Galloway Raptor Study Group (RSG), following the completion of 2019/20 non-breeding surveys (September 2019 – March 2020 inclusive). Consultation with these stakeholders will aim to discuss survey findings and if necessary, refinements to the survey requirements for the 2020 breeding season (April 2020 – August 2020 inclusive).
120. At this time, it is not anticipated that further surveys will be required following the completion of the 2020 breeding season.

### 7.2 Covid-19 Pandemic

121. Due to site access limitations associated with the global Covid-19 pandemic, all surveys scheduled in early to mid-April had to be postponed and rescheduled to late April and early May.
122. As per SNH advice<sup>44</sup>, as the delays were minor and occurred during Year 2 surveys, it is not believed that these delays will have a significant impact on the robustness of the data collected to inform assessment. However, it is noted that if the osprey pair return to breed in 2020, this is likely to occur in April when no access was permitted. Therefore, establishing an accurate return date for the breeding osprey pair (as well as breeding pairs for any other target species) may not be possible in 2020.

### 7.3 Baseline Conditions

123. The Site Boundary encompasses the proposed wind turbine locations and associated infrastructure as part of the Proposed Development. The Study Area relates to the area surveyed but not necessarily within the Site Boundary.

#### 7.3.1 Desk Study

124. The following data sources will be consulted as part of the Desk Study:
- Dumfries and Galloway RSG data;
  - SNH Sitelink<sup>45</sup>;
  - Forestry and Land Scotland data (via email); and
  - Any relevant Environmental Statements/EIARs, and any technical reports from other developments or proposed developments in the local area.
125. Two statutory designated sites for ornithological features have been identified within 20km<sup>46</sup> of the Site, both of which are SSSIs; details are summarised in **Table 7.2**. No Special Protection Areas (SPAs) or Wetlands of International Importance (Ramsar sites) are present within 20km.

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<sup>44</sup> SNH – Coronavirus Advice - Planning and Development Services, <https://www.nature.scot/coronavirus/planning-development-services> [Accessed 27th April 2020]

<sup>45</sup> SNH Sitelink <https://sitelink.nature.scot/home> [Accessed 16th March 2020]

<sup>46</sup> 20km is the limit of the search radius used, as this is the upper core range of geese species associated with Natura sites, as stated in SNH (2016) *Assessing Connectivity with Special Protection Areas*.

**Table 7.2 Summary of Statutory Sites Designated for Ornithological Interest Within 20km of the Site, Listed in Order of Proximity**

Site name	Designation	Approximate distance and direction from the Site*	Notified Features
Merrick Kells	SSSI	5.6km due south east	Breeding bird assemblage.
Bogton Loch	SSSI	7.6km due north east	Breeding bird assemblage.
*From closest point			

### 7.3.2 Field Survey Methods

<sup>126.</sup> The following ornithological surveys are currently ongoing:

- Flight Activity Surveys (FAS) from September 2018 to August 2020 inclusive (two full years);
- Black Grouse Surveys in 2019 and 2020;
- Breeding Raptor Surveys in 2019 and 2020;
- Moorland Breeding Bird Survey in 2019 and 2020;
- Winter Walkover Survey in winter 2018/19 and winter 2019/20, and
- Nightjar Surveys: in June and July 2019 (watching brief only) and 2020 (specific walkover survey).

<sup>127.</sup> All field surveys are being undertaken following SNH Guidance<sup>47</sup> as well as generic and species-specific guidance where required.

### 7.3.3 Field Survey Results

<sup>128.</sup> Key results from Year 1 (September 2018 - August 2019) surveys are outlined in **Table 7.3**. Surveys to date have recorded an assemblage of breeding and wintering birds which are typical of forested habitats in Southern Scotland, with low overall flight activity and limited use of the Site by sensitive species.

<sup>47</sup> SNH (2017). Recommended Bird Survey Methods to Inform Impact Assessment Onshore Wind Farms.

**Table 7.3 Summary of Key Results During Year 1 Baseline Ornithology Surveys**

Survey	Key Results
Flight Activity Surveys	<p>A total of 37 flights by ten identified target species were recorded during the FAS, with hen harrier (<i>Circus cyaneus</i>) the most frequently recorded species (11 flights), followed by goshawk (<i>Accipiter gentilis</i>, eight flights), and five or fewer flights for each remaining species.</p> <p>Hen harrier was recorded within the Study Area during the non-breeding season (September 2018 – January 2019), with areas of open ground and forest edge regularly used by individuals for hunting; however, there was no evidence of any winter roosting.</p> <p>Other notable registrations included five pink-footed goose (<i>Anser brachyrhynchus</i>) flights during FAS in the non-breeding season, with flocks ranging in size from 65 birds to a peak of 360 individuals.</p>
Black Grouse Surveys	<p>There were no records of black grouse (<i>Lyrurus tetrix</i>) during targeted surveys for this species. However, black grouse was recorded incidentally during FAS, Breeding Raptor Surveys and Winter Walkover surveys and there is suitable habitat for this species both within the Site and within the wider Study Area.</p>
Breeding Raptor Surveys	<p>One active osprey nest was identified during the Breeding Raptor Surveys, which successfully fledged young. Additionally, a peregrine (<i>Falco peregrinus</i>) eyrie was recorded, however signs indicated that although the territory was occupied, breeding either did not take place or was unsuccessful.</p> <p>Merlin (<i>Falco columbarius</i>) and goshawk were recorded during Breeding Raptor Surveys, however there was no evidence that either species was breeding.</p>
Breeding Bird Surveys	<p>Five confirmed territories of crossbill (<i>Loxia curvirostra</i>) were recorded within the Study Area during the Breeding Bird Surveys, three of which were within the Site Boundary.</p> <p>The breeding bird community within the Study Area was typical of the Site location and habitats present. The only breeding wader species were snipe (<i>Gallinago gallinago</i>) (two territories) and common sandpiper (<i>Actitis hypoleucos</i>) (one territory).</p>
Winter Walkover	<p>The wintering bird population was typical of the Site location and habitats present, and included small numbers of target species. No Schedule 1 raptor roosts or foraging wildfowl flocks were identified within the Study Area.</p>

<sup>129.</sup> Results from 2019/20 non-breeding season FAS are still to be fully analysed, however preliminary results are similar to those outlined in **Table 7.3** above, with no notable results. Full results from 2019/20 FAS will be outlined in further Appendixes following their completion.

#### 7.4 Sensitive Receptors

<sup>130.</sup> Results to date have identified the following sensitive ornithological receptors:

- Breeding osprey and peregrine;

- Breeding crossbill; and
- Goshawk (non-breeding), hen harrier and pink-footed goose (wintering).

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

## 7.5 Mitigation

132. Significant effects upon ornithological receptors will be avoided/minimised where possible through the design process. Good practice during construction<sup>48</sup> and operation of the Proposed Development will also be implemented (for example through the sensitive timing of works and pre-construction checks for nesting birds).

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

## 7.6 Issues Scoped-Out

134. The following issues have been **scoped-out** of the EIAR:

- Impacts on ornithological features of Merrick Kells SSSI; and
- Impacts on ornithological features of Bogton Loch SSSI.

135. Merrick Kells SSSI is designated for its breeding bird assemblage, however no details of species are given in the citation<sup>49</sup> with the Site Management Statement<sup>49</sup> stating “*There is a diversity of breeding birds, including raptors and other upland species, but all are present at low densities*”. Due to the 5.6km distance between the Proposed Development and the SSSI, expected core range of notified species<sup>50</sup>, habitats present and survey results to date, there is considered to be no potential for connectivity between the ornithological features of the SSSI and the Proposed Development and therefore no likely impacts upon the designated site are predicted.

136. Bogton Loch SSSI is designated for its breeding bird assemblage, however the only non-passerine species listed in the citation<sup>51</sup> is a black-headed gull (*Chroicocephalus ridibundus*) colony. Due to the 7.6km distance between the Proposed Development and the SSSI, predominance of coniferous plantation present within the Site Boundary and survey results to date, there is considered to be no potential for connectivity between the ornithological features of the SSSI and the Proposed Development and therefore no potential impacts upon the designated site are predicted.

137. Species not listed in **Section 7.3** will be **scoped-out** of the EIAR in accordance with SNH guidance<sup>47</sup>, unless otherwise informed by ongoing surveys.

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<sup>48</sup> Wind Farm Construction: Good Practice 4<sup>th</sup> Edition (2019). [Accessed online 9<sup>th</sup> March 2020]

<https://www.nature.scot/sites/default/files/2019-05/Guidance%20-%20Good%20Practice%20during%20wind%20farm%20construction.pdf>

<sup>49</sup> <https://sitelink.nature.scot/site/1148> [Accessed 16<sup>th</sup> March 2020]

<sup>50</sup> SNH (2016). Assessing Connectivity with Species Protection Areas (2016).

<sup>51</sup> <https://sitelink.nature.scot/site/240> [Accessed 16<sup>th</sup> March 2020].

### 7.7 Likely Significant Effects

138. Taking into account the findings from surveys to date, and following avoidance measures incorporated into the design and good practice measures, potential significant effects on ornithological receptors associated with construction and operation of the Proposed Development are likely to be limited to disturbance, displacement and turbine-based injury or mortality effects on osprey, which are known to breed within the Site.

### 7.8 Assessment Methodology

139. The assessment of ornithological effects associated with the Proposed Development, including cumulative effects, will be undertaken in accordance with guidelines published by SNH<sup>52</sup> and CIEEM<sup>53</sup>.

### 7.9 Limitations and Assumptions

140. Sensitive receptors are based on survey results to date; however, it is assumed that sensitive receptors will not differ greatly following analysis of 2019/20 survey data and any data received through consultation.

#### Question 10:

Do you agree with the Ornithology proposed approach for baseline collection, prediction of effects and significance assessment?

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<sup>52</sup> SNH (2018). Assessing Significance of Impacts on Onshore Wind Farms out with Designated Areas.

<sup>53</sup> CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland.

## 8 Cultural Heritage

### 8.1 Consultation

141. No consultation has taken place to date. This Scoping Report will form the basis for initial consultation with Historic Environment Scotland (HES) and the West of Scotland Archaeology Service (WoSAS) in relation to the Proposed Development.
142. Consultation will be undertaken to determine and identify which assets should be assessed for Setting effects, as informed by the blade tip ZTV. The requirement for visualisations (in the form of wirelines or photomontages) will also be agreed through consultation and produced from the key Cultural Heritage assets assessed.

### 8.2 Baseline Conditions

143. The Cultural Heritage assets within the Site and in a 10km buffer surrounding it (the Study Area) are listed in **Table 8.1** and illustrated on **Figure 2.2 Local Environmental Constraints, Appendix A**. A 10km preliminary assessment buffer was applied to take into consideration potential Setting effects on Cultural Heritage assets.

**Table 8.1 Cultural Heritage Designations**

Designation/Sensitivity	Assets within the Study Area
Within Site	<ul style="list-style-type: none"> <li>- 2 Scheduled Monuments;</li> <li>- 55 Undesignated Assets; and               <ul style="list-style-type: none"> <li>o Predominantly post-Medieval assets; and</li> <li>o Potential to be further assets identified through Site survey work and through HER data requests from WoSAS.</li> </ul> </li> </ul>
Within 5km buffer of Site	<ul style="list-style-type: none"> <li>- 6 Scheduled Monuments;</li> <li>- 32 Listed Buildings;               <ul style="list-style-type: none"> <li>o 6 Category A Listed;</li> <li>o 17 Category B Listed; and</li> <li>o 9 Category C Listed</li> </ul> </li> <li>- 3 Inventory Garden and Designed Landscapes; and</li> <li>- 2 Conservation Areas</li> </ul>
Within 10km buffer of Site	<ul style="list-style-type: none"> <li>- 25 Scheduled Monuments;</li> <li>- 166 Listed Buildings;               <ul style="list-style-type: none"> <li>o 17 Category A Listed;</li> <li>o 70 Category B Listed; and</li> <li>o 79 Category C Listed.</li> </ul> </li> <li>- 4 Inventory Garden and Designed Landscape;</li> <li>- 6 Conservation Areas; and</li> <li>- 3 Properties in Care.</li> </ul>

### 8.3 Sensitive Receptors

144. It is considered only those assets within a relatively close proximity to the Proposed Development have the potential to experience a significant effect on their Setting. As such, detailed assessments will be undertaken for designated sites within 5km of the Site, as well as for heritage assets up to

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10km identified during consultation or with a larger presence in the landscape such as Garden and Designed Landscapes. In all cases, only assets shown to have potential visibility of the turbines within the ZTV will be assessed.

145. The assessment will also focus on the undesignated assets noted within the Site that have been recorded as archaeological sites of local importance. Furthermore, the potential for unknown archaeological sites within and adjacent to the Site will be considered and assessed.

### 8.4 Mitigation

146. The Applicant is committed to implementing accepted good practice during the design, construction and operation of the Proposed Development, thereby ensuring that many potential effects on Cultural Heritage can be avoided or reduced. Measures will be embedded into the design to ensure that infrastructure avoids all statutory designated assets. Setting effects will be avoided or reduced where possible through design.
147. The results of the assessment will determine the requirement for any appropriate mitigation measures for the protection of the Cultural Heritage resource or, where necessary, the investigation and recording of any sites with potential to be affected by the Proposed Development where preservation in situ cannot be achieved.

### 8.5 Issues Scoped-Out

148. The following elements are proposed to be **scoped-out** of the EIAR as they are not present within 10km of the Proposed Development:
- World Heritage Sites;
  - Inventory Battlefields; and
  - Marine Protected Areas.
149. Once construction is complete, the potential for direct effects on known and unknown undesignated assets will be removed, so this element will also be **scoped-out** of the EIAR for the operation phase.
150. During operation, it is considered only those assets within, or within a relatively close proximity to the Proposed Development (approximately 5km) may potentially receive a significant effect on their Setting. The designated assets located beyond the 5km buffer may be **scoped-out** of the EIAR where intervening topography, or other screening significantly reduces the likelihood of indirect impacts from the Proposed Development.

### 8.6 Likely Significant Effects

151. The potential direct effects related to the construction of the Proposed Development include:
- Permanent, complete or partial loss of an archaeological feature or deposit as a result of ground excavation;
  - Permanent or temporary loss of the physical of a feature, monument, building, or group of monuments;
  - Damage to resources as a result of ground excavation;
  - Damage to resources due to compaction, desiccation or waterlogging; and
  - Damage to resources as a result of ground vibration caused by construction.

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152. There are two Scheduled Monuments contained within the Site and a number of undesignated assets that have the potential to be directly impacted upon during construction. The embedded mitigation will ensure that statutory protected assets are not directly impacted upon, and undesignated assets will be avoided where possible through the design process.

153. The potential indirect effects related to the construction of the Proposed Development include:

- The movement and activity of large construction machinery, usually with flashing hazard lights;
- Views of cranes or lifting equipment impacting on key sensitive ridgelines;
- Temporary spoil heaps and disposal areas; and
- Flood lighting of areas for evening and morning working during the winter.

154. These effects will be temporary in nature and it is considered only those assets within, or within a relatively close proximity to, the Proposed Development may potentially receive an effect on their Setting during construction, with these effects unlikely to be significant.

## 8.7 Potential Significant Effects

### 8.7.1 Construction

155. The potential direct effects related to the construction of the Proposed Development include:

- Permanent, complete or partial loss of an archaeological feature or deposit as a result of ground excavation;
- Permanent or temporary loss of the physical of a feature, monument, building, or group of monuments;
- Damage to resources as a result of ground excavation;
- Damage to resources due to compaction, desiccation or waterlogging; and
- Damage to resources as a result of ground vibration caused by construction.

156. There are two Scheduled Monuments contained within the Site and a number of undesignated assets that have the potential to be directly impacted upon during construction. The embedded mitigation will ensure that statutory protected assets are not directly impacted upon, and undesignated assets will be avoided where possible through the design process.

157. The potential indirect effects related to the construction of the Proposed Development include:

- The movement and activity of large construction machinery, usually with flashing hazard lights;
- Views of cranes or lifting equipment impacting on key sensitive ridgelines;
- Temporary spoil heaps and disposal areas; and
- Flood lighting of areas for evening and morning working during the winter.

158. These effects will be temporary in nature and it is considered only those assets within, or within a relatively close proximity to, the Proposed Development may potentially receive an effect on their Setting during construction, with these effects unlikely to be significant.

### 8.7.2 Operation

159. The potential indirect effects related to the operation of the Proposed Development include:

- The increased visual presence of the windfarm and the intervisibility between the windfarm and archaeological or Historic sites or features which may affect their Setting, depending on a number of additional considerations;
- The introduction of new lighting changing the night-time view; and
- Cumulative effects with other existing or proposed developments.

## 8.8 Assessment Methodology

160. The Cultural Heritage assessment will be supported through the production of an illustrated archaeological desk-based assessment. This will include a detailed baseline compiled through a broad and standard range of data sources, including the Historic Environment Record (HER), the HES National Heritage List and National Record for the Historic Environment (SNRHE), local authority data sources along with published works and cartographic sources, and topographic, geology and geotechnical data, where available.

161. A site walkover will be undertaken to assess the visible archaeological and built heritage resource and archaeological potential of the Proposed Development, with the results included within the assessment. This will allow for the determination of whether previously unrecorded historic features are present on-site. The results of any new archaeological sites will be discussed with WoSAS and/or HES.

162. The significance of an effect is assessed by determining what the changes will be against the existing, or predicted, baseline as a result of the Proposed Development. The method for assessing significance of effect will be based on the environmental value (or sensitivity) of a receptor and the magnitude (degree of change) of the impact. Sensitivity will be assessed as high, medium, low, or negligible, and magnitude will be assessed as substantial, moderate, slight, or negligible in line with the Environmental Impact Assessment Handbook<sup>54</sup>. The work will be undertaken in accordance with the standards set by the Chartered Institute for Archaeologists (CIfA), the Historic Environment Policy Scotland (HEPS)<sup>55</sup> as well as the HES' Guidance on Managing Change in the Historic Environment document series paying particular attention to guidance on Setting<sup>56</sup>. All elements of the assessment will also be undertaken in accordance with the following policies and guidelines:

- By-laws: Code of Conduct, CIfA<sup>57</sup>;
- Standards and Guidance for Historic Environment Desk Based Assessment, CIfA<sup>58</sup>; and
- Standards and Guidance for commissioning work on, or providing consultancy advice on, archaeology and the historic environment, CIfA<sup>59</sup>.

## 8.9 Limitations and Assumptions

163. This Scoping Report related to Cultural Heritage is based on the Site set out within **Figure 2.2 Local Environmental Constraints, Appendix A**. Furthermore, the information related to the designated

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<sup>54</sup> Scottish Natural Heritage (2018). Environmental Impact Assessment Handbook.

<sup>55</sup> Historic Environment Scotland (2019). Historic Environment Policy Scotland.

<sup>56</sup> Historic Environment Scotland (2016). Managing Change in the Historic Environment: Setting

<sup>57</sup> Chartered Institute for Archaeologists (2014). By-laws: Code of Conduct.

<sup>58</sup> Chartered Institute for Archaeologists (2017). Standards and guidance for desk-based assessment.

<sup>59</sup> Chartered Institute for Archaeologists (2014). Standards and guidance for archaeological advice by historic environment services.

heritage assets was derived from publicly available datasets provided by HES through the HES Portal<sup>60</sup>.

**Question 11:**

Do you agree with the Cultural Heritage proposed approach for baseline collection, prediction of effects and significance assessment?

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<sup>60</sup> Historic Environment Scotland. Spatial Downloads. Available at: <http://portal.historicenvironment.scot/spatialdownloads>

# 9 Hydrology, Hydrogeology, Geology and Peat

## 9.1 Consultation

164. There has been no consultation undertaken to date for Hydrology, Hydrogeology, Geology and Peat. The following consultees will be approached for information to inform the EIAR:

- Scottish Environment Protection Agency (SEPA) (regarding licenced abstractions, supplies and engineering activities in the water environment);
- SNH (regarding designated sites);
- Scottish Water (regarding public water supplies); and
- South Ayrshire Council (regarding private water supplies).

## 9.2 Baseline Conditions

165. The Study Areas for Hydrology, Hydrogeology, Geology and Peat include the area within the Site Boundary, plus within a 1km buffer, and up to 5km downstream for any identified sensitive surface water receptors, such as water supplies or hydrologically relevant designated sites.

166. British Geological Survey (BGS) Geindex<sup>61</sup> indicates the Site is largely underlain from north to south, by:

- Swanshaw Sandstone Formation (red-brown, grey-green and chocolate-brown, medium and coarse-grained terrestrial sandstones with subordinate pebble beds and conglomerates, minor fine-grained sandstones, siltstones and mudstones);
- Southern Midland Valley Felsite Sills – Andesitic Rock; and
- Duneaton Volcanic Formation (mainly andesitic and basaltic lavas, commonly amygdaloidal, including olivine basalts, pyroxene andesites and feldsparphyric lavas with subordinate volcanic breccias, tuffs and minor sandstone interbeds).

167. The south west of the Site is largely comprised by:

- Dalreoch Formation (sandy and pebbly greywacke); and
- Kirkcom Formation (sandstone/siltstone turbidite sequence).

168. There are small pockets of:

- Maybole-Straiton-Dalmellington Mafic Intrusions;
- Inverclyde Group (sandstones containing pedogenic limestone and dolomite nodules, fine-grained carbonate as beds, nodules and pebbles, and grey and brown mudstones containing thin beds of limestone and dolomite; subordinate siltstone and mudstone);
- Benan Conglomerate Formation (boulder conglomerate);
- North Britain Siluro-Devonian Calc-Alkaline Dyke Suite; and
- Lower Limestone Formation (cyclic: includes marine limestones).

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<sup>61</sup> BGS (2019). BGS Geindex Onshore. [online]. Available at: <http://mapapps2.bgs.ac.uk/geoindex/home.html> [Accessed 6th March 2020].

169. Superficial geology mapping indicates that the majority of the Site is underlain by till (Diamicton), with small pockets of peat and alluvium (silt and clay). Hummocky glacial deposits are also noted.
170. The SNH Carbon and Peatland Map (2016)<sup>62</sup> indicates that Class 5 (peaty soil; no peatland vegetation) is predominant across the Site. Pockets of Class 1 (peat soil; peatland) and 3 (predominantly peaty soil with some peat soil; peatland with some heath) are more prominent in the north west and a large section of Class 1 is present in the south west of the Site. Soil Mapping<sup>63</sup> identified that there are six soil units present within the Site; peat, peaty podzols, peaty gleys, mineral gleys, brown soils and alluvial soils. Of the six units, three of them include peat or peaty soils in their composition.
171. The majority of the Site, including the Linfern Loch, is located within the River Stinchar catchment. This water body has been classified by SEPA (ID: 10467 u/s Water of Gregg) under the Water Framework Directive (WFD) (2018) as having an overall status of Moderate due to the effect of anthropogenic acidification on macroinvertebrates. The catchment also comprises SEPA classified water body, Dalquhairn Burn (ID: 10477) which drains the western extent of the Site and has a status of High.
172. The northern extent of the Site is within the Water of Girvan catchment, classified by SEPA (ID: 10455 Lyndsayston Burn to Palmullan Burn) which has an overall status of Moderate due to the effect of anthropogenic acidification on macroinvertebrates and fish ecology. This catchment comprises other SEPA classified watercourses which drain the Site, including Dobbingsstone/Lyndsayston Burn (ID: 10459) and Palmullan Burn (ID: 10463), both of which have an overall status of High.
173. SEPA Flood Risk Management mapping<sup>64</sup> suggests that there is a high risk of river flooding locally, with this limited to areas immediately adjacent to the River Stinchar. Small areas of surface water flooding risk are limited to isolated discrete locations within the Site.
174. The Drinking Water Quality Regulator for Scotland<sup>65</sup> mapping shows two private water supplies (PWS), Glenalla and Tallaminnoch within 1km of the Site Boundary. The south eastern extent of the Site is within a Scottish Water public water catchment area. Further information will be sought from South Ayrshire Council, Scottish Water and SEPA to inform the assessment of effects on water supplies.
175. SNH SiteLink mapping<sup>66</sup> indicates there are no nationally or internationally designated sites within, or hydrologically linked to the Site.
176. Potential groundwater dependent terrestrial ecosystems (GWDTE) may be present within the Site Boundary which will be confirmed by ecological surveys and hydrological assessments.

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<sup>62</sup> SNH (2016). Carbon and Peatland Map [online] Available at: <https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/> [Accessed 6th March 2020].

<sup>63</sup> MLURI (2013). Soil Mapping [online] Available at: [http://map.environment.gov.scot/Soil\\_maps/?layer=1](http://map.environment.gov.scot/Soil_maps/?layer=1) [accessed 18<sup>th</sup> March 2020].

<sup>64</sup> SEPA (2018). Flood Maps [online] Available at: <http://map.sepa.org.uk/floodmap/map.htm> [Accessed 6th March 2020].

<sup>65</sup> DWQR (2019). Private Water Supplies mapping [online]. Available from: <https://dwqr.scot/private-supply/> [Accessed 6th March 2020].

<sup>66</sup> SNH (2020). SiteLink Map [online] Available at: <https://sitelink.nature.scot/map> [Accessed 13th March 2020].

### 9.3 Sensitive Receptors

177. Sensitive receptors within the Study Area include surface water features, private water supplies and peat. GWDTE may be present and specific NVC communities may be considered sensitive to the Proposed Development.

### 9.4 Mitigation

178. The majority of the assessed potential effects will be mitigated through the iterative design process by considering environmental constraints relating to hydrology, hydrogeology, geology and peat. Further embedded measures include using existing track routes deemed to be acceptable and locating all development features out with 50m buffers of Ordnance Survey (OS) mapped watercourses as far as possible, for example minimising foundations or tracks in these zones. New watercourse crossings will be minimised. Peat surveys and peat stability assessment data will be used within the design process to minimise incursion on these sensitive receptors. Specific mitigation measures will also be identified to reduce potential impact from construction and operation of the Proposed Development.
179. During construction, industry good practice principles will be adopted and stated in the Outline CEMP to limit the likelihood of an incident occurring that may have a detrimental effect on water quality or quantity, peat, or GWDTE, and to reduce the magnitude of any incident which does occur. This will be considered as embedded mitigation and may include:

- Fuel and chemical pollution prevention, including good practice storage and refuelling techniques;
- Erosion control and sediment management techniques;
- Reductions in natural flows arising from any temporary or permanent abstractions;
- Appropriately designed, located and sized watercourse crossing structures;
- Appropriate mitigation shall be detailed for infrastructure within or adjacent to sensitive peat and GWDTE features, such as application of floating track and careful drainage design;
- Sustainable drainage techniques; and
- Site supervision and staff training.

### 9.5 Issues Scoped-Out

180. The following effects are proposed to be **scoped-out** of further assessment as, with the adoption of good design and implementation of standard good practice construction measures, significant effects are considered unlikely:
- Reductions in natural flows arising from any temporary or permanent abstractions. This can be managed via the Construction Site Licence application process; and
  - All structures will be designed and constructed following good practice techniques and will be of sufficient capacity to receive storm flows with an allowance for increased flows due to climate change. Therefore, it is considered that the Proposed Development will not increase local flood risk.

### 9.6 Potential Significant Effects

181. Adopting a precautionary approach at this preliminary stage, potential construction and operational (including cumulative) effects to be assessed in the EIAR include:
- Direct effects during construction from chemical or hydrocarbon pollution to surface water, groundwater, private water supplies, or soil, reducing quality and resource value;
  - Direct effects during construction on surface water quality from sedimentation;

- Direct effects during construction that modify surface water drainage patterns, altering hydrological regime, hydromorphology, private water supply yield and flood risk;
- Indirect effects during construction on surface water quality or surface water drainage patterns due to peat instability;
- Direct effects during construction on groundwater flows and levels, including private water supply yield and GWDTE;
- Direct effects during construction on soils, including soil erosion, excavation losses and compaction of soil;
- Direct effects during construction on soil loss due to peat instability; and
- Carbon losses over the lifespan of the Proposed Development.

## 9.7 Assessment Methodology

182. The assessment of effects will be carried out in accordance with the principles contained within a range of standard guidance documents from CIRIA, Forestry and Land Scotland, SEPA, SNH, the Scottish Government, and Scottish Renewables relating to water pollution, abstractions, watercourse crossings, sustainable drainage, peat management, peat landslide and hazard risk assessment, and forestry.

### 9.7.1 Desk Study

183. The desk-based study will be designed to assist in determining the characteristics of the Site and will collate baseline information from available sources to inform the subsequent field survey. The desk-based study will typically involve the following elements:

- Collation of geological, geomorphological and hydrogeological information;
- Use of topographical maps to identify watercourse catchments, water bodies, springs and boreholes within the Study Area;
- Identification of any designated or protected sites with a hydrological, hydrogeological, geological or geomorphological interest within a 5km buffer of the Site;
- Estimation of low and peak stream flows;
- Collation of available historical hydrological and flooding information for the immediate area and the main downstream watercourses;
- Collation of preliminary data on public and private water supplies;
- Collation of available meteorological data for the region; and
- Collation of available surface and groundwater quality data for the region.

### 9.7.2 Field Surveys

184. The field survey will take the form of a reconnaissance level walkover with three objectives: ground-truthing of desk study data; identification of topographical and other features not shown on mapping; and placing the Site and surrounding landscape in context, including determining the general hydrological conditions of the Site.

185. Specific field survey tasks will gather Site information on peat depth (based on phase 1 and phase 2 probing), peat stability, watercourse crossings and geology.

186. Data collected during the field survey will therefore provide a profile of the characteristics of the area, highlighting sensitive areas and constraints to the design of the Proposed Development.

### 9.7.3 Assessment

187. Following the baseline studies and the confirmation of final layout design, the potential effects on the hydrology, hydrogeology, geology and peat will be assessed based on guidance noted above. The effects of all temporary and permanent infrastructure associated with the Proposed Development will be considered. Activities to be considered may include watercourse crossings, excavation, drainage, importation of material and the Site storage of materials, including soil, fuel and chemicals.
188. Central to the assessment will be the assumption that good practice regulatory construction and operational measures will be implemented (see **Section 9.4 'Mitigation'** above).
189. The significance of potential effects will be categorised using professional judgement against a matrix, considering three key factors: the sensitivity of the receiving environment, the likelihood of that effect occurring (or probability) and potential magnitude of any effect that does occur.
190. The sensitivity of receptors will be based on factors that include designated status, water quality, aquatic ecology, fluvial geomorphology and groundwater vulnerability, with sensitivity ranging from low-medium-high. Magnitude will be evaluated based on the change that occurs to the baseline condition, considering temporal issues and ranging from negligible-minor-moderate-major. The probability of an effect occurring will be evaluated as ranging from low-medium-high.
191. The assessment will draw largely from the following supporting technical appendices which will be part of the EIAR:
- Watercourse crossings - locations identified following design freeze will be visited, with photographs taken, dimensions and channel characteristics noted;
  - GWDTE – in accordance with SEPA guidance<sup>67</sup>; relevant NVC communities within 100m and 250m buffer zones around the proposed infrastructure will be identified and assessed considering the change in groundwater contribution areas pre and post-development;
  - Peat stability risk assessment (PSRA) - will include characterisation of the peatland features, description of observed peat instability, interpretation of aerial imagery, analysis of peat depth (based on representative peat probing involving a good coverage of proposed infrastructure, including 50m intervals along track routes) and factor of safety stability data to highlight any areas of specific initial concern (high or moderate risk) in line with current guidance<sup>68</sup>; and
  - Soil and peat management plan (SPMP) - estimation of the excavated peat volume will be based on site-specific data relating to infrastructure dimensions, measured peat depths and threshold values for floating track. The plan will utilise peat depth data gathered during the peat stability task to identify quantities of soil and/or peat that will require excavation in order to undertake the Proposed Development, in line with current guidance<sup>69</sup>.
192. Residual effects, post-mitigation, will be identified and assessed as either significant or non-significant.

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<sup>67</sup> SEPA (2017). Land Use Planning System SEPA Guidance Note 31, Guidance on assessing the impacts of development proposals on groundwater abstractions and groundwater dependent terrestrial ecosystems, Version 3.

<sup>68</sup> Scottish Executive (2017). Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments, 2nd Edition.

<sup>69</sup> Scottish Renewables/SEPA (2012). Developments on Peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste.

## 9.8 Limitations and Assumptions

- <sup>193.</sup> This Scoping Report was prepared prior to consultation and the completion of field surveys. Hydrology, Hydrogeology, Geology and Peat baseline conditions may therefore change, based upon the responses from consultees and collection of field survey data.

### Question 12:

Do you agree with the Hydrology, Hydrogeology, Geology and Peat proposed approach for baseline collection, prediction of effects and significance assessment?

# 10 Noise

## 10.1 Consultation

194. No consultation has taken place to date. This Scoping Report will form the basis for initial consultation with the Environmental Health Department of South Ayrshire Council in relation to the Proposed Development.

## 10.2 Baseline Conditions

### 10.2.1 Study Area

195. For operational noise, a 5km Study Area will be adopted. This is considered sufficient to ensure that all potentially significant cumulative noise effects will be addressed – i.e. the combined effect of noise from the Proposed Development when operated simultaneously with any other identified windfarm developments. The operational noise assessment will extend to include a representative sample of the receptors in closest proximity to both the Proposed Development and the other identified windfarms such that all locations of potential cumulative effects are fully accounted for. The relevant existing windfarms in the vicinity of the Proposed Development are defined below.

### 10.2.2 Sources of Information

196. A desk-based review has been undertaken to determine the existing baseline conditions. This has included consideration of the following sources of information:

- The AddressBase Plus™ database, which marries the UK postal address database with Ordnance Survey (OS) six figure grid references;
- 1:50000 OS Land Ranger mapping for the Site and surrounding area;
- 1:25000 OS Explorer mapping for the Site and surrounding area;
- Open Source 10m topographic ground contour details for the Site and surrounding area;
- Freely available on-line aerial and street scene photography for the Site and surrounding area;
- The South Ayrshire Council Planning Portal, for the identification of windfarm developments both proposed (i.e. at scoping stage, application submitted or consented but yet to be commenced), and existing (i.e. under construction or operational); and
- SNH Windfarm Footprint Maps, depicting all windfarm developments which SNH have been consulted upon including their latest known planning status.

### 10.2.3 Local Noise Environment

197. The Proposed Development is located in a sparsely populated area, although there are several individual properties in the vicinity of the Site. The noise environment at these properties is expected to include contributions from both 'manmade' and 'natural' sources. 'Manmade' noise sources include road traffic movements on the local minor roads and possible industrial/commercial noise e.g. from forestry operations within and around the Site as well as sporadic noise associated with farm workings. With regard to noise from other windfarms, only the Hadyard Hill and Dersalloch Windfarms have been identified as operational, and therefore have the potential to contribute to the prevailing noise environment at receptors in their vicinity (see **Section 10.2.4** below).

198. Natural sources include bird song, the wind, rustling vegetation, noise from rainfall, animals and water courses. Given the general rural nature of the area, it is expected that natural sources will largely dominate the background noise levels that prevail during the most sensitive periods as considered

when setting windfarm noise level limits (i.e. night-time, evening, weekend afternoon and Sunday mornings), but with possible additional contribution from man-made sources.

#### 10.2.4 Cumulative Developments

199. A review of other identified windfarm developments in the vicinity of the Site has been undertaken. The following developments within a 5km radius of the Site Boundary have been identified as having the potential to give rise to a cumulative noise impact with the Proposed Development:

- Dersalloch Windfarm – approximately 3.5km north east of Site Boundary – Operational; and
- Hadyard Hill Windfarm – approximately 3.6km west of Site Boundary – Operational.

200. The following other windfarm developments have also been identified within 5km, but have been scoped-out of the assessment for the reasons stated:

- Knockskae Windfarm, to the immediate north of the Site Boundary – Refused;
- Linfairn Windfarm, to the immediate north of the Site Boundary – Application withdrawn;
- Glenmount Windfarm, approximately 1.5km east of the Site Boundary – Application withdrawn;
- Clauchrie Windfarm, approximately 3.5km south of the Site Boundary – In scoping, but 6.8km from the wind turbine Developable Area; and
- Hadyard Hill Windfarm Extension, to the immediate west of the Site Boundary – Application withdrawn.

201. The location of the above windfarm developments, including the Developable Area, can be seen in **Figure 10.1 Noise and Vibration Sensitive Receptors and Proposed Baseline Noise Measurement Locations, Appendix A**.

#### 10.3 Sensitive Receptors

202. The noise and vibration sensitive receptors identified in the vicinity of the Site are listed below. The stated distances are to the Developable Area (see **Figure 10.1 Noise and Vibration Sensitive Receptors and Proposed Baseline Noise Measurement Locations, Appendix A**). Once the candidate turbine type has been finalised, noise level predictions will be undertaken and the following list of receptors will be refined in accordance with the Energy Technical Support Unit's R-97 document: Assessment and rating of noise from windfarms (ETSU-R-97)<sup>70</sup>, i.e. to those where predicted noise levels are above 35dB L<sub>A90</sub> at a 10m/s wind speed.

203. Three dwellings at Meikle Hill/Border House (1km);

- Glenalla (1km);
- Knockskae (1.2km);
- Linfairn (1.7km) – Not listed in AddressBase Plus database as a residential property.
- Current assumption for receptor is based on satellite imagery which suggests a dwelling amongst the farm buildings. Confirmation of the status of the dwelling to be confirmed in the EIAR;
- Genoch (1.4km);

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<sup>70</sup> The Working Group on Noise from Wind Turbines (1996). The Assessment of Rating Noise from Wind Farms. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/49869/ETSU\\_Full\\_copy\\_Searchable\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/49869/ETSU_Full_copy_Searchable_.pdf)

204. Dwelling south of Genoch (1km) – Not listed in AddressBase Plus database as a residential property. Current assumption for receptor is based on satellite imagery which suggests a dwelling at this location. Confirmation of the status of the dwelling will be confirmed in the EIAR:

- Glengill Cottage (1.6km);
- Tairlaw (1.9km);
- Two dwellings at Tairlaw Toll (1km);
- Tallaminnock (1km).
- Black Row (1km);
- Aldinna (1km);
- White Row (1km);
- Pinvalley (2.1km);
- South Balloch (2km);
- North Balloch (1.8km);
- Dalwyne (2.3km);
- Dalquhairn (2.4km);
- Doughty (1.5km);
- Dobbingsstone (1.5km);
- Blair (1.1km);
- Glenmartin (1km); and
- Cullochknowes (1.2km).

## 10.4 Mitigation

### 10.4.1 Construction Phase

205. It is anticipated that on-site construction works will be at sufficient distance from the nearest sensitive receptors that construction noise and vibration will not give rise to significant effects. Where localised off-site works are required in close proximity to receptors, e.g. should road and junction improvements be required, there are a number of safeguards in place that serve to minimise the effects of construction noise. These include:

- The various EC Directives and UK Statutory Instruments that limit noise emissions of a variety of construction plant; and
- The powers that exist for local authorities under Sections 60 and 61 of the Control of Pollution Act 1974 (COPA).

206. In addition to the above, adoption of Best Practicable Means (BPM), as defined in Section 72 of COPA, is also an effective means of controlling noise from construction sites. Measures in compliance with BPM include: the adoption of appropriate construction working hours, the careful selection of construction plant and working methods, careful programming and timing of deliveries and the shutting down of plant when not being used etc. Additional measures in compliance with the principles of BPM are keeping residents informed of the works, as well as undertaking monitoring during the works if identified as necessary. These measures can assist in the minimisation of effects as a result of adopting a considerate approach to working and a means of ensuring and demonstrating that appropriate limits are not exceeded.

207. The adoption of BPM can also be applied to minimise the levels of groundborne vibration that are generated (e.g. through the selection of non-impulsive or low vibration generative working methods).

### 10.4.2 Operational Phase

208. With regard to operational noise, there are a number of mitigation measures that are available if required. The layout and design of the Proposed Development will be subject to an iterative design process allowing the incorporation of such measures as 'embedded mitigation' where necessary. The available measures include the following:

- The use of the Proposed Development layout design to ensure that wind turbines are appropriately sited such that specified noise level limits can be met;
- The identification of an appropriate wind turbine type for installation that can be operated such that specified noise level limits can be met; and
- The identification of a wind turbine type for installation that allows individual wind turbines to be operated in low/reduced noise modes during specific meteorological conditions (i.e. the use of a wind turbine noise management system), e.g. when a given receptor is downwind of the Proposed Development within a defined wind speed range.

209. In addition, planning conditions can be used to specify derived noise level limits that are not to be exceeded, and procedures to manage any noise-related issues (such as complaints) should these arise during operation.

210. ETSU-R-97 allows a relaxation of the applicable noise level limits where the occupants of a receptor have a financial involvement in the Proposed Development, but this is not the case for any receptors with the Proposed Development.

## 10.5 Issues Scoped-Out

### 10.5.1 Construction Phase

211. There are no receptors within 1km of the Developable Area. Noise and vibration arising from wind turbine construction works is therefore not anticipated to give rise to a significant effect.

212. It is proposed that vehicular access tracks on the Site will utilise the existing forestry tracks as much as possible minimising the need for associated construction works. Vehicular access to the Site will be from the C46w to the east, approximately 250m south of Tallaminnoch. This access will lead to an internal network of vehicular tracks which will provide access to the wind turbines. However, as noted above, the Developable Area is at substantial distance from the closest receptors, so those access tracks will be too. An assessment of construction noise and vibration from on-site works is therefore scoped-out of the assessment.

213. The delivery of wind turbine components to the Site would be from the south utilising the C46w, A714 and A75. Localised road and junction improvement works are anticipated to be necessary to facilitate abnormal deliveries and turbine blades in particular. Such junction works are anticipated to comprise (for example) the laying of additional areas of load bearing surfaces, the cutting back of vegetation/tree canopies, minor earthwork reprofiling, localised widening and road sign removals etc. Such works would be small scale, local, temporary and short-term only, and would be akin to temporary work associated with utilities servicing etc. An assessment of construction noise and vibration from off-site road and junction improvement works is therefore scoped-out of the assessment.

214. Routes for general construction traffic are yet to be finalised, but Site access would be at the same point on the C46w. Travel to this point could be via the A714 and C46w to the south, or the B741 and C46w (Newton Stewart Road) to the north (which in turn link to the A77, A734 and B734 and B7023).
215. These routes pass small villages including Glentroll, Straiton, Cloyntie, Crosshill and Dailly, and a number of other isolated properties. However, construction traffic movements are not anticipated to generate road traffic noise levels that would be sufficiently high to give rise to significant effects. An assessment of construction traffic noise is therefore scoped-out of the assessment.

### 10.5.2 Operational Phase

216. Wind turbines do not generate levels of groundborne vibration that are considered significant in relation to human perception, and (moreover) they would be located at a significant distance from the nearest receptors. Assessment of operational groundborne vibration is therefore scoped-out of the assessment.
217. Any fixed plant items associated with the Proposed Development such as the associated substation and possible Energy Storage Facility can be sited at sufficient distance from the nearest sensitive receptors that any operational noise levels would be negligible and not significant. Assessment of noise from fixed plant items is therefore scoped-out of the assessment.
218. With regard to low frequency noise and infrasound, Scottish planning policy for noise references the online planning resource entitled Onshore wind turbines: Planning advice<sup>71</sup>. In turn, this references a report for the UK Government which concluded that “there is no evidence of health effects arising from infrasound or low frequency noise generated by the wind turbines...”. Assessment of low frequency noise and infrasound is therefore scoped-out of the assessment.
219. Once operational, development-generated road traffic travelling to and from the Site will be extremely low, comprising periodic service and maintenance visits etc. These would not be sufficient to give rise to significant effects. Assessment of operational road traffic noise is therefore scoped-out of the assessment.

## 10.6 Potential Significant Effects

### 10.6.1 Construction Phase

220. It is proposed that on-site borrow pits will be used for the winning of stone for utilisation in the construction of the Proposed Development. The detailed on-site ground conditions are yet to be determined, but it is anticipated that blasting works may be required. The precise location of borrow pits, and the need for blasting works is yet to be confirmed, so an assessment of blast induced noise, vibration and air overpressures has been scoped-in at this stage.

### 10.6.2 Operational Phase

221. It is expected that with careful design, the applicable limits for wind turbine noise can be achieved, but a detailed assessment will be undertaken to demonstrate compliance. This assessment will include account of potential cumulative noise impacts that could arise as a result of the Proposed

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<sup>71</sup> Scottish Government (2014). Onshore wind turbines: Planning advice  
[https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2014/05/onshore-wind-turbines-planning-advice/documents/onshore-wind-turbines\\_online-renewables-advice-pdf/onshore-wind-turbines\\_online-renewables-advice-pdf/govscot%3Adocument/Onshore%2Bwind%2Bturbines\\_online%2Brenewables%2Badvice.pdf](https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2014/05/onshore-wind-turbines-planning-advice/documents/onshore-wind-turbines_online-renewables-advice-pdf/onshore-wind-turbines_online-renewables-advice-pdf/govscot%3Adocument/Onshore%2Bwind%2Bturbines_online%2Brenewables%2Badvice.pdf)

Development operating simultaneously with other identified local windfarm developments scoped-in for consideration (see **Section 10.2.4**). Assessment of operational wind turbine noise has therefore been scoped-in to the assessment.

## 10.7 Assessment Methodology

### 10.7.1 Construction Phase

#### 10.7.1.1 Blast Induced Noise, Vibration and Air Overpressure from Borrow Pit Works (Where Required)

222. The potential for blast induced noise, vibration and air overpressures will be considered following the guidance contained within BS 5228-2:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites<sup>72</sup>. Vibration and Planning Advice Note (PAN) 50: Controlling the effects of surface mineral workings<sup>73</sup>, including Annex D: The control of blasting at surface mineral workings. This assessment will consider the likelihood of impacts arising with reference to the location of any proposed on-site borrow pits, and the mitigation measures that would be available for incorporation into the working methods.

223. Where required, appropriate noise and vibration mitigation measures will be presented, and residual effects determined.

### 10.7.2 Operational Phase

#### 10.7.2.1 Operational Wind Turbine Noise

224. A detailed assessment of operational wind turbine noise levels will be undertaken in accordance with ETSU-R-97 and the Institute of Acoustics': *A good practice guide to the application of ETSU-R-97 (IoA GPG)*<sup>74</sup>. A desk-based review of the other cumulative windfarm developments that have been scoped-in for consideration, will be undertaken. This review will include both the published noise assessment work previously undertaken for those developments as well as any associated noise level limits to which those developments have to comply. This review will determine whether or not there is sufficient historic baseline noise measurement data for the assessment to draw upon, but it is assumed that an additional baseline noise survey will be required, as outlined below.

#### 10.7.2.2 Baseline Noise Survey

225. A detailed baseline noise survey will be undertaken in order to establish the prevailing conditions in the vicinity of the Site. Measurements will be undertaken at up to six locations selected as representative of the closest existing noise sensitive receptors to the Site.

226. The proposed measurement locations are as follows:

- Location A - Glenmartin (to be selected as also representative of Blair, Cullochknowes and Mieklehill/Border House);
- Location B – Glenalla;

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<sup>72</sup> British Standards Institution (2008). BS 5228-2:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites

<sup>73</sup> The Scottish Office – Development Department (1996). Controlling the Effects of Surface Mineral Workings

<sup>74</sup> Institute of Acoustics (2013). A Good Practice Guide to the Application of ETSU-R-97

<https://www.ioa.org.uk/sites/default/files/IOA%20Good%20Practice%20Guide%20on%20Wind%20Turbine%20Noise%20-%20May%202013.pdf>

- Location C - Dwelling South of Genoch;
- Location D - Tairlaw Toll or Tallaminnock;
- Location E - Black Row or White Row (selected as also representative of Aldinna); and
- Location F - Doughty.

227. These proposed measurement locations are depicted in **Figure 10.1 Noise and Vibration Sensitive Receptors and Proposed Baseline Noise Measurement Locations, Appendix A**, but the final adopted measurement locations will be dependent upon obtaining property/landowner approvals.
228. The noise survey will be undertaken to fulfil the requirements of ETSU-R-97 and the IoA GPG, including its associated Supplementary Guidance Notes (SGNs). The survey will be undertaken over a period of approximately three weeks in order to obtain the prevailing levels under the requisite range of wind speed conditions. The survey will be undertaken with simultaneous measurement of wind speed and direction from the on-site meteorological masts. Rainfall measurements will also be obtained for the duration of the baseline noise survey.
229. The measured wind speed data will be corrected/standardised to a height of 10m above ground following current good practice, drawing upon guidance presented within the IoA GPG and associated SGNs. This will allow due account of site-specific wind shear.
230. The baseline noise survey will be mostly unattended, as appropriate for long-term surveys, with all measurements carried out using sound level meters compliant with Class 1 specification, as set out in BS EN 61672-1: 2013: *Electroacoustics. Sound level meters. Specifications*<sup>75</sup>, and using wind protection that conforms to the recommendations in the IoA GPG. All measurement equipment will be installed by a consultant competent in environmental noise monitoring, in accordance with the principles of BS 7445-2: 1991: *Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use*<sup>76</sup>.

#### 10.7.2.2.1 Assessment

231. The baseline noise and meteorological data (obtained from the desk review and baseline survey) will be analysed and assessed in accordance with ETSU-R-97 and the IoA GPG, to determine applicable daytime and night-time noise level limits for the Proposed Development acting in isolation and cumulatively with other windfarm developments.
232. A detailed noise model will be prepared for the final layout of the Proposed Development and selected candidate wind turbine.
233. The noise model will also include the latest submitted or approved scheme and wind turbine details for the other cumulative windfarm developments that have been scoped-in to the assessment (see **Section 10.2.4**).
234. The noise model will be used to undertake a series of operational wind turbine noise level predictions. In accordance with the IoA GPG, noise level predictions will be undertaken by application of the prediction method detailed within ISO 9613 2:1996: *Acoustics- Attenuation of sound during*

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<sup>75</sup> British Standards Institution (2013). BS EN 61672-1: 2013: Electroacoustics. Sound Level meters. Specifications.

<sup>76</sup> British Standards Institution (1991). BS 7445-2: 1991: Description and Measurement of Environmental Noise. Guide to the Acquisition of Data Pertinent to Land Use.

propagation outdoors. General method of calculation<sup>77</sup>. This method will determine the resulting wind turbine noise levels under downwind propagation conditions. Where necessary (e.g. at Doughty, where the property is between the Proposed Development and an operational cumulative development, and so cannot be subject to downwind propagation from both developments at the same time), directional corrections will be applied in accordance with the guidance contained within the IoA GPG.

235. Noise level predictions will be undertaken for a representative sample of local noise sensitive receptors, and for a range of integer wind speeds between 4 and 12 m/s. Predictions will be undertaken both 'with', and 'without' contribution from the identified cumulative developments.
236. The results of the noise level predictions will be compared against the derived site-specific noise level limits. The results of the assessment will be used to determine whether or not a significant effect would arise from the operation of the Proposed Development.
237. Where required, appropriate noise mitigation measures will be presented, and residual effects determined.

### 10.8 Limitations and Assumptions

238. To ensure transparency within the EIA process, the following limitations and assumptions have been identified:
- The final wind turbine to be installed at the Proposed Development would be the subject of a tender process which will not progress until after consent. The operational noise assessment will therefore be based on the noise emission data for a candidate wind turbine type that fits within the proposed physical parameters (e.g. max tip height);
  - The selection of baseline survey monitoring locations is dependent upon the provision of landowner approvals. Where these are not forthcoming, it will be necessary to adopt proxy measurement locations selected as representative of identified receptors. This approach is in accordance with current good practice; and
  - The operational noise assessment shall draw upon the latest information available for each of the other windfarm developments scoped-in for consideration. This information could be subject to change (e.g. as those developments which are yet to be subject to a planning approval pass through the planning system).

#### Question 13

Do you agree with the Noise proposed approach for baseline collection, measurement locations, prediction of effects and significance assessment?

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<sup>77</sup> International Organization for Standardization (1996). ISO 9613 2:1996: Acoustics- Attenuation of Sound during Propagation Outdoors. General Method of Calculation.

# 11 Traffic and Transport

## 11.1 Consultation

239. No consultation pertaining to Traffic and Transport has been undertaken to date. The following local authorities and statutory bodies will be consulted to provide opinion on the scope and method of assessment proposed for the Traffic and Transport chapter:

- South Ayrshire Council; and
- Transport Scotland.

240. South Ayrshire Council will also be asked to provide information on any 'committed' developments deemed relevant to be included within the base traffic flow data, for inclusion within the study.

241. The following additional stakeholders will be consulted as a minimum, with regard to the suitability of the proposed access routes for both general construction traffic and abnormal load vehicles:

- Dumfries and Galloway Council;
- Scotland Transerv (South West);
- Police Scotland; and
- Network Rail.

## 11.2 Baseline Conditions

242. The proposed access routes in relation to both general construction traffic and abnormal load movements seek to utilise routes previously used for operational windfarms in the vicinity of the Proposed Development, in addition to using where practicable the Trunk Road network and local routes deemed suitable for the predicted types of vehicles used in the construction of the Proposed Development. It is therefore considered that routes to the Proposed Development are available to both general construction traffic and abnormal load vehicles, subject to the appropriate studies.

243. To establish baseline traffic flows, data will be obtained from the Department for Transport (DfT) and/or South Ayrshire Council for the most recently available period (2018). Annual average daily flow (AADF) information will be obtained for the agreed study network, which will confirm the traffic levels including light goods vehicles (LGV) and heavy goods vehicles (HGV) along the routes. These figures will be combined with the forecast levels of construction traffic, in order to identify the impact of the Proposed Development on the study network. At locations on the agreed study network where DfT traffic data is unavailable, it is proposed that independent traffic surveys will be obtained through Automatic Traffic Counts (ATCs) installed for a period of one week.

244. The Study Area for the purposes of the Traffic and Transport chapter has been defined as the public road network in the vicinity of the Proposed Development, which will be used by vehicles to access the Site in relation to construction activities. It is proposed that the following road sections will form the Study Area:

- U52W between the A75 and A714 at Newton Stewart;
- A714 – between the A75 and the C46W at Bargrennan;
- B741 – between the A77 and the B741 at Dailly;
- B741 – between the B741 at Dailly and B7045 at Straiton;
- B741 – between the A713 and B741 at Straiton;

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- B7023/Dalhowan Street – between the A77 and the B741; and
- C46W/Un-named road through to the proposed site access.

### 11.3 Sensitive Receptors

245. The following sensitive receptors have been identified along the proposed access routes:

- U52W between the A75 and A714 at Newton Stewart – places of employment and stand-alone properties (houses and farms);
- A714 – between the A75 and the C46W at Bargrennan – places of employment and stand-alone properties (farms) and a local church;
- B741 – between the A77 and the B741 at Dailly – stand-alone properties (farms) and places of employment;
- B741 – between the B741 at Dailly and B7045 at Straiton – residential properties / stand-alone properties local facilities in and around Dailly, including local church, local primary school, village centre and associated facilities and National Cycle Network Route 7;
- B741 – between the A713 and B741 at Straiton – stand-alone properties (farms) and residential properties;
- B7023/Dalhowan Street – between the A77 and the B741 – stand-alone properties (farms) and Crosshill village centre including local amenities; and
- C46W/Un-named road through to the proposed site access – Glentrool village and its associated amenities, stand-alone properties, Glentrool House O' Hill hotel and public house, Glentrool camping and caravan site, holiday homes/B&B's, residential properties, main access to Glentrool Visitor Centre and associated facilities/attractions and NCN Route 7.

246. The sensitivity of the receptors identified on the proposed access routes will be evaluated in relation to potential impacts of both general construction traffic and abnormal load traffic, with appropriate mitigation measures proposed.

### 11.4 Mitigation

247. The results of the assessment will determine the appropriate mitigation measures for the protection of any sensitive receptors identified that have potential to be significantly affected by the construction of the Proposed Development. Mitigation, where appropriate, will be identified and embedded into the design of the Proposed Development, in particular the areas around the construction phase and tasks associated with moving large quantities of materials to the Site. Measures proposed will be incorporated into the outline Construction Traffic Management Plan (CTMP) which will be included within the EIAR. Examples of typical measures included within the framework CTMP to mitigate against any potential impacts during the construction phase of the Proposed Development will be:

- Restrictions on routes that site personnel can use;
- Route timing restrictions, i.e. at school drop off and pick-ups;
- Route maintenance i.e. road sweeping, gully clearing etc.;
- Temporary speed reductions for site personnel on the surrounding road network;
- Temporary route signing; and
- Site personnel travel plan.

248. The proposed measures would not be limited to those identified above and would be agreed with the Local Authority prior to implementation of the final CTMP.

### 11.5 Issues Scoped-Out

249. As vehicles travel away from the Proposed Development during the construction phase, they will disperse across the wider road network, thus diluting any potential effects. It is therefore expected that the effects relating to Traffic and Transport are unlikely to be significant beyond the Study Area identified above, and as such no other routes are proposed to be included.
250. The traffic impacts associated with the operational phase will be very low with one or two small service vehicles regularly accessing the Site to carry out routine maintenance on the wind turbines and battery storage facility. Therefore, further assessment of the traffic impacts of the Proposed Development during the operational phase is not considered necessary.

### 11.6 Potential Significant Effects

251. It is expected that the potential effects relating to Traffic and Transport would only be significant within the Study Area identified above. As such only those sensitive receptors within this area will be assessed.
252. In relation to abnormal loads associated with the construction of the Proposed Development, access could be taken from a number of Ports of Entry (POE), such as Glasgow KGV Docks or Cairnryan (Stranraer). Both options provide direct, convenient access on to the Trunk Road and Motorway networks. There are limitations on the size of certain components that Cairnryan can accommodate, and as such consideration would be given to this during the route assessment works and as part of the Traffic and Transport chapter within the EIAR. Existing studies have already been undertaken by SPR the Applicant in this regard, with a detailed route assessment being undertaken from Glasgow KGV Docks. The proposed access route currently under consideration based on these studies and proposed for inclusion within the Traffic and Transport chapter is as follows:
- Glasgow KGV Docks;
  - Kings Inch Drive;
  - M8;
  - M74/M6;
  - A75;
  - U52W;
  - A714;
  - C46W; and
  - Site Road.
253. No significant effects are predicted during the operational phase. Effects are expected to occur only during the construction phase and be temporary in nature. Notwithstanding this however, a number of mitigation measures will be proposed and included in the CTMP to help reduce the effects of both abnormal load movements and general construction traffic on the surrounding road network during the construction phase.

### 11.7 Assessment Methodology

254. In line with the Environmental Assessment guidance (Institute of Environmental Assessment (IEA), 1993)<sup>78</sup>, the following criteria will be adopted to identify whether links on a network should be subject to detailed assessment:
- Include traffic links where either traffic flows would increase by more than 30% or the number of HGV movements would increase by more than 30% as a result of the development; and
  - Include any other specifically sensitive location affected by traffic increases of at least 10%.
255. The following groups and special interests will be assessed for each link on the agreed study network in line with the IEA guidance, to determine the sensitivity of receptors:
- People at home;
  - People at work;
  - Sensitive locations – including hospitals, schools, places of worship and historical buildings;
  - People walking;
  - People cycling;
  - Recreational and shopping areas;
  - Ecological/nature conservation sites; and
  - Tourist/visitor attractions.
256. In addition to traffic impact on the study network, the following effects will be assessed in accordance with the IEA guidance methodology:
- Severance;
  - Driver delay;
  - Pedestrian delay;
  - Pedestrian amenity;
  - Fear and intimidation; and
  - Accidents and safety.
257. The significance of the effects on receptors will be evaluated against the IEA guidance and where possible, in line with the criteria used for the other environmental topic areas covered in the EIAR. These criteria are subjective but consider the number of receptors affected, their sensitivity and the length of the period for which they will be impacted.
258. A number of the traffic-related effects set out in the IEA guidance such as noise, vibration and ecological effects are out with the scope of this assessment and will be assessed in the respective chapter of the EIAR.
259. With regard to general construction traffic, in order to assess traffic impacts during the construction phase, estimated vehicle movements for all major construction vehicle trip generators will be calculated. Where information is available these will be based on site-specific information and the turbine manufacturer's construction guidelines.

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<sup>78</sup> Institute of Environmental Assessment (IEA) (1993). The Guidelines for the Environmental Assessment of Road Traffic .

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260. Daily vehicle movements during the peak period of the construction phase will be assessed against the baseline traffic conditions. Any changes in traffic levels on each of the study network links during the construction phase will be assessed in terms of percentage change and compared against the maximum vehicle capacity of each link.
261. As part of the assessment, an electronic service delivery for abnormal loads (ESDAL) will be undertaken. This will be used to confirm and consult with all relevant roads authorities and asset managers the suitability of the structures on the proposed wind turbine component delivery routes to accommodate the proposed abnormal loads.
262. The assessment will consider Transport Scotland's Transport Assessment Guidance (2012)<sup>79</sup> as appropriate.

### 11.8 Limitations and Assumptions

263. This Scoping Report in relation to identifying sensitive receptors has been based on a desk-based exercise only. Should the Local Authority be aware of any specific sensitive receptors not included, advice would be welcomed. With regard to the sourcing of materials in relation to the construction of the Proposed Development, the contractors and suppliers are unlikely to be known at the EIAR stage and so it is not possible to confirm with certainty which routes will be used by development traffic, and how much traffic will utilise each route. Therefore, worst-case assumptions of assigning all construction traffic to each route will be made (unless agreed otherwise with the Local Authority).
264. Any other limitations or assumptions made in the preparation of the Traffic and Transport chapter will be clearly stated in the EIAR.

#### Question 14:

Do you agree with the Traffic and Transport proposed approach for baseline collection, prediction of effects and significance assessment?

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<sup>79</sup> Transport Scotland (2012). Transport Assessment Guidance [https://www.transport.gov.scot/media/4589/planning\\_reform\\_-\\_dpmtag\\_-\\_development\\_management\\_\\_dpmtag\\_ref\\_\\_17\\_-\\_transport\\_assessment\\_guidance\\_final\\_-\\_june\\_2012.pdf](https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17_-_transport_assessment_guidance_final_-_june_2012.pdf)

# 12 Socio-Economics, Recreation, and Tourism

## 12.1 Consultation

265. At this stage of the project, no consultation has been undertaken in relation to the socio-economic, recreation and tourism assessment. However, it is anticipated that Scottish Rights of Way Access Society (ScotWays<sup>80</sup>), Community Councils, British Horse Society and Visit Scotland will be contacted to confirm the number and location of Public Rights of Way (PRoW) in close proximity to the Proposed Development as part of the EIAR. Consultation with FLS will also be undertaken in order to confirm if mountain bike trails, or other recreational activities, are present within 5km of the Proposed Development when completing the EIAR.

## 12.2 Baseline Conditions

### 12.2.1 Study Areas

266. There are no recognised standards or methodologies for assessing the socio-economic, recreation and tourism effects of windfarms, and therefore the Study Areas have been defined based on professional judgement.

267. The 'local level' Study Area for the socio-economic assessment comprises the administrative boundary of South Ayrshire Council. Scotland comprises the 'regional level' Study Area for the assessment of socio-economics impacts.

268. The recreation and tourism assessment focus on a 5km and 15km Study Area respectively, in order to capture the receptors most likely to be affected by the Proposed Development.

### 12.2.2 Socio-economics

269. The 2018 Office of National Statistics (ONS) population estimate for South Ayrshire<sup>81</sup> was 112,600 and 5,438,100 for Scotland. The working population including people aged 16 to 64 in South Ayrshire was 66,700 (59.2%) in 2018, which is lower than the Scotland (64.2%) and National (62.7%) averages. Overall, the data shows that the proportion of total employees across industry sectors in the Study Area are broadly in line with the national average. However, South Ayrshire has a greater percentage of employees in Manufacturing, Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles, Accommodation and Food Services, Human Health and Social Work Activities than the national average.

270. There are scattered properties, as well as some small-scale communities and settlements located in close proximity to the Site Boundary. These include:

- Kilkerran located approximately 2.6km north west;
- Craig located approximately 2.7km north;
- Cloyntie located approximately 3.4km north;

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<sup>80</sup> The Scottish Rights of Way Access Society (ScotWays). Available at: <https://www.scotways.com/>

<sup>81</sup> NOMIS (2018). Local Authority Profile – South Ayrshire. Available at: <https://www.nomisweb.co.uk/reports/lmp/la/1946157432/report.aspx> (Accessed: 09 March 2020)

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- Roan of Craigoch located approximately 4.1km north west;
- Dailly located approximately 4.3km west;
- Crosshill located approximately 4.4km north;
- Wallacetown located approximately 4.5km north west; and
- Straiton located approximately 4.5km north.

271. The main settlement to the Proposed Development is considered to be Straiton.

272. Galloway Forest Park is a commercial forestry with charged forest drives<sup>82</sup>, including Carrick Forest Drive which is located immediately south east of the Site Boundary.

### 12.2.3 Recreation

273. There are existing formal and informal recreation facilities and activities within the recreation Study Area including:

- Core Paths<sup>83</sup>;
  - Core Path SA1 (within the Site Boundary);
  - Core Path SA47 (within the Site Boundary);
  - Core Path SA49 (within the Site Boundary);
  - Core Path SA56 (immediately east of the Site Boundary); and
  - Core Path SA57 (approximately 2.4km east of the Site Boundary).
- Galloway Forest Park (within the Site Boundary);
- Galloway and South Ayrshire Biosphere (within the Site Boundary);
- Carrick Forest Drive (immediately south east of the Site Boundary);
- Cornish Hill Trail (immediately east of the Site Boundary);
- Old Road through Straiton heritage path (within the Site Boundary)<sup>84</sup>;
- Sustrans National Cycle Network Route 7 (within the Site Boundary)<sup>85</sup>;
- Two National Byways (immediately adjacent to the Site Boundary)<sup>86</sup>;
- Forest Road – roads within Galloway Forest Park (within the Site Boundary);
- Tairlaw Car Park and picnic area (within the Site Boundary);
- Forest Drive Car Park and picnic area (immediately east of the Site Boundary);
- Bradan Car Park (east of the Site Boundary);
- Galloway Dark Skies Park Core Area (within the Site Boundary);
- Dark Sky Park Loch Bradan Car Park (approximately 2.2km east of the Site Boundary);
- Bell Memorial Car Park (approximately 2.2km south of the Site Boundary);

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<sup>82</sup> Forestry and Land Scotland, Galloway Forest Park. Available at: [https://forestryandland.gov.scot/images/pdf/rec\\_pdfs/Galloway-Forest-Park-Map-and-Trail-Guide.pdf](https://forestryandland.gov.scot/images/pdf/rec_pdfs/Galloway-Forest-Park-Map-and-Trail-Guide.pdf) (Accessed: 09 March 2020)

<sup>83</sup> South Ayrshire Council, Core Paths. Available at: <https://www.south-ayrshire.gov.uk/outdooraccess/corepaths.aspx> (Accessed: 09 March 2020).

<sup>84</sup> Heritage Paths, Old Road through Straiton heritage path. Available at: <http://www.heritagepaths.co.uk/pathdetails.php?path=130> (Accessed: 09 March 2020).

<sup>85</sup> Sustrans, Route 7. Available at: <https://www.sustrans.org.uk/find-a-route-on-the-national-cycle-network/route-7/> (Accessed: 09 March 2020).

<sup>86</sup> South Ayrshire Council, Environment and Conservation. Available at: <https://south-ayrshire.maps.arcgis.com/apps/Styler/index.html?appid=271d61f79ccf47adbe94e507edb4afa4> (Accessed: 09 March 2020).

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- It is understood that fishing is undertaken in Loch Bradan for permit holders (located 730m east of the Site Boundary)<sup>87</sup>; and
- It is understood that deer stalking is undertaken within the Site Boundary.

274. No PRoW has been identified during this stage of the project, however ScotWays will be consulted as part of the EIAR in order to gain an understanding of PRoW within the recreation Study Area.

### 12.2.4 Tourism

275. The top three reasons for visiting Ayrshire and The Isle of Arran between 2015 and 2016 according to the latest VisitScotland survey<sup>88</sup>, in which respondents were able to provide more than one response, were:

- To see the scenery and landscape (68%);
- To get away from it all (36%); and
- Holiday here before and wanted to return (34%).

276. The top three popular activities were: sightseeing (72%), visiting a beach (62%) and visiting a historic house, stately home or castle (54%). Whilst equivalent local data is not available; it is considered that broadly similar reasons for visiting the local area will apply.

277. Tourist facilities and attractions identified within the tourism Study Area include the recreational facilities and activities above, as well as:

- Dalquharran Castle (approximately 5.2km north west of the Site Boundary);
- Loch Doon Campsite (approximately 7.7km north east of the Site Boundary);
- Roundhouse Café (approximately 8.1km north east of the Site Boundary);
- Scottish Dark Sky Observatory (approximately 8.2km north east of the Site Boundary);
- Dalcairney Falls (approximately 8.5km north east of the Site Boundary);
- The Merrick mountain peak (approximately 8.7km south east of the Site Boundary);
- Loch Doon Castle (approximately 9km east of the Site Boundary);
- Doon Valley Railway Museum (approximately 10.7km north east of the Site Boundary);
- Bruce's Stone (approximately 12.9km south east of the Site Boundary);
- Girvan Beach (approximately 13.8km west of the Site Boundary); and
- Glentool Visitor Centre (approximately 13.9km south of the Site Boundary).

278. Tourist accommodation has been identified within the following towns and villages:

- Dailly (approximately 4.3km west of the Site Boundary);
- Crosshill (approximately 4.4km north of the Site Boundary);
- Straiton (approximately 4.5km north of the Site Boundary);
- Blairquhan (approximately 4.8km north of the Site Boundary);
- Kirkmichael (approximately 6.6km north of the Site Boundary);
- Maybole (approximately 8.3km north west of the Site Boundary);
- Dalmellington (approximately 10.2km north east of the Site Boundary);
- Patna (approximately 11.2km north of the Site Boundary);
- Turnberry (approximately 12km north west of the Site Boundary);
- Maidens (approximately 12.6km north west of the Site Boundary);

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<sup>87</sup> Forestry and Land Scotland, Carrick Forest Drive. Available at: <https://forestryandland.gov.scot/visit/forest-parks/galloway-forest-park/carrick-forest-drive> (Accessed: 09 April 2020)

<sup>88</sup> VisitScotland (2017). Scotland Visitor Survey 2015 and 2016: Regional Results – Ayrshire & The Isle of Arran.

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- Girvan (approximately 13km west of the Site Boundary);
- Dalrymple (approximately 13.9km north of the Site Boundary); and
- Glentool (approximately 14.7km south of the Site Boundary)

### 12.3 Sensitive Receptors

279. The sensitive receptors identified for socio-economics comprise South Ayrshire economy; Scotland economy; the UK economy; and Galloway Forest Park as a commercial forestry.

280. Recreation sensitive receptors are as detailed in the baseline section above.

281. Tourism sensitive receptors comprise tourist attractions and tourist accommodation.

282. The sensitive receptors identified for socio-economics, recreation and tourism are provided below.

- Socio-economics:
  - South Ayrshire economy;
  - Scotland economy;
  - The United Kingdom (UK) economy; and
  - Galloway Forest Park as a commercial forestry.
- Recreation:
  - Core paths;
  - Galloway Forest Park (including walking trails and cycling routes);
  - Carrick Forest Drive;
  - Cornish Hill Trail;
  - Heritage path;
  - Sustrans National Cycle Route;
  - National Byways;
  - Forest roads within Galloway Forest Park;
  - Car parks and picnic area within Galloway Forest Park;
  - Bradan Car Park (users of the Range of the Awful Hand);
  - Galloway Dark Skies Core Area; and
  - Carrick Forest for fishing and deer stalking.
- Tourism:
  - Tourist attractions; and
  - Tourist accommodation.

### 12.4 Mitigation

#### 12.4.1 Socio-Economics

283. It is anticipated that a Construction Method Statement (CMS) would be prepared by the construction contractors and agreed with South Ayrshire Council prior to the commencement of the construction works. The CMS would include measures for the construction contractor to provide employment opportunities in the local area. Mitigation relating to commercial forestry operations would be informed by the Forestry and Land Use assessment as part of the EIAR.

284. The Applicant is committed to offering a package of community benefits to local communities that could include the opportunity for community organisations to benefit and to invest in the Proposed Development once operational. In addition to the shared ownership opportunity, should the Proposed Development gain consent, a Community Benefit Fund would be made available.

## 12.5 Recreation and Tourism

285. The CMS would also include public notices that would be issued prior to the construction and maintenance works to inform local residents, recreational users and businesses of dates and durations of the works. During construction and maintenance, it is anticipated that access would be temporarily restricted for areas surrounding works and alternative paths or access routes be provided where possible.

## 12.6 Issues Scoped-Out

286. No aspects are proposed to be **scoped-out** of the EIAR.

## 12.7 Potential Significant Effects

287. The Proposed Development has the potential to have both beneficial and adverse effects on socio-economics, recreation and tourism.

### 12.7.1 Socio-Economics

288. There is the potential for direct, indirect and induced beneficial impacts on the local and regional economy during the construction and operation of the Proposed Development. The Proposed Development would generate short-term and long-term jobs and Gross Value Added (GVA) contributions.

289. There is the potential for indirect and direct adverse impacts on commercial businesses located within the Galloway Forest Park. For example, the Proposed Development could deter some visitors from using Carrick Forest Drive.

290. The Proposed Development could have direct and indirect adverse impacts on commercial forestry operations at Galloway Forest Park due to the loss of or reduced viability of the forestry.

### 12.7.2 Recreation

291. There is the potential for temporary adverse effects on access to recreational facilities and activities during the construction and also during any operational maintenance works for the Proposed Development. This is because the areas surrounding the construction and maintenance activities would be temporarily restricted. In addition, access to recreational facilities and activities may be adversely affected by construction traffic and activities. The Proposed Development could also have an adverse effect on amenity experienced by users of the recreational facilities and activities. Improved access arrangements for recreation purposes may be considered as part of the Proposed Development, which may result in a beneficial effect. The possibility for and suitability of incorporating such arrangements will be explored within the EIAR.

### 12.7.3 Tourism

292. There is the potential for temporary adverse effects on tourism during construction and also during any operational maintenance works of the Proposed Development. The construction and operation of the Proposed Development could affect accessibility and amenity of the tourist attractions (e.g. the Dark Sky Observatory within Galloway Forest Park) and availability of tourist accommodation. Improved access arrangements for tourist attractions may be considered as part of the Proposed Development, which may result in a beneficial effect. The possibility for and suitability of incorporating such arrangements will be explored within the EIAR Assessment Methodology.

293. There is no established guidance for conducting a socio-economic, recreation and tourism assessment as part of the EIA process. The assessment methodology will be based upon professional judgement and informed by desk-based information and field notes/photographs of the Site.
294. A review of local, regional and national socio-economic, recreation and tourism planning policies, legislations and strategies will be undertaken and considered as part of the EIAR.
295. Socio-economic, recreation and tourism effects will be assessed for both the construction and operational phases of the Proposed Development.
296. The level of significance of an effect will take into consideration the sensitivity of the receptor and the magnitude of an impact. Specific values in terms of sensitivity will not be attributed to the resources/receptors due to their diversity in nature and scale, however the assessment instead takes account of the qualitative (rather than quantitative) 'sensitivity' of each receptor and, in particular, on their ability to respond to change. The magnitude of impact will consider the size of the impact on receptors in the context of the area in which the effects will be experienced. The effects will be described as either beneficial, negligible or adverse.
297. The Landscape and Visual, Noise, Air, Climate and Carbon Balance, Traffic and Transport and Forestry and Land Use assessments will inform the assessment of effects for recreational facilities and activities as well as tourist attractions in the Study Areas.

#### 12.7.4 Socio-Economics

298. Regional employment statistics will be reviewed, and settlements will be identified and described using sources such as the National Online Manpower Information System (NOMIS) and the Scottish Index of Multiple Deprivation.
299. The assessment will seek to assess the likely direct employment and economic benefits during construction and operation (and cumulatively) of the Proposed Development and associated indirect employment and economic benefits, such as effects on local commerce.
300. Direct construction employment effects will largely be based on the anticipated full time equivalent (FTE) jobs likely to be generated. Both leakage and displacement factors will be applied to this figure to determine the net direct FTEs generated in the local economy. For indirect employment, Scottish Government 'Type II Multipliers' will be used to assess the likely scale of indirect employment effects generated by the purchase of goods and services by businesses associated with construction of the Proposed Development, and also induced employment generated by the expenditure of those directly and indirectly employed by the businesses involved with the Proposed Development. These induced and indirect multipliers will identify the net direct, indirect and induced FTEs. Indirect economic benefits will be assessed qualitatively and will be based on previous studies<sup>89</sup>.
301. For direct employment during operation, again both leakage and displacement factors will be applied to the estimated FTEs generated in relation to maintenance activities to give a net FTE figure. The indirect and induced multipliers relating to construction activity will also be applied to this figure to determine the operational direct, indirect and induced FTEs likely to be generated. In addition, the economic benefit of community benefit payments or shared ownership offer will be determined, and

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<sup>89</sup> BVG Associates ( 2017). Economic Benefits from Onshore Wind Farms.

the effect of this assessed, with reference to Community Action Plans. Consideration will also be given to other anecdotal evidence of economic benefits of windfarms during operation.

302. Reference will be made to the Scottish Economic Strategy<sup>90</sup>, South Ayrshire Economic Development Strategy<sup>91</sup> to inform the assessment of socio-economics.

303. An assessment of the cumulative employment and economic benefits will be provided. This will be largely qualitative, although consideration will be given to the cumulative economic benefits from community benefit payments to the local economy.

304. The assessment will also take into consideration the 'economic benefits from onshore windfarms' research undertaken by BVG Associates<sup>92</sup>.

305. A qualitative assessment considering the potential effects of the loss or reduced viability of the Carrick Forest and Galloway Forest Park commercial forestry operations will be undertaken and will be informed by the Forestry assessment undertaken as part of the EIAR. A qualitative assessment will also be undertaken to consider the potential effects on commercial businesses located within the Galloway Forest Park including, for example, Carrick Forest Drive.

306. Within the LVIA, an analysis of sequential effects upon users of roads and recreational routes within the Study Area (including the Carrick Forest Drive) will also be undertaken (see **paragraph 76, Section 5.3.3**).

#### 12.7.5 Recreation

307. The EIAR will include a qualitative assessment of the effect of the Proposed Development on informal and formal recreation facilities and activities, including designated routes, within the recreation Study Area. The assessment will consider changes in accessibility (worsened or improved), severance, and amenity on the recreational receptors during construction and operation of the Proposed Development. For the purpose of this assessment, amenity is considered to be a combination of visual amenity and noise levels experienced by users of the recreational facilities and activities. Air quality has been **scoped-out** of the EIAR assessment and considered to have a not significant effect on recreation receptors.

#### 12.7.6 Tourism

308. A review of national and regional tourism strategies and visitor statistics will be undertaken for the tourism Study Area. Key visitor attractions and facilities within 15km of the Site Boundary will be identified using publicly available sources, such as VisitScotland's website. A qualitative assessment will be undertaken based on the changes in availability, accessibility (worsened or improved), severance, and amenity on tourist receptors (tourist attractions and tourist accommodation) during the construction and operation of the Proposed Development. For the purpose of this assessment, amenity is considered to be a combination of visual amenity and noise levels experienced by users of the tourist attractions. Air quality has been **scoped-out** of the EIAR assessment and considered to have a not significant effect on tourism receptors.

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<sup>90</sup> Scottish Government (2015). Scotland's Economic Strategy.

<sup>91</sup> South Ayrshire Council (2013). South Ayrshire Economic Development Strategy 2013 – 2023.

<sup>92</sup> BVG Associates (2017). Economic Benefits from Onshore Wind Farms.

309. A qualitative assessment of the impacts of the Proposed Development on visitors' decisions to holiday in the Study Area will be undertaken based on Scotland specific research, such as the Visit Scotland Position Statement<sup>93</sup>.

### 12.8 Limitations and Assumptions

310. The following assumptions have been identified for the Scoping Report:

- Baseline data has been collected through desk-based study using publicly available sources;
- PRow data was not available at the time of writing; and
- Information regarding mountain bike trails was limited at the time of writing.

#### Question 15:

Do you agree with the Socio-Economics, Recreation, Tourism proposed approach for baseline collection, prediction of effects and significance assessment?

#### Question 16:

Are there any other receptors that should be included within the assessment?

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<sup>93</sup> Visit Scotland (2014). Position Statement – Wind Farms. Available at: <https://www.visitscotland.org/binaries/content/assets/dot-org/pdf/policies/visitscotland-position-statement---wind-farms---oct-2014.pdf> (Accessed: 09 March 2020).

# 13 Other Issues

## 13.1 Introduction

311. An 'Other Issues' chapter will be included in the EIAR and will contain the assessments of the potential impacts of the Proposed Development from other issues which are not covered in other technical disciplines.
312. This section of the Scoping Report sets out the proposed approach in respect to the 'Other Issues' assessments that are required in order to provide a comprehensive assessment of the potential environmental impacts of the Proposed Development.
313. Other Issues identified in this Scoping Report include:
- Forestry and Land Use;
  - Aviation and Radar;
  - Telecommunications;
  - Air, Climate and Carbon Balance;
  - Shadow Flicker;
  - Population and Human Health;
  - Major Accidents and Disasters; and
  - Material Assets.

## 13.2 Forestry and Land Use

### 13.2.1 Consultation

314. At this stage it is anticipated that the main consultee will be Scottish Forestry (SF), South Scotland Conservancy. SF will be consulted to ensure that the proposed changes to the woodlands address the requirements of the Scottish Government's Control of Woodland Removal Policy<sup>94</sup> and other relevant guidance. In addition, there may be interrelated issues raised by other consultees and this will be clearly set out in the EIAR.

### 13.2.2 Baseline Conditions

315. The Proposed Development is located within Carrick Forest which is owned by the Scottish Ministers and managed by FLS as part of the National Forest Estate (NFE). Carrick is a long established commercial forest created over an extended period of time, which is now into the production phase with ongoing felling and replanting. It forms part of the Carrick and Changue Land Management Plan (LMP), an extensive area of conifer plantation that lies between the village of Barr to the west and Tairlaw Toll to the east, around 4.6km south of Straiton in South Ayrshire. FLS have been developing a new land management plan for the woodlands, which is due to be submitted in May 2020 and is not expected to be approved before November 2020. The stated management objectives for this large scale forest are focussed on timber production, the integration of agricultural land, conservation and large scale landscape views<sup>95</sup>.

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<sup>94</sup> Forestry Commission Scotland (2009). The Scottish Government's Policy on Control of Woodland Removal. Edinburgh.

<sup>95</sup> Forestry and Land Scotland, South Region, Carrick and Changue Land Management Plan Brief. Available at <https://forestryandland.gov.scot/images/corporate/design-plans/galloway/carrick-and-changue/carrick-changue-brief.pdf> accessed on 11th March 2020.

316. A desk based assessment reveals small parts of the woodlands within the Site Boundary are identified as core areas under the Native Woodland Integrated Habitat Network<sup>96</sup>. Further parts of the woodlands are classed as Primary and Secondary Zones under the Native Woodland Integrated Habitat Network, as potential areas for native woodland expansion. The Native Woodland Survey of Scotland (NWSS)<sup>97</sup> identifies small areas of native woodland, nearly-native woodland and Plantations on Ancient Woodland Sites (PAWS). The Ancient Woodland Inventory Scotland<sup>98</sup> (AWI) identifies parts of these woodlands as 'ancient of semi natural origin' or 'other' on the Roy<sup>99</sup> map.
317. A forestry baseline will be prepared which will detail the woodlands existing at the time of preparation of the EIAR. This will include current species; planting year; felling and restocking plans contained within the existing LMP; and other relevant woodland information. It will be prepared from existing forest records; desk-based assessments; consultation with FLS; and field surveys.

### 13.2.3 Sensitive Receptors

318. Commercial forests are dynamic and constantly changing through landowner activities; market forces; and natural events, such as windblow or pest and diseases. The forestry assessment will be a factual assessment describing the changes to the forest structure resulting from the incorporation of the Proposed Development into the forest which will be presented in a Technical Appendix. Other Chapters of the EIAR will identify the sensitive receptors relevant to their disciplines and report on the effects of the Proposed Development related to forest felling and restocking. The relevant Chapters of the EIAR include **Chapter 5: Landscape and Visual; Chapter 6: Ecology; Chapter 7: Ornithology; and Chapter 9: Hydrology, Hydrogeology, Geology and Peat.**

### 13.2.4 Mitigation

319. Measures to avoid or mitigate potential impacts upon the forest will, as far as practicable, be embedded in the design of the Proposed Development through consideration of the siting of the wind turbines; by using existing forest tracks. Woodland loss would be minimised by keyholing infrastructure into the felling and restocking plans.
320. Potential forms of mitigation may include a redesign of the existing forest in consultation with FLS including, for example, changes to the felling programme; the use of designed open space; alternative species and woodland types; changing the management intensity; or the provision of compensation planting on or offsite.

### 13.2.5 Issues Scoped-Out

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

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<sup>96</sup> Scottish Forestry, FGS Native Woodland - Integrated Habitat Network. Available at: <https://map.environment.gov.scot/sewebmap/> accessed on 11<sup>th</sup> March 2020.

<sup>97</sup> The Native Woodlands Survey of Scotland. Available at <https://scottishforestry.maps.arcgis.com/apps/webappviewer/index.html?id=0d6125cfe892439ab0e5d0b74d9acc18> accessed on 24<sup>th</sup> February 2020.

<sup>98</sup> Ancient Woodland Inventory Scotland. Available at: <https://map.environment.gov.scot/sewebmap/> accessed on 11<sup>th</sup> March 2020.

<sup>99</sup> National Library of Scotland: Roy Military Survey of Scotland, 1747-1755 available at <https://maps.nls.uk/roy/>

### 13.2.6 Potential Significant Effects

322. There is potential for changes to the forest structure resulting from the Proposed Development, with consequential implications for the wider felling and restocking plans across the forest area. Areas of woodland are anticipated to be required to be felled for the construction and operation of the Proposed Development including for access tracks, wind turbine locations and other infrastructure. The potential effects will be changes to the structure of the woodlands, which may result in a loss of woodland area.

### 13.2.7 Assessment Methodology

323. The forestry assessment will be limited to the forest area contained within the currently approved Carrick and Changue LMP. A Windfarm Forest Plan will be prepared, which will detail felling and replanting proposals, illustrating the forestry requirements associated with the construction and operation of the Proposed Development. This will include a felling plan to show which woodlands are to be felled, and when, for the construction and operation of the Proposed Development. It will further include a restocking plan showing which woodlands are to be replanted and with which species and areas to be left unplanted for the Proposed Development infrastructure.
324. The changes to the woodland structure will be analysed and described including changes to woodland composition, timber production, traffic movements and the felling and restocking plans. The resulting changes to the woodland structure will be assessed for compliance with the UK Forestry Standard<sup>100</sup> and the requirement for compensation planting to mitigate against any woodland loss. The Windfarm Forest Plan will be assessed against the baseline data in line with the Control of Woodland Removal Guidance<sup>101</sup>.

### 13.2.8 Limitations and Assumptions

325. This section of the Scoping Report has been prepared from a desk based assessment only. No consultations or field surveys have been carried out.

## 13.3 Aviation and Radar

326. The Proposed Development has the potential to cause a variety of adverse effects on aviation during wind turbine operation. These include but are not limited to:
- Physical obstructions;
  - Generation of unwanted returns on Primary Surveillance Radar (PSR); and
  - Adverse effects on overall performance of Communications, Navigation and Surveillance (CNS) equipment.
327. Where line of sight exists between wind turbines and air traffic control radars it is possible that the wind turbines may be detected by the radar, dependant on atmospheric conditions, and appear as clutter on the controllers' screens; such clutter may have an adverse impact on air traffic control operations. However, it is also possible that the inherent processing capabilities of modern PSR mean that wind turbine clutter will not be reported to air traffic controllers and consequently the existence of

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<sup>100</sup> Forestry Commission (2017). The UK Forestry Standard: The Government's Approach to Sustainable Forestry, Forestry Commission, Edinburgh.

<sup>101</sup> Forestry Commission Scotland (2019). Guidance to Forestry Commission Scotland staff on implementing the Scottish Government's Policy on Control of Woodland Removal. Available at <https://scotland.forestry.gov.uk/images/corporate/pdf/Implementation-Guidance-Control-of-woodland-removal.pdf> accessed on 24th February 2020.

radar line of sight to a wind turbine does not have an adverse (or any) impact on the aviation stakeholder's air traffic control service.

### 13.3.1 Proposed Assessment Methodology

328. The general approach to windfarm development is to avoid adverse effects on aviation infrastructure where possible or, where adverse effects on their air traffic control service have been identified and substantiated by aviation stakeholders, work to identify and implement appropriate operational or technical mitigation solutions.

329. In relation to the Proposed Development the following consultees have been identified:

- Ministry of Defence (MOD);
- Glasgow Prestwick Airport (GPA);
- NATS (En Route) plc (NERL); and
- CAA - Airspace.

### 13.3.2 Potential Effects and Baseline Conditions

330. The nearest licensed aerodrome is GPA, located approximately 28km north of the Site. This lies within the advised wind turbine safeguarding area of the airport and preliminary radar modelling suggests that the wind turbines will be visible to GPA's PSRs. Glasgow Airport lies approximately 67km to the north of the Site. The Site sits outwith Glasgow Airport's wind turbine safeguarding area and no radar line of sight exists from Glasgow Airport's PSR.

331. The closest NERL radar is located at Lowther Hill, approximately 50km east of the Site. Preliminary online data from NERL suggests that the wind turbines may be visible to the Lowther Hill PSR.

332. The Site is within a MOD low flying tactical training area.

333. The UK statutory requirements for the lighting of en-route obstacles (i.e. those away from the vicinity of a licensed aerodrome) are set out in Article 222 of the UK Air Navigation Order 2016<sup>102</sup>. Article 222 requires, as a general rule, all obstacles over 150m to be lit with a medium intensity (2000 candela) steady red aviation warning lights. The CAA interprets 'as close as possible to the top of the obstacle' as the fitting of lights on the top of the nacelle rather than the blade tips; the nacelle light is to be a 2000 candela steady red light with the option where the horizontal meteorological visibility in all direction from every wind turbine in a group is more than 5km for the intensity of the nacelle light to be reduced to not less than 10% of the minimum peak intensity; and at least three low intensity steady red (32 candela) intermediate lights (to provide 360 degree cover) to be installed on the tower at half the nacelle height. The implications of this for visual amenity will be considered in the EIAR as detailed in **Chapter 5** above.

334. As the Site is located within the buffer zone of the Galloway Forest Dark Skies Park, radar activated aviation lighting will be considered for the proposed Development. The CAA is currently working with the wind industry to identify the parameters which would apply to radar activated lighting systems in the UK. Radar activated lighting systems ensure that the aviation warning lights are only illuminated when aircraft are in the immediate lateral and vertical vicinity of the turbines in hours of darkness. It is anticipated that this additional CAA policy will be published during 2020, which SPR is monitoring.

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<sup>102</sup> Air Navigation Order (2016). Available at: <http://www.legislation.gov.uk/uksi/2016/765/contents/made>

### 13.4 Telecommunications

335. Telecommunication systems use a variety of electromagnetic (EM) signals, commonly described as radio waves. Uses primarily include: television (TV); radio; mobile telephony; microwave communications; and, radar. Interference of EM signals can cause distorted sound, image or data transmission and can potentially occur when existing telecommunication systems are not adequately considered during a windfarm's design and development.
336. The Study Area will comprise the Site and the wind turbine locations. Only EMI and telecommunications links which travel across the Site and close to the wind turbine locations will be impacted by the Proposed Development and therefore there is no need to widen the Study Area.
337. The assessment of potential telecoms and electromagnetic interference requires consultation through Spectrum, the OFCOM department for managing civilian use of the radio spectrum. Details or links operated in the area will be obtained, the point location details will then be requested from the operator to be mapped in GIS. There is general guidance provided by different link operators on separation distances that need to be maintained. If there is potential for one or more wind turbines to be located within the specified distances, we will engage with the operator to discuss any mitigation that may be required.
338. Initial consultation has been undertaken with Ofgem which suggested that there may be telecommunication assets within the Site which are owned by Scottish Gas Network (SGN). Therefore, consultation with Scottish Gas Network will be undertaken to ascertain the location of their assets within the Site and this will be taken into account in the Site design as required.

TV interference is now considered to be a low risk due to analogue TV signals no longer being in use and so this aspect is proposed to be **scoped-out** of the EIAR. In the unlikely instance that TV interference occurs, it is considered that this can be appropriately covered by a suitably worded planning condition and complaints procedure to implement any necessary mitigation.

### 13.5 Air, Climate and Carbon Balance

339. The Site is not located near an Air Quality Management Area<sup>103</sup> and operational emissions to air, water and soil are anticipated to be negligible given the nature of the Proposed Development. The only appreciable emission to air caused by the Proposed Development would be emissions from construction traffic. However, given the rural nature of the routes to be used and that the levels of pollution in the background air quality are low, construction of the Proposed Development is not considered to lead to sufficient traffic levels to have the potential for air pollution levels approaching any relevant limit values. The Outline CEMP will contain standard industry good practice mitigation regarding emissions during construction and therefore no significant air quality effects are anticipated. It is therefore proposed that an assessment of air quality impacts is **scoped-out** of the EIAR.
340. The Proposed Development will reduce demand for fossil fuel electricity generation and will support the transition to a low carbon energy system, as described in **Section 2.1** of this Scoping Report. Although there will be a small amount of greenhouse gas emissions associated with construction activities and embedded in the construction components, operational emissions are anticipated to be negligible.

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<sup>103</sup> WSP (2020). iGIS, Air Quality Management Area 2017. Available at: <http://igis.wspgroup.com/General/maps/index.aspx>

341. The design of the Proposed Development will comply with guideline flood return periods including climate change allowances and flood risk will be considered in the EIAR as discussed in **Section 9** of this Scoping Report. Other factors such as extremes of temperature, storms, and drought have been considered as part of Major Accidents and Disasters discussed in **Section 13.8** and no significant effects are likely. It is therefore proposed that an assessment of Climate is **scoped-out** of the EIAR.
342. The Scottish Government uses an assessment of the carbon impact of windfarm development to support the process of determining windfarm developments in Scotland. This is particularly relevant in peatland areas where there can be substantial carbon losses due to disturbance to peat, which can in part off-set the benefit of wind energy on carbon emissions.
343. The carbon balance assessment is a desktop assessment comparing the carbon losses of windfarm construction with the ongoing savings of green electricity production to estimate the reduction in carbon emissions expressed as a breakeven or “payback” timescale. It is based on the methodology within Calculating Carbon Savings from Windfarms on Scottish Peatlands, Nayak et al 2008, with subsequent updates. The calculations contain expected values but also upper and lower bound values. Within the parameter set there are a several site-specific options and it is important the appropriate choices are made and can be justified within the supporting report.
344. The Scottish Government has an on-line Carbon Calculator Tool (latest version 1.6.0)<sup>104</sup> for the purpose of carbon balance assessment which will be used for this project in conjunction with the guidance provided in Scottish Government, SNH and SEPA’s Peatland Survey - Guidance on Developments on Peatland – 2017 document<sup>105</sup>.
345. The iterative conceptual design will seek to avoid deep peat and minimise peat disturbance, in order to achieve a more favourable carbon balance assessment.

### 13.6 Shadow Flicker

346. The term “Shadow Flicker” refers to the flickering effect caused when rotating wind turbine blades periodically cast shadows over nearby properties. Shadow flicker can only occur inside a property and under a certain set of conditions including bright sunshine, the wind turbines are operational and that the sun is in a particular location to cast a shadow from the wind turbines across a property.
347. The Scottish Government’s “Onshore wind turbines: planning advice”<sup>106</sup> and industry standard guidelines<sup>107</sup> states that shadow flicker is unlikely to be of a significant impact at distances greater than ten rotor diameters from a wind turbine. However, the South Ayrshire Supplementary Planning

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<sup>104</sup> Scottish Government (2018). Carbon calculator for wind farms on Scottish peatland: factsheet [online]. Available at: <https://www.gov.scot/publications/carbon-calculator-for-wind-farms-on-scottish-peatlands-factsheet/>. Accessed 6<sup>th</sup> March 2020.

<sup>105</sup> Scottish Government, SNH and SEPA (2017). Guidance on developments on peatland: peatland survey [online]. Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance-2017/govscot%3Adocument/Guidance%2Bon%2Bdevelopments%2Bon%2Bpeatland%2B-%2Bpeatland%2Bsurvey%2B-%2B2017.pdf>.

<sup>106</sup> Scottish Government (2014). Onshore wind turbines: planning advice. Available at: <https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/>

<sup>107</sup> Parsons Brinckerhoff Consultants on behalf of DECC (2010). Update of UK Shadow Flicker Evidence Base. Available at: <https://www.gov.uk/government/publications/update-of-uk-shadow-flicker-evidence-base>

Guidance<sup>108</sup> for windfarms requests that the modelling be undertaken to assess impact on all residential properties within 2.5km. Therefore, for the Proposed Development the Study Area which will be assessed for potential shadow flicker impact will be an area around each of the wind turbine locations of 2.5km. Once the final wind turbine layout is fixed, the locations of residential properties which are within this Study Area will be determined and a shadow flicker model will be run to predict the potential impact on these properties. For this assessment a worst-case scenario based upon the following assumptions will be used to determine the maximum potential impact due to shadow flicker at each of the residential properties:

- There is direct sunlight during all daylight hours;
- All the wind turbines are visible from each location (no screening);
- The wind turbines are always operating; and
- The wind is always aligned with the sun (the wind turbine rotor casts the maximum possible shadow).

348. To date no consultation has been undertaken regarding shadow flicker and none is expected to be required for the EIAR.

349. If the impacts assessed in the EIAR require mitigation, then there are a number of highly effective mitigation measures available. For example, screening in the form of an appropriate hedge or similar and appropriate wind turbine control modules to inhibit the conditions required for shadow flicker to occur.

### 13.7 Population and Human Health

350. The Proposed Development will be designed and maintained in accordance with all relevant industry guidelines, standards and regulations including those pertaining to safeguarding the risk to human health. This includes the design and siting of the wind turbines factoring in appropriate buffers from sensitive receptors such as the forestry tracks and core paths will minimise human health risk during operation. Risks associated with ice build-up, lightning strike and structural failure are removed or reduced through inbuilt wind turbine technology and mechanisms.

351. Given the nature of the Proposed Development as “non-emitting”, the low population density surrounding the Site, and distance from residential receptors, it is considered that the proposed Development will not present a risk to human health. Although some alternations to existing or new tracks might be required, these are also not considered to present a significant risk to human health.

352. Given the absence of potential significant effects, all assessment of effects on population and human health are proposed to be **scoped-out** of the EIAR.

### 13.8 Major Accidents and Disasters

353. A review was undertaken of the potential effects deriving from the vulnerability of the Proposed Development to risks of Major Accidents and Disasters.

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<sup>108</sup> South Ayrshire Council (2015). South Ayrshire Local Development Plan Supplementary Guidance: Wind Energy, Adopted December 2015. Available at: <https://www.south-ayrshire.gov.uk/documents/adopted%20wind%20energy-supplementary%20guidance.pdf>

354. An initial list of Major Accidents and Disasters was compiled using a variety of sources including the Cabinet Office National Risk Register of Civil Emergencies 2015 Edition<sup>109</sup> and UK Government Emergency Response & Recovery Guidance<sup>110</sup>.
355. This list was screened in two stages to identify risks which would be applicable to the Proposed Development; firstly, based on the location and use/nature of the Proposed Development; and then based on the likelihood of the event and consequence of the outcome. The final screened list was then considered in terms of existing mitigation or prevention measures such as regulations and guidance. The review of the list did not identify potential significant effects from Major Accidents and Disasters that would require assessment under the EIA Regulations and therefore this topic has been **scoped-out** of the EIAR.
356. Flood risk and peat slide will be addressed in the Hydrology, Hydrogeology, Geology and Soils assessment of the EIAR.

### 13.9 Material Assets

357. Considering the nature and scale of the Proposed Development, significant effects on material assets are not anticipated. The manufacturing or construction of the Proposed Development is not anticipated to result in significant use of primary or secondary materials; existing access tracks will be used as far as practicable and borrow pits, where required, will be sought on site to avoid the need to import materials. There would be negligible waste generation during construction, and this would be minimised through controls to minimise material use and waste generation which will be contained in the Outline CEMP. During operation, material resource use and waste generation is anticipated to also be negligible and concern routine maintenance of the wind turbines only. As such, it is therefore proposed that this topic be **scoped-out** of the EIAR.

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<sup>109</sup> National Risk Register of Civil Emergencies (2015). Cabinet Office. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/419549/20150331\\_2015-NRR-WA\\_Final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/419549/20150331_2015-NRR-WA_Final.pdf)

<sup>110</sup> Emergency Response and Recovery, Non statutory guidance accompany the Civil Contingencies Act 2004 (2013). HM Government. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/253488/Emergency\\_Response\\_and\\_Recovery\\_5th\\_edition\\_October\\_2013.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/253488/Emergency_Response_and_Recovery_5th_edition_October_2013.pdf)

**Question 17:**

Do you agree with the proposed approach for baseline collection, prediction and significance assessment for the following topics:

- Forestry and Land Use
- Aviation and Radar
- Telecommunications
- Air, Climate and Carbon Balance
- Shadow Flicker
- Population and Human Health
- Major Accidents and Disasters
- Material Assets

## 14 Topics “Scoped-Out”

358. As explained above, a number of topics are considered to be not significant, and will be scoped-out from further consideration within the EIA process. **Table 14.1** below lists each topic and the elements scoped-in and out from further assessment; with a summary of the justification for doing so.

**Table 14.1 - Issues Scoped-In and Scoped-Out**

Topic	Scoped-In	Scoped-Out
Landscape and Visual	<ul style="list-style-type: none"> <li>• <b>LVIA-</b> Assessment of the landscape and visual effects of wind turbine lighting. This will also include:               <ul style="list-style-type: none"> <li>○ <b>CLVIA-</b> The assessment of cumulative effects will be an integral part of the LVIA given the Proposed Development is in close proximity to several large windfarms.</li> <li>○ <b>Lighting Assessment –</b> Wind turbines 150m or taller require aviation lighting, a night time lighting assessment should be carried out to take account of the potential effects to the Galloway Dark Skies Park as well as the Merrick WLA.</li> <li>○ <b>Wild Land Assessment -</b> The Merrick WLA is situated within 1km of the Site Boundary.</li> <li>○ <b>RVAA -</b> A detailed assessment of potential visual effects on residential properties within an approximately 2km Study Area (measured from the nearest proposed turbines) would be undertaken.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Landscape Character -</b> All LCTs within the Study Area that do not have any or very minimal potential visibility of the Proposed Development will be scoped-out of the assessment. In addition, LCTs with potential visibility will be scoped-out if a combination of distance and intervening landscape cover and built form (not included within the ZTV model) reduces the potential for any significant effects.</li> <li>• <b>Landscape Designations -</b> Due to the distance from the Proposed Development, minimal potential visibility illustrated on the ZTV (<b>Figure 5.3 ZTV, Appendix A</b>) and also qualities which relate to aspects or views unrelated to the Site, the following landscape designations are proposed to be scoped-out of the LVIA: Culzean Castle and Country Park; Culzean Castle Garden and Designed Landscape; and Dumfries House Garden and Designed Landscape.</li> <li>• <b>Visual Receptors -</b> The following visual receptors will be scoped out of the LVIA due to none or limited potential visibility of the Proposed Development: Dunure; Girvan and Girvan Beach; St Johns Town of Dalry; New Cumnock; Cumnock; Auchinleck; Barhill; Drongan; and Southern Upland Way, Glen Trool Visitor Centre and Bruces Stone.</li> </ul>

Topic	Scoped-In	Scoped-Out
Ecology	<ul style="list-style-type: none"> <li>• <b>Merrick Kells SAC (otter)</b> – the wide ranging nature of otter territories means that individuals associated with the SAC could potentially forage and/or commute along watercourses within the Site</li> <li>• <b>Galloway and South Ayrshire Biosphere Reserve</b> – the Proposed Development could have impacts on the flora and fauna associated with the Site which could potentially pose adverse effects on the general wildlife and biodiversity interests of the Biosphere Reserve;</li> <li>• <b>Linfern Loch, and the River Stinchar and Water of Girvan catchments</b> – the Site is hydrologically connected to the loch which is located in the centre of the Site, while watercourses within the Site drain into the River Stinchar and Water of Girvan;</li> <li>• <b>Habitats on Site including GWDTE</b> - the Site includes potentially sensitive habitats such as small pockets along forest rides such as small pockets along forest rides, particularly marshy grassland, flush and spring, blanket bog as well as AWI habitat;</li> <li>• <b>Otters</b> - Merrick Kells SAC is designated for its important population of European otter. Linfern Loch, tributaries associated with the River Stinchar and Water of Girvan, and adjacent terrestrial habitat potentially used by otters;</li> <li>• <b>Water vole</b> – the Site crosses several drains, ditches and burns potentially utilised by water vole;</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Merrick Kells SAC (habitat interests)</b> – the SAC is sufficiently distant away from and the lack of hydrological connectivity means that the SAC’s habitat interests are not expected to be affected.</li> <li>• <b>Auchalton SSSI</b> – the Site is sufficiently distant from and is not hydrologically connected to this designated site for the Proposed Development to affect its notified habitat interest (lowland neutral grassland).</li> <li>• <b>Freshwater invertebrates (including freshwater pearl mussel <i>Margaritifera margaritifera</i>)</b> - subject to information obtained in the desk study and observations made during the fish habitat suitability assessment, it is not anticipated that freshwater pearl mussels will be present to pose a constraint to the Proposed Development. No construction activities associated with the Proposed Development will occur within 10m of watercourses or waterbodies and appropriate mitigation measures will be adopted to protect watercourses.</li> <li>• <b>Terrestrial invertebrates</b>- subject to information obtained in the desk study and incidental observations made during programmed surveys, it is not anticipated that terrestrial invertebrate would pose a significant constraint to the Proposed Development.</li> </ul>

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Topic	Scoped-In	Scoped-Out
	<ul style="list-style-type: none"> <li>• <b>Red squirrel</b> - the Site contains coniferous woodland habitat potentially utilised by red squirrel for shelter and foraging;</li> <li>• <b>Pine marten</b> - the Site contains coniferous woodland habitat potentially utilised by pine marten for shelter and foraging.</li> <li>• <b>Badgers</b> - the Site contains potentially suitable habitat for badgers including for sett excavation;</li> <li>• <b>Bats</b> - the Site comprises woodland habitat potentially utilised by bats for foraging, commuting or roosting. There are also a small number of buildings immediately surrounding the Site which may be used for roosting. Activity surveys undertaken in the autumn of 2019 also confirmed the presence of five species; common pipistrelle, soprano pipistrelle, brown long-eared, Natterer's and Daubenton's bats, of which soprano pipistrelle bats were the most commonly recorded.</li> <li>• <b>Fish</b> - the Site crosses watercourses connected to Linfern Loch, the River Stinchar and Water of Girvan which may potentially support salmonid species;</li> <li>• <b>Reptiles</b> – the Site potentially provides suitable habitat for protected reptile species including common lizard <i>Zootoca vivipara</i>; and</li> <li>• <b>Amphibians</b> – wet habitats of the Site provide potential breeding and foraging habitat for amphibian species, possibly including great crested newts.</li> </ul>	

Topic	Scoped-In	Scoped-Out
Ornithology	<ul style="list-style-type: none"> <li>• <b>Flight Activity Surveys</b> - A total of 37 flights by ten identified target species were recorded during the FAS, with hen harrier (<i>Circus cyaneus</i>) the most frequently recorded species (11 flights), followed by goshawk (<i>Accipter gentilis</i>, eight flights), and five or fewer flights for each remaining species.</li> <li>• Hen harrier was recorded within the Study Area during the non-breeding season (September 2018 – January 2019), with areas of open ground and forest edge regularly used by individuals for hunting; however, there was no evidence of any winter roosting.</li> <li>• Other notable registrations included five pink-footed goose (<i>Anser brachyrhynchus</i>) flights during FAS in the non-breeding season, with flocks ranging in size from 65 birds to a peak of 360 individuals.</li> <li>• <b>Black Grouse Surveys</b>-There were no records of black grouse (<i>Lyrurus tetrix</i>) during targeted surveys for this species. However, black grouse was recorded incidentally during FAS, Breeding Raptor Surveys and Winter Walkover surveys and there is suitable habitat for this species both within the Site and within the wider Study Area.</li> <li>• <b>Breeding Raptor Surveys</b> - One active osprey nest was identified during the Breeding Raptor Surveys, which successfully fledged young. Additionally, a peregrine (<i>Falco peregrinus</i>) eyrie was recorded, however signs indicated that</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Impacts on ornithological features of Merrick Kells SSSI</b> - Due to the 5.6km distance between the Proposed Development and the SSSI, expected core range of notified species, habitats present and survey results to date, there is considered to be no potential for connectivity between the ornithological features of the SSSI and the Proposed Development and there therefore no potential impacts upon the designated site are predicted.</li> <li>• <b>Impacts on ornithological features of Bogton Loch SSSI</b> - Due to the 7.6km distance between the Proposed Development and the SSSI, predominance of coniferous plantation present within the Site and survey results to date, there is considered to be no potential for connectivity between the ornithological features of the SSSI and the Proposed Development and therefore no potential impacts upon the designated site are predicted.</li> </ul>

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Topic	Scoped-In	Scoped-Out
	<p>although the territory was occupied, breeding either did not take place or was unsuccessful.</p> <ul style="list-style-type: none"> <li>• Merlin (<i>Falco columbarius</i>) and goshawk were recorded during breeding raptor surveys, however there was no evidence that either species was breeding.</li> <li>• <b>Breeding Bird Surveys</b> - Five confirmed territories of crossbill (<i>Loxia curvirostra</i>) were recorded within the Study Area during the breeding bird surveys, three of which were within the Site.</li> <li>• The breeding bird community within the Study Area was typical of the Site location and habitats present. The only breeding wader species were snipe (<i>Gallinago gallinago</i>) (two territories) and common sandpiper (<i>Actitis hypoleucos</i>) (one territory).</li> <li>• <b>Winter Walkover</b> - The wintering bird population was typical of the Site location and habitats present and included small numbers of target species. No Schedule 1 raptor roosts or foraging wildfowl flocks were identified within the Study Area.</li> </ul>	
Cultural Heritage	<p><b>Direct Effects</b></p> <ul style="list-style-type: none"> <li>• Permanent, complete or partial loss of an archaeological features or deposit as a result of ground excavation;</li> <li>• Permanent or temporary loss of the physical or visual integrity of a feature, monument, building, or group of monuments;</li> <li>• Damage to resources as a result of ground excavation;</li> </ul>	<p><b>Direct and Indirect Effects</b></p> <ul style="list-style-type: none"> <li>• The following elements are proposed to be scoped-out of the Cultural Heritage assessment as they are not present within 10km of the Proposed Development: <ul style="list-style-type: none"> <li>○ World Heritage Sites;</li> <li>○ Inventory Battlefields; and</li> <li>○ Marine Protected Areas.</li> </ul> </li> </ul>

Topic	Scoped-In	Scoped-Out
	<ul style="list-style-type: none"> <li>• Damage to resources due to compaction, desiccation or waterlogging; and</li> <li>• Damage to resources as a result of ground vibration caused by construction.</li> </ul> <p><b>Indirect Effects</b></p> <ul style="list-style-type: none"> <li>• The movement and activity of large construction machinery, usually with flashing hazard lights;</li> <li>• Views of cranes or lifting equipment impacting on key sensitive ridgelines;</li> <li>• Temporary spoil heaps and disposal areas; and</li> <li>• Flood lighting of areas for evening and morning working during the winter.</li> <li>• The increased visual presence of the windfarm and the intervisibility between the windfarm and archaeological or Historic sites or features which may affect their Setting, depending on a number of additional considerations;</li> <li>• The introduction of new lighting changing the night-time view; and</li> <li>• Cumulative effects with other existing or proposed developments.</li> </ul>	<p><b>Direct Effects</b></p> <ul style="list-style-type: none"> <li>• Once construction is complete, the potential for direct effects on known and unknown undesignated assets will be removed and therefore scoped-out for the operation phase.</li> </ul> <p><b>Indirect Effects</b></p> <ul style="list-style-type: none"> <li>• Designated assets beyond a 5km buffer where intervening topography or other screening significantly reduces any impacts on Setting as indicated within the ZTV.</li> </ul>
Hydrology, Hydrogeology, Geology and Peat	<ul style="list-style-type: none"> <li>• Direct effects during construction from chemical or hydrocarbon pollution to surface water, groundwater, private water supplies, or soil, reducing quality and resource value;</li> <li>• Direct effects during construction from sedimentation upon surface water quality;</li> <li>• Direct effects during construction that modify surface</li> </ul>	<ul style="list-style-type: none"> <li>• Reductions in natural flows arising from any temporary or permanent abstractions - This can be managed via the Construction Site Licence application process; and</li> <li>• All structures would be designed and constructed following good practice techniques and would be of sufficient capacity to receive storm flows with an allowance for increased flows due to climate change. Therefore, it is considered</li> </ul>

Topic	Scoped-In	Scoped-Out
	<p>water drainage patterns, altering hydrological regime, hydromorphology, private water supply yield and flood risk;</p> <ul style="list-style-type: none"> <li>• Indirect effects during construction on surface water quality or surface water drainage patterns due to peat instability;</li> <li>• Direct effects during construction on groundwater flows and levels, including private water supply yield and GWDTE;</li> <li>• Direct effects during construction on soils, including soil erosion, excavation losses and compaction of soil; and</li> <li>• Direct effects during construction on soil loss due to peat instability; and carbon losses over the lifespan of the Proposed Development.</li> </ul>	<p>that the Proposed Development will not increase local flood risk.</p>
Noise	<ul style="list-style-type: none"> <li>• <b>Blast induced noise, vibration and air overpressures</b> - It is proposed that on-site borrow pits will be used for the winning of stone for utilisation in the construction of the Proposed Development. However, the precise location of borrow pits, and the need for blasting works is yet to be confirmed, so an assessment is required.</li> <li>• <b>Operational wind turbine noise assessment</b> - It is expected that with careful design, the applicable limits for turbine noise can be achieved, but a detailed assessment will be undertaken to demonstrate compliance. This assessment will include account of potential cumulative noise impacts that could arise as a result of the</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Construction noise and vibration from on-site works</b> - There are no receptors within 1km of the wind turbine Developable Area, therefore noise and vibration arising from wind turbine construction works is not anticipated to give rise to a significant effect. The vehicular access to the Site will also be a substantial distance from the closest receptors, and therefore also not to give rise to a significant effect.</li> <li>• Construction noise and vibration from off-site road and junction improvement works associated with necessary abnormal deliveries – works would be small scale, local, temporary and short-term only, and would be akin to temporary work associated with utilities servicing etc.</li> <li>• <b>Construction traffic noise</b> - Construction traffic movements are not anticipated to generate road</li> </ul>

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Topic	Scoped-In	Scoped-Out
	<p>Proposed Development operating simultaneously with other identified local windfarm developments scoped-in for consideration.</p>	<p>traffic noise levels that would be sufficiently high to give rise to significant effects.</p> <ul style="list-style-type: none"> <li>• <b>Operational groundborne vibration</b> - Wind turbines do not generate levels of groundborne vibration that are considered significant in relation to human perception, and (moreover) they would be located at a significant distance from the nearest receptors.</li> <li>• <b>Fixed plant items</b> - Any fixed plant items associated with the Proposed Development such as the associated substation and proposed Energy Storage Facility can be sited at sufficient distance from the nearest sensitive receptors that the resulting operational noise levels would be negligible and not significant.</li> <li>• <b>Low frequency noise and infrasound</b> - With regards to low frequency noise and infrasound, Scottish planning policy for noise references the online planning resource entitled Onshore wind turbines: Planning advice. In turn, this references a report for the UK Government which concluded that <i>“there is no evidence of health effects arising from infrasound or low frequency noise generated by the wind turbines...”</i>.</li> <li>• <b>Operational road traffic noise</b> - Once operational, development-generated road traffic travelling to and from the Site will be extremely low, comprising periodic service and maintenance visits etc. These would not be sufficient to give rise to significant effects.</li> </ul>
Traffic and Transport	<p><b>Construction phase</b> - Effects associated with traffic generated by the Proposed Development are expected to occur only during the</p>	<p><b>Construction phase</b> - As vehicles travel away from the Proposed Development during the construction phase, they will disperse across the wider road network, thus diluting any</p>

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Topic	Scoped-In	Scoped-Out
	<p>construction phase and be temporary in nature.</p> <p>The Study Area has been defined as the public road network in the vicinity of the Proposed Development, which will be used by vehicles to access the Site in relation to construction activities. The access routes will be evaluated in relation to potential impacts of both general construction traffic and abnormal load traffic.</p>	<p>potential effects. It is therefore expected that the effects relating to Traffic and Transport are unlikely to be significant beyond the Study Area identified above, and as such no other routes are proposed to be included.</p> <p><b>Operational phase</b> - When compared to the construction phase, the traffic impacts associated with the operational phase will be very low with one or two small service vehicles regularly accessing the Site to carry out routine maintenance on the wind turbines and battery storage facility.</p>
Socio-economics, recreation and Tourism	<p><b>Construction and operation assessment</b> – Potential for beneficial and adverse effects on local and regional economy, recreation and tourism.</p>	None
Forestry and Land Use	<p><b>Forestry assessment</b> – Impact upon the existing forestry resource and operations.</p>	<p><b>Cumulative Effects</b> - The changes to the forest for a particular development are regarded as site specific and it is considered that there are no cumulative onsite forestry issues to be addressed.</p>
Aviation and Radar	<p><b>Operational impacts</b> – Sensitive receptors within proximity that may be impacted during operation - GPA, located approximately 28km north of the Site, NEERL's Lowther Hill PSR, located approximately 50km east of the Site. The Site is within a MOD low flying tactical training area.</p>	<p><b>Glasgow Airport</b> – Outwith wind turbine safeguarding area and no radar line of sight.</p>
Telecommunications	<p><b>Operational impacts</b> – There may be telecommunication assets within the Site which are owned by SGN.</p>	<p><b>TV interference</b> - Considered to be a low risk due to analogue TV signals no longer being in use.</p>
Air, Climate and Carbon Balance	<p><b>Carbon balance</b> – Assessment will estimate the reduction in carbon emissions of the construction and operation.</p>	<ul style="list-style-type: none"> <li><b>Air Quality</b> - There are not considered to be any potential significant effects on air quality considering the nature and location of the Proposed Development.</li> </ul>

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Topic	Scoped-In	Scoped-Out
		<ul style="list-style-type: none"> <li><b>Climate</b> – Potential low impact during construction and beneficial impact during operation as a result of supporting the reduction of fossil fuel use.</li> </ul>
Population and Human Health	None	<b>Construction and operation</b> - There are not considered to be any potential significant effects on population and human health considering the nature and location of the Proposed Development.
Major Accidents and Disasters	None	<b>Construction and operation</b> - There are not considered to be any potential significant effects on the environment as a result of the vulnerability of the Proposed Development to major accidents and disasters.
Material Assets	None	<b>Construction and operation</b> - Considering the nature and scale of this development, significant effects are not anticipated.

**Question 18:**

Do you agree with the list of issues to be scoped-out, and the rationale behind the decision?

# 15 How to Respond to this Scoping Report

364. This Scoping Report has been issued to the Energy Consents Unit (ECU) in support of a request for a scoping opinion under Regulation 12 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.
365. Responses to this Scoping Report will inform the detailed methodology for each aspect of the environmental impact assessment in conjunction with on-going consultation with statutory and non-statutory consultees throughout the development process.
366. SPR invites consultees to comment on the following:

**Question 1:** Do you agree with the Landscape and Visual proposed approach for baseline collection, prediction of effects and significance assessment?

**Question 2:** Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, including cumulative effects?

**Question 3:** Are the proposed viewpoint locations acceptable, including for night-time assessment?

**Question 4:** Are there any other scoping or in planning windfarm sites, in addition to those illustrated, to consider as part of the cumulative assessment?

**Question 5:** Has the consultee identified any further landscape or visual receptors to be considered within the assessment (e.g. where potential significant effects may occur)?

**Question 6:** Do you agree with the landscape and visual receptors proposed to be scoped-out?

**Question 7:** Are there any other relevant consultees who should be consulted with respect to the LVIA?

**Question 8:** Any comments on Wild Land Assessment, noting further consultation is required on its inclusion?

**Question 9:** Do you agree with the Ecology proposed approach for baseline collection, prediction of effects and significance assessment?

**Question 10:** Do you agree with the Ornithology proposed approach for baseline collection, prediction of effects and significance assessment?

**Question 11:** Do you agree with the Cultural Heritage proposed approach for baseline collection, prediction of effects and significance assessment?

**Question 12:** Do you agree with the Hydrology, Hydrology, Geology and Peat proposed approach for baseline collection, prediction of effects and significance assessment?

**Question 13:** Do you agree with the Noise proposed approach for baseline collection, measurement locations, prediction of effects and significance assessment?

**Question 14:** Do you agree with the Traffic and Transport proposed approach for baseline collection, prediction of effects and significance assessment?

**Question 15:** Do you agree with the Socio-Economics, Recreation, and Tourism proposed approach for baseline collection, prediction of effects and significance assessment?

**Question 16:** Are there any other receptors that should be included within the assessment?

**Question 17:**

Do you agree with the proposed approach for baseline collection, prediction and significance assessment for the following topics which have been scoped-in to the assessment?

- Forestry and Land Use;
- Aviation and Radar;
- Telecommunications;
- Air, Climate and Carbon Balance;
- Shadow Flicker;
- Population and Human Health;
- Major Accidents and Disasters; and
- Material Assets.

**Question 18:** Do you agree with the list of issues to be scoped-out, and the rationale behind the decision?

**Question 19:** Are there any key issues or possible effects which have been omitted?

**Question 20:** Of those issues identified for assessment, which do you consider the most important/material and which the least?

367. All responses should be sent to the following email address:

Econsents\_admin@gov.scot

368. All comments received will be included in the EIAR for reference, unless consultees request otherwise.

# Appendix A: Figures

## Appendix B: Register of Commitments

369. The following table lists the commitments made through this Scoping Report which have influences the scope of assessments proposed.

370. An Outline EMP will be included as part of the EIAR which will include these commitments and will be submitted with the application for consent.

Reference	Description	Scoping Report Reference
SC01	Significant effects on ecological receptors will be avoided or minimised where possible through the conceptual design process. Good practice working methods such as the employment of an ECoW, pre-construction protected species surveys/checks (e.g. for otters or badgers), implementation of setback/buffer zones, pollution prevention measures and sensitive timing of works during construction and operation of the Proposed Development will also be implemented.	6.4
SC02	No construction activities associated with the Proposed Development will occur within 10m of watercourses or waterbodies and appropriate mitigation measures will be adopted to protect watercourses.	6.5
SC03	Significant effects on ornithological receptors will be avoided/minimised where possible through the design process. Good practice during construction and operation of the Proposed Development will also be implemented (for example through the sensitive timing of works and pre-construction checks for nesting birds).	7.4
SC04	Significant effects on IOFs will be prevented, reduced, and where possible offset. A BPP will be produced to ensure that all reasonable precautions are taken to protect ornithological features associated with the Proposed Development.	7.4
SC05	Accepted good practice will be implemented during the design, construction and operation of the Proposed Development, thereby ensuring that many potential effects on Cultural Heritage can be avoided or reduced. Measures will be embedded into the design to ensure that infrastructure avoids all statutory designated assets. Setting effects will be avoided or reduced where possible through design.	8.4
SC06	Embedded mitigation will ensure that statutory protected assets are not directly impacted upon, and undesignated assets will be avoided where possible through the design process.	8.6

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Reference	Description	Scoping Report Reference
SC07	<p>During construction, industry good practice principles will be adopted to limit the likelihood of an incident occurring that may have a detrimental effect on water quality or quantity of peat, or GWDTE, and to reduce the magnitude of any incident which does occur. This will be considered as embedded mitigation and will include:</p> <ul style="list-style-type: none"> <li>• Fuel and chemical pollution prevention, including good practice storage and refuelling techniques;</li> <li>• Erosion control and sediment management techniques;</li> <li>• Reductions in natural flows arising from any temporary or permanent abstractions;</li> <li>• Appropriately designed, located and sized watercourse crossing structures;</li> <li>• Appropriate mitigation shall be detailed for infrastructure within or adjacent to sensitive peat and GWDTE features, such as application of floating track and careful drainage design;</li> <li>• Sustainable drainage techniques; and</li> <li>• Site supervision and staff training.</li> </ul>	9.4
SC08	<p>On-site construction works will be sufficiently removed from the nearest sensitive receptors that construction noise and vibration will not give rise to significant effects.</p>	10.3
SC09	<p>BPM, as defined in Section 72 of COPA, will be adopted as a means of controlling construction noise. Measures in compliance with BPM include: the adoption of appropriate construction working hours, the careful selection of construction plant and working methods, careful programming and timing of deliveries and the shutting down of plant when not being used etc.</p>	10.3
SC10	<p>Additional measures in compliance with the principles of BPM are keeping residents informed of the works, as well as undertaking monitoring during the works if identified as necessary. These measures can assist in the minimisation of effects as a result of adopting a considerate approach to working and a means of ensuring and demonstrating that appropriate limits are not exceeded.</p>	10.3
SC11	<p>The adoption of BPM can also be applied to minimise the levels of groundborne vibration that are generated (e.g. through the selection of non-impulsive or low vibration generative working methods).</p>	10.3
SC12	<p>The layout and design of the Proposed Development will be subject to an iterative design process allowing the incorporation of 'embedded mitigation' to mitigate operational noise.</p>	10.3

Reference	Description	Scoping Report Reference
SC13	<p>Mitigation will be identified and embedded into the design of the Proposed Development. Measures proposed will be incorporated into the Outline CTMP which will be included within the EIAR. Examples of typical measures included within the framework CTMP to mitigate against any potential impacts during the construction phase of the Proposed Development will be:</p> <ul style="list-style-type: none"> <li>• Restrictions on routes that site personnel can use;</li> <li>• Route timing restrictions, i.e. at school drop off and pick-ups;</li> <li>• Route maintenance i.e. road sweeping, gully clearing etc.;</li> <li>• Temporary speed reductions for site personnel on the surrounding road network;</li> <li>• Temporary route signing; and</li> <li>• Site personnel travel plan.</li> </ul> <p>The proposed measures will not be limited to those identified above and will be agreed with the Local Authority prior to implementation of the final CTMP.</p>	11.4
SC14	<p>A CMS will be prepared by the construction contractors and agreed with South Ayrshire Council prior to the commencement of the construction works. The CMS will include measures for the construction contractor to provide employment opportunities in the local area.</p>	12.4
SC15	<p>Mitigation relating to commercial forestry operations will be informed by the Forestry and Land Use assessment as part of the EIAR.</p>	12.4
SC16	<p>The Applicant is committed to offering a package of community benefits to local communities that could include the opportunity for community organisations to benefit and to invest in the Proposed Development once operational. In addition to the shared ownership opportunity, should the Proposed Development gain consent, a Community Benefit Fund will be made available</p>	12.4
SC17	<p>Public notices will be issued prior to the construction and maintenance works to inform local residents, recreational users and businesses of dates and durations of the works.</p>	12.4
SC18	<p>During construction and maintenance, where access will be temporarily restricted for areas surrounding works, alternative paths or accesses route will be provided where possible.</p>	12.4
SC19	<p>Woodland loss will be minimised by keyholing infrastructure into the felling and restocking plans.</p>	13.2

Reference	Description	Scoping Report Reference
SC20	Potential forms of mitigation may include a redesign of the existing forest in consultation with FLS including, for example, changes to the felling programme; the use of designed open space; alternative species and woodland types; changing the management intensity; or the provision of compensation planting on or offsite.	13.2
SC21	<p>A Windfarm Forest Plan will be prepared, which will detail felling and replanting proposals, illustrating the forestry requirements associated with the construction and operation of the Proposed Development. This will include a felling plan which forms part of the Windfarm Forest Plan to show which woodlands will be felled and when for the construction and operation of the Proposed Development.</p> <p>The Windfarm Forest Plan will be assessed against the baseline data in line with the Forestry Commission Scotland's Control of Woodland Removal Guidance.</p>	13.2
SC22	The Outline CEMP will contain standard industry good practice mitigation regarding emissions during construction.	13.5

## Appendix C: List of Consultees

371. The following consultees will be consulted by the ECU to inform the scope of the EIAR. These, and other stakeholders, may also be contacted by topic specialists during the EIA process for information to inform topic assessments.

Category	Consultee
Statutory Consultee	Energy Consents Unit
	South Ayrshire Council
	Scottish Environmental Protection Agency
	Scottish Natural Heritage
	Historic Environment Scotland
Internal Scottish Government Advisors	Transport Scotland
	Marine Scotland
	Scottish Forestry
Non Statutory Consultees	Association of Salmon Fishery Board
	Ayrshire Rivers Trust
	British Horse Society
	BT
	Civil Aviation Authority – Airspace
	The Coal Authority
	Crown Estate Scotland
	Defence Infrastructure Organisation (DIO)
	Fisheries Management Scotland
	Fisheries – Doon and Stinchar District Salmon Fisheries Boards

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Category	Consultee
	Galloway and Southern Ayrshire Biosphere
	Game and Wildlife Conservation Trust
	Glasgow Airport
	Glasgow Prestwick Airport
	Health and Safety Executive
	JNCC (for Geological conservation review)
	Joint Radio Company
	John Muir Trust
	Met Office
	Mountaineering Scotland
	National Farmers Union of Scotland
	National Trust for Scotland Regional Office
	NATS (En Route) plc (NERL)
	OFCOM
	RAF
	Ramblers Associated (Scotland)
	Saving Scotland's Red Squirrels
	RSPB Scotland
	Scottish Badgers
	Scottish Outdoor Access Network (SOAN)
	Scottish Raptor Study Group

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Category	Consultee
	Scottish Rights of Way and Access Society (ScotWays)
	Scottish Water
	Scottish Wildlife Trust
	Scottish Wild Land Group
	South West Scotland Environmental Information Centre
	Sustrans Scotland
	Visit Scotland
	West of Scotland Archaeology Service
	The Woodland Trust
Community Councils	Barr
	Daily
	Crosshill, Straiton and Kirkmichael

## Appendix D: Glossary of Terms and Abbreviations

Term or Abbreviation	Explanation
AADF	Annual Average Daily Flow
AOD	Above Ordnance Datum
ATC	Automatic Traffic Counts
AWI	Ancient Woodland Inventory
BGS	British Geological Survey
Borrow pit	An area used to excavate to obtain material for use in construction
BPM	Best Practicable Means
BPP	Bird Protection Plan
CAA	Civil Aviation Authority
CCTV	Close Circuit Television
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecological and Environmental Management
CIRIA	Construction Industry Research and Information Association
ClfA	Chartered Institute for Archaeologists
CLVIA	Cumulative Landscape and Visual Impact Assessment
CMS	Construction Method Statement
CNS	Communication, Navigation and Surveillance
COPA	Control of Pollution Act
CTMP	Construction Traffic Management Plan
DfT	Department for Transport
Developable Area	Area not constrained by the design
EclA	Ecological Impact Assessment

## Scoping Report

Term or Abbreviation	Explanation
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment
EIAR	The report which presents the findings of an Environmental Impact Assessment Report.
EM	Electromagnetic
Embedded mitigation	Mitigation which is inherently included into the design of a project
ESDAL	Electronic Service Delivery for Abnormal Loads
ECU	Energy Consents Unit
EU	European Union
FAC	Flight Activity Surveys
FLS	Forestry and Land Scotland
GIS	Geographical Information Systems
GPA	Glasgow Prestwick Airport
GVA	Gross Value Added
GWDTE	Groundwater Dependent Terrestrial Ecosystems
Ha	Hectares
HER	Historic Environment Record
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
HSA	Habitat Suitability Assessment
IEA	Institute of Environment Assessment
IEMA	Institute of Environmental Management and Assessment
IOA	Institute of Acoustics
IOFs	Important Ornithological Features
km	Kilometres
LCT	Landscape Character Type

Term or Abbreviation	Explanation
LDP	Local Development Plan
LGV	Light Goods Vehicle
LMP	Land Management Plan
LNR	Local Nature Reserve
LVIA	Landscape and Visual Impact Assessment
LWS	Local Wildlife Site
m	Metres
MOD	Ministry of Defence
MW	Megawatt
NATS	National Air Traffic Services
NCN	National Cycle Network
NFE	National Forest Estate
NNR	National Nature Reserve
NOMIS	National Online Manpower Information System
NWSS	Native Woodland Survey of Scotland
NVC	National Vegetation Classification
ONS	Office of National Statistics
OS	Ordnance Survey
PAN	Planning Advice Note
PAWS	Plantations on Ancient Woodland Sites
PIDS	Public Information Days
POE	Ports of Entry
PPA	Power Performance Assessment
PSR	Primary Surveillance Radar
PRoW	Public Right of Way

Term or Abbreviation	Explanation
PSRA	Peat Stability Risk Assessment
PWS	Private Water Supply
PV	Photovoltaic
Proposed Development	The aspects of the Carrick Windfarm for which permission is sought to construct and operate
RSPB	Royal Society for the Protection of Birds
RVAA	Residential Visual Amenity Assessment
SA	Scenic Area
SAC	Special Areas of Conservation
SEPA	Scottish Environmental Protection Agency
SF	Scottish Forestry
SFCC	Scottish Fisheries Coordination Centre
SGN	Supplementary Guidance Notes
SGN	Scottish Gas Network
SNH	Scottish Natural Heritage
SNRHE	Scottish National Record for the Historic Environment
SPA	Special Protection Areas
SPMP	Soil and Peat Management Plan
SSSI	Site of Special Scientific Interest
SWSEIC	South West Scotland Environmental Information Centre
Study Area	The area for which the respective assessment or study is concerned
Survey Area	The area relating to the respective survey
Site Boundary	The extent of the area relating to the application
TV	Television
The Applicant / SPR	ScottishPower Renewables, who is submitting the application for the proposed Carrick Windfarm.

Term or Abbreviation	Explanation
The Site	The area within the Site Boundary for which the Proposed Development will be contained.
UK	United Kingdom
VP	Vantage Point
WLA	Wild Land Area
WLAA	Wild Land Area Assessment
WFD	Water Framework Directive
WoSAS	West of Scotland Archaeology Service
ZTV	Zone of Theoretical Visibility

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