Clauchrie Windfarm

EIA Scoping Report

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www.scottishpowerrenewables.com

SCOTTISHPOWER RENEWABLES

Table of contents

Figures:

1 Introduction

1.1 Overview

1. ScottishPower Renewables (UK) Ltd (SPR) intends to apply to the Scottish Government Energy and Consents Unit (ECU) for Section 36 consent under the Electricity Act 1989 (the Act) for the development of Clauchrie Windfarm (hereinafter referred to as the 'proposed Development') located approximately 6 km to the north east of Barrhill within the administrative boundaries of both South Ayrshire Council (SAC) and Dumfries and Galloway Council (D&GC) (herein referred to as 'the Site'). An additional request will also be made by SPR that planning permission is deemed to be granted under Section 57 of the Town and Country Planning (Scotland) Act, as amended. The main developable area and wind turbines will be located within the SAC boundary whilst access to the site and approximately 7 km of access track is located within the D&GC boundary. At present, the Site is owned by Forestry and Land Scotland (FLS) - and largely comprises commercial Sitka spruce plantations. The location of the site[1], and indicative area within which the core proposed Development turbines will be located (the 'Developable Area'), is shown in **Figure 1.1**.

2. The proposed Development is anticipated to comprise approximately 16 turbines up to 200 m to turbine blade tip, with associated infrastructure, battery storage, and ancillary services infrastructure. The deployment of other ancillary renewable technologies within the site is also being explored at this stage. An on-site energy storage capability would allow the project to regulate output and provide clean energy to power homes and businesses when needed the most. Given the scale of the development, it is anticipated that the proposed Development will exceed 50 MW. This will require consent from the ECU with SAC and D&GC councils acting as statutory consultees in the consenting process. An indicative turbine layout is illustrated in **Figure 1.2**.

3. Onshore windfarm developments are seen 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 close them all by 2025, resulting in the need for over a quarter of the UK's energy generation needing to be replaced in this period. The UK's climate change ambitions are amongst the highest in Europe and require an 80% reduction in CO_2 emissions by 2050. By 2050 we could also use considerably more electricity than we do today. This is driven by trends such as the growth in electric vehicle ownership, which has grown thirty-fold and is set to rise with the abolition of new diesel and petrol cars by 2040. Without the subsidy regime, and the requirement for onshore windfarm development to now be self-supporting, increased support from stakeholders is crucial going forward in order for the UK to meet these targets.

4. SPR currently owns and operates five windfarms in the South Ayrshire administrative boundary, namely Arecleoch, Dersalloch, Glen App, Kilgallioch and Mark Hill with an extension for Arecleoch windfarm currently undergoing a detailed feasibility study[2]. SPR also owns and operates numerous other windfarms throughout south west Scotland. As a result of continued investment and development within the area, SPR has voluntarily contributed over £5.5m in community benefit funds to local communities in South Ayrshire[3]. SPR believes that these funds are best managed by local communities who are aware of the projects that will make a difference in their area and who are best placed to determine the distribution of these funds to achieve the greatest local benefits. It is anticipated that the proposed Development would establish a community benefit arrangement which is likely to include an opportunity for the local communities to invest in the operational windfarm.

5. SPR has appointed LUC to undertake and prepare an Environmental Impact Assessment (EIA) scoping study to accompany a request for the ECU to adopt an EIA scoping opinion under Regulation 12 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ('the EIA Regulations'). Specialist advice on ornithology was obtained from MacArthur Green.

6. The EIA Scoping Opinion, consultation responses and findings from the EIA process will be used to inform and shape a final design for the proposed Development. Following this, a comprehensive assessment of likely significant environmental effects

[1] Unless otherwise stated, the use of the term 'site' throughout the report refers to the wider redline application boundary.
[2] ScottishPower Renewables, 2019, Arecleoch Windfarm Extension. Available at: https://www.scottishpowerrenewables.com/pages/arecleoch_windfarm_extension.aspx (Accessed 31/01/2019)
[3] ScottishPower Renewables, 2018, South Ayrshire Newsletter. Avaialble at: https://www.scottishpowerrenewables.com/userfiles/file/South_Ayrshire_Newsletter_Spring_2018.pdf (Accessed 31/01/2019)

will be undertaken. The results of the EIA will be presented in an EIA Report which will be submitted to the ECU in support of the Section 36 application for consent.

1.2 Purpose of Scoping Report

7. The preparation of a scoping study is considered to be good practice and forms an important step in EIA. To inform the EIA process, the scoping study provides clarification on key impacts associated with the proposed Development as well as providing information on which issues are to be 'scoped in' or included within the EIA Report. This process is also important in detailing issues which are likely to be 'scoped out' to ensure the EIA report remains focussed on the likely significant environmental effects associated with the proposed Development.

8. Scoping enables all parties involved in the decision making process to consolidate and agree upon key environmental issues which are relevant to the proposed Development as well as assessment methodology. The scoping study also facilitates early engagement with planning authorities and other relevant stakeholders included in the planning process and can aid the identification of key opinions which are often grounded in a local context.

9. The specific aims of this Scoping Report are to:

- engage with relevant statutory and non – statutory consultees and stakeholders at an early stage in the EIA process and ensure all parties are sufficiently informed about the proposed Development;
- present all relevant statutory and non-statutory consultees and stakeholders with the opportunity to comment on the proposed Development at an early stage;
- establish the availability of relevant baseline data;
- establish a robust assessment and survey framework from which a comprehensive assessment can be conducted and included within the EIA;
- identify all relevant technical and environmental issues which are likely to be significantly affected by the proposed Development and include these considerations within the EIA;
- 'scope out' issues where significant effects are deemed unlikely;
- minimise the environmental impacts and effects associated with the proposed Development; and
- define a clear layout in which the findings are presented within the EIA report.

1.3 The Applicant

10. ScottishPower is part of the Iberdrola Group, one of the world's largest integrated utility companies and a world leader in wind energy. We now only produce 100% green electricity - our focus is on wind energy, smart grids and driving the change to a cleaner, electric future and we're investing over £4m every working day to make this happen. We're 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.

11. ScottishPower Renewables is at the forefront of the development of the renewables industry through pioneering ideas, forward thinking and outstanding innovation. Our ambitious growth plans include offshore windfarms in East Anglia with our team also leading the Group's international offshore development including in Germany, France and the USA. With over 40 operational windfarms, we manage all of our sites through our world leading Control Centre at Whitelee Windfarm, near Glasgow.

1.4 LUC

12. LUC is an environmental consultancy with extensive experience in the preparation of EIAs for windfarm developments, possessing the necessary skills and relevant expertise, knowledge and qualifications to undertake scoping for the proposed Development. With a track record of over 50 years and a team of over 130 skilled professionals, LUC have offices in Bristol, Manchester, London, Glasgow and Edinburgh, with an additional office presence at Lancaster University Environment Centre.

1.5 Scoping Report Structure

13. Following on from the introductory section, the Scoping Report is structured as per **Table 1.1**

Table 1.1: Structure of Scoping Report

Section	Content
Chapter 2: The Environmental Impact Assessment	Provides a description of the approach to scoping the EIA.
Chapter 3: Project and Site Description	Provides details on the site and the surrounding areas and an overview of the infrastructure required.
Chapter 4: Planning Policy Context	Details the relevant national and local planning policy relevant to the application and its determination for consent.
Topic Chapters 5 – 13	Describes the specialist environmental studies proposed to be undertaken in order to assess the potential effects of the proposed Development on the environment and, where relevant, identifies topics to be scoped out of the EIA.
Appendix A: Proposed List of Scoping Consultees	Provides a list of both statutory and no-statutory consultees who will be approached by the ECU to provide input for the Scoping Opinion.
Appendix B: List of Scoping Questions	Provides a consolidated list of all questions included throughout the Scoping Report which are being used to seek clarification on key points.

2 The Environmental Impact Assessment

2.1 The EIA Process

14. EIA is a systematic and iterative process in which direct and indirect as well as both positive and negative likely significant effects of a proposed Development are compiled, evaluated and presented in a transparent and accessible manner. EIA also presents the scope for reducing negative or enhancing positive, effects in a way which can be clearly understood. A chapter providing a summary of significant effects will be included within the EIA report to consolidate and clearly communicate the key impacts associated with the proposed Development.

15. Additionally, EIA and the information in the EIA Report allow the determining authority to fully consider information pertaining to the environmental effects of a development. Thus, EIA can play a fundamental role in the decision making process and aids in the early engagement of stakeholders. Appendix A, lists the consultees who will be contacted on their views in relation to the propose Development.

16. As the EIA process runs in tandem with project design, the pre-emptive identification of potential effects can inform and shape the design of the proposed Development. This early detection of effects associated with the proposed Development can subsequently inform appropriate mitigation measures which can avoid, reduce and, where possible, offset potentially adverse environmental effects. In addition, the enhancement of positive effects can also be achieved through iterative design phases. The EIA will be carried out in accordance with current Scottish Government regulations and policy as well as best practice guidelines which include:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017[4];
- Scottish Government Web Based Guidance on wind turbines (updated in May 2014)[5];
- Scottish Planning Policy (SPP) (June 2014)[6];
- Planning Advice Note (PAN) 3/2010 Community Engagement (2010)[7];
- Planning Circular 3 2013 Development Management Procedures[8];
- Scottish Natural Heritage (SNH) (2013) (4th Edition), A Handbook on Environmental Impact Assessment;[9]
- Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment[10]; and
- PAN 1/2013 Environmental Impact Assessment (updated June 2017)[11].

2.2 Scoping

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

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

18. In order to streamline this scoping report, a list of questions relevant to each topic is presented at the end of each section which will query whether the information contained by each topic is sufficient and if further information will be required. A consolidated list of queries is presented in **Appendix B**.

[4] Scottish Government, 2017, The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations
[5] Scottish Government, 2014, Onshore wind turbines: planning advice
[6] Scottish Government, 2014, Scottish Planning Policy
[7] Scottish Government, 2010, "PAN 3/2010 Community Engagement"
[8] Scottish Government, 2013, Planning Circular 3 2013 Development Management Procedures
[9] Scottish Natural Heritage, 2013, A Handbook on Environmental Impact Assessment (4th Edition)
[10] Institute of Environmental Management and Assessment, 2004, Guidelines for Environmental Impact Assessment
[11] Scottish Government, 2017, PAN 1/2013 Environmental Impact Assessment

2.3 Baseline Conditions

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

20. Baseline conditions are not static and it is often necessary to update them with further baseline surveys to ensure that the data upon which the EIA is based is up to date and accurately reflects the current situation of the receiving environment. For the purposes of the assessment, the baseline is considered to be the existing site which is currently undeveloped and predominantly dominated by commercial forestry plantation.

21. In accordance with the 2017 EIA Regulations, climate change will also be considered when relevant baseline data is collected for each topic area.

2.4 Assessment OF Effects

22. For each topic that is identified as requiring further study, a detailed technical assessment will be carried out in line with the scope and methodology agreed upon with relevant consultees. Individual technical assessment will be undertaken by a competent and appropriately qualified consultant in which technical standards and relevant guidance will be adhered to. A range of relevant and appropriate methodologies will be employed to assess the potential effects associated with the proposed Development. These assessments will take both the construction and operational phases of the proposed Development into account and will be carried out in relation to the Site and surrounding area.

23. The EIA Regulations (Regulation 4 (2), (3) and (4)) specify that the EIA must:

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

(3) The factors are—
(a) population and human health;
(b) biodiversity, and in particular species and habitats protected under Council Directive 92/43/EEC on the conservation of natural habits and wild flora(1) and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds(2);
(c) land, soil, water, air and climate; and
(d) material assets, cultural heritage and the landscape.

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

24. The EIA Regulations (Regulation 5 (2)) further specifies that:

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

25. Previous experience of other windfarm developments, combined with the EIA requirements, the knowledge of the site and possible effects of the proposed Development, has led to the identification of the following topics for assessment in the EIA. A

summary of known baseline conditions of relevance, predicted effects, any outline mitigation measures that can be recommended at this stage and the proposed scope for the EIA is provided for each of these topic areas in **Chapters 5 to 13** of this Scoping Report.

- Landscape and Visual Amenity;
- Hydrology, Hydrogeology, Geology and Soils;
- Ecology;
- Ornithology;
- Noise;
- Cultural Heritage;
- Traffic and Transport;
- Socio-Economics, Tourism and Recreation; and
- Other Issues.

26. The subsequent assessments of these effects are then presented in a dedicated Chapter within the EIA Report. Each Chapter will provide a detailed assessment of the potential impacts associated with construction and development stages, identification of mitigation measures and description of the significance of cumulative and residual effects (those remaining after the mitigation measures have been implemented).

27. Individual technical assessment will be undertaken by a competent and appropriately qualified consultant in which technical standards and relevant guidance will be adhered to with full reference to all technical guidance and data sources used, as required by Part 10 of Schedule 4 of the EIA Regulations. The technical assessments will each provide a detailed assessment of potential effects (direct and indirect, positive and negative, short term or long term), identify mitigation measures and determine the significance of the residual effects (those remaining after the mitigation measures have been implemented). Chapters will be accompanied by technical appendices and figures where relevant.

28. An assessment will be made of the likely significant cumulative effects of the proposed development in combination with other windfarms including:

- schemes which have been submitted to the relevant authorities but not yet determined;
- schemes which are consented;
- schemes which are under construction or operational.

29. The scope and methodology for the cumulative assessment will be agreed with the relevant statutory consultees, including South Ayrshire Council, Dumfries and Galloway Council and SNH. Study areas will be defined separately for each topic assessed in the EIA to reflect the likely extent of potential effects.

30. A standalone Non-Technical Summary (NTS) of the findings of the EIA Report will also be produced as required by Part 8 of Schedule 4 of the EIA Regulations.

2.5 Mitigation and Monitoring

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

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

32. These measures will be termed mitigation measures and will be included for each topic area, where appropriate.

33. The EIA will identify and assess potentially significant effects prior to mitigation, the subsequent effectiveness of mitigation measures put in place and the significance of residual effects identified thereafter. Good practice throughout the construction and operation phases and current regulatory contexts are not considered to be "mitigation" and form an inherent part of the design/ construction process. This information will be taken into consideration prior to the assessment of likely effects arising from the proposed Development. On the assumption that a number of good practice measures will be in place, during both

construction and operation, it may be appropriate to scope out the potential for a number of potential effects on this basis. This will be detailed in the relevant chapters of the EIA Report as appropriate.

34. More specific mitigation measures will then be proposed prior to determining the likely significance of residual effects with a mitigation schedule included as an appendix within the EIA Report.

35. The mitigation measures implemented will be subject to appropriate monitoring in order to assess effectiveness. Where monitoring is proposed, this will be "*proportionate to the nature, location and size of the proposed development and the significance of its effects on the environment having regard in particular to the type of parameters to be monitored and the duration of the monitoring*" as stated in Part 7 (22) (2) (a) of the EIA Regulations.

2.6 Uncertainty

36. The EIA process is designed to enable good decision-making based on the best possible information about the environmental effects of a proposed development. There will, however, always be an element of uncertainty as to the exact scale and nature of the effects. These may arise through shortcomings in available information or due to the limitations of the professional judgement process. As required in Schedule 4, Part 6 of the EIA Regulations, it is important that such uncertainty is explicitly recognised and that the EIA Report includes *"A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved"*.

2.7 Competent Experts

37. As per Regulation 5(5) of the EIA Regulations 2017, the EIA Report must be prepared by "*competent experts*" with a clear statement outlining the relevant competenices of those undertaking the EIA. This information will be included within the introductory sections of the EIA Report.

2.8 Consultation

2.8.1 Scoping Consultation

38. This Scoping Report is being issued to the ECU, who will then consult with key consultees and stakeholders before forming their Scoping Opinion. It is anticipated that the agencies and bodies to be consulted will include those listed in **Appendix A**. This list is not exhaustive and other agencies will be consulted by topic specialists on an informal basis for information to inform the EIA as and when required.

2.8.2 Public Consultation

39. Public information events are planned for summer 2019. This will be an opportunity for the public to learn about the proposed Development through information panels and visualisations. Discussion and feedback on the scheme will be encouraged; and where received, feedback will be taken into account in development of the design as part of the EIA.

40. The public information events will also be a chance for discussion on community involvement in the proposed Development through shared ownership and how the community might benefit from the proposed Development.

3 Project and Site Description

3.1 Site and Surrounding Area

41. The Site is located approximately 6 km to the north east of Barrhill and falls within SAC and D&GC administrative boundaries. The Likely Developable Area, which is located in the north western section of the Site, falls wholly within the SAC administrative boundary. The Site is predominantly covered by commercial Sitka spruce plantations which are currently owned by Forestry and Land Scotland (FLS) - formerly Forestry Enterprise Scotland (FES), prior to the establishment of FLS as a government agency, as part of the wider Forestry Devolution Programme in Scotland as of 1st April 2019. Forested moorland is dominant throughout the site; however, the north eastern section is characterised by a Rugged Hills, Lochs and Forest landscape. The topography rises in northern section of the site (above 300 AOD) with distinctive, steep-sided hills such as Fell Hill (465 m) and Craigenreoch (565 m). There is one loch contained within the Site boundary (Loch Scalloch) with two in the immediate vicinity to the south east (Loch Moan, Kirriereoch Loch) and three to the south west (Half Merk Loch, Skaig Loch and Shiggerland Loch).

42. The surrounding area is rural in nature with the land largely being used for agriculture and commercial forestry operation. The Site also lies within the boundary of the Galloway Forest Park and the Galloway Forest Dark Sky Park, which is the only Dark Sky Park in Scotland.

43. The closest sizeable settlement from the Site is Barrhill (4.6 km to the south west). Other settlements include Barr (3.3 km to the north), Glentrool (8.6 km to the south) and Pinwherry (5.6 km to the west). The area is classed as "Very Remote Rural" under the Scottish Government's 8-Fold Urban Rural Classification (URC)[12], designating it as an area with a population of less than 3,000 people and a drive time of over 60 minutes to a settlement of 10,000 or more. There are a total of three remote dwellings located within the site and several others located on the periphery.

44. The main transport routes within the area include the A714. The A714 is located immediately to the south and west of the Site and provides an important tourist route between South Ayrshire and Galloway. The B734 runs past the northern end of the Site and takes a route along the Stinchar Valley between Barr and Pinmore. The Southern Upland Way, a popular national walking route, is located approximately 9.6 km to the south of the Site.

45. The Site is located within 5 km of the Merrick Wild Land designation to the south east of the proposed Development while Feoch Meadows, a Scottish Wildlife Trust Reserve and the Merrick Kells Special Area of Conservation (SAC) are the closest natural heritage designation. There are no Listed Buildings or Scheduled Monuments within the Site; however, Black Clauchrie House, a Category C Listed Building is located to the south of the Site.

3.2 Project Description

46. The proposed Development is anticipated to comprise 16 turbines up to 200m to blade tip, including associated infrastructure, battery storage and ancillary services infrastructure and will contribute to the Scottish Government's renewable energy targets (see **Chapter 4**).

47. The following components comprise the related infrastructure required for the delivery, construction and operation of the development:

- Crane hardstandings adjacent to each turbine;
- Power cables linking the turbines laid in trenches underground, including cable markers;
- Upgraded and new Site access tracks, passing places and turning circles;
- Permanent and temporary power performance assessment (PPA) anemometry masts;
- A substation compound including a control building, parking, lighting columns and battery storage / ancillary grid services equipment, with solar panels on the roofs of buildings;
- Communication mast(s);
- Health and Safety and other directional signage;
- Close circuit television (CCTV) mast(s);

[12] Scottish Government, 2018, Urban Rural Classification: Defining Scotland by Rurality. Available at: https://www2.gov.scot/Topics/Statistics/About/Methodology/UrbanRuralClassification

- A radar sensor mast;
- Temporary Site construction compounds; and
- Temporary borrow pits.

Substation

48. The proposed Development would include a new onsite substation and control building. The substation and control building is expected to be a single storey building with a pitched roof and solar panels with the building also housing switchgear, metering, protection and control equipment.

49. The proposed wind turbines, battery storage, and other potential co-located technologies would be connected to the onsite substation by underground cabling. The grid connection will be subject to a separate consenting regime and is the responsibility of the electricity grid network operator, ScottishPower Energy Networks (SPEN). Information on the route of the grid connection will be set out in the EIA Report, but this will not form part of the assessment or be included in the application for consent.

Energy Storage

50. An energy storage facility is proposed on the site. The facility would be able to both import and export power to the network as required, providing a 'security buffer' to cope with supply and demand events. The battery storage facility would provide back-up power to National Grid for the benefit of providing stability to the electricity supply network and the integration of more renewable energy generation. As set out in the Scottish Government's Onshore Wind Policy Statement, innovative solutions such as the integration of energy storage within onshore windfarm proposals not only help improve the ability of variable generators, such as onshore wind, to manage generation and demand but can also help grow the supply chain.

51. It is ancipated that the battery storage facility will be located adjacent to the substation compound. The batteries would be housed in structures very similar to shipping containers. These would be arranged in tandem i.e. two containers on a combined plinth with a shared transformer unit and coolers.

Access

52. SPR has previously secured land along the delivery route used for the operational Arecleoch and Killgallioch windfarms which can be utilised for the proposed Development. SPR have also conducted further engineering studies of the route for larger turbine types including the Vestas V136 and V150.

53. It is expected that the wind turbines would be delivered to either Cairnryan Port in Dumfries and Galloway or George V Docks in Glasgow. In the instance that the George V docks will be used for turbine delivery, the turbines would move along the A74 to the M6 where they would then proceed northwards at junction 44. The route would then continue along the A75 to the unclassified road past Newton Stewart where they would then join the A714. This route has previously been used during the construction of both Arecleoch and Kilgallioch windfarms

54. The alternative delivery route from Cairnryan would follow the A77, A751 and proceed along the A75. The delivery route would then continue along an unclassified road past the settlement of Newton Stewart and then north to the site entrance located along the A714.

Borrow Pits

55. Where possible, the material required for the constuction of onsite access tracks, turbine bases and hardstandings would largely be sourced from onsite borrow pits. By employing this approach, the transportation of material to the Site would be minimised. This is dependant on the quality of stone found onsite in which case it may become necessary to import stone into the site for use as a capping material for access tracks and hardstandings.

56. The design and location of onsite borrow pits will be considered as part of the ongoing EIA and design process with the borrow pits being reinstated after the completion of construction.

Forestry

57. The majority of the site is covered in commercial forestry. Forestry works will form an integral part of the proposed Development, and a detailed forest design and management plan will be prepared in consultation with Forestry Commission Scotland (FCS) and submitted with the application. The forest works will be subject to assessment through the integrated EIA process with the Forestry Design Plan to be considered appropriately within the relevant technical chapters of the EIA. If

required, forestry will be considered in a seperate technical appendix to accompnay the EIA. Compensatory planting will be undertaken by SPR to account for forestry lost onsite to wind turbines and associated infrastructure, in accordance with the Scottish Government's Control of Woodland Removal policy.

58. FCS will act as the main forestry consultee and will be consulted throughout the development of the proposals to ensure that the proposed changes to the woodlands are appropriate and address the requirements of the Control of Woodland Removal Policy.

Construction Works

59. It is expected that the construction of the proposed Development will be completed over a period of up to 18 months and will consist of the following principal activities:

- construction of the temporary construction compound(s);
- extraction of stone from the borrow pits for track and foundation construction;
- construction of site access juncition, tracks and passing places and any watercourse crossings;
- construction of culverts under tracks to facilitate drainage and maintain existing hydrology;
- construction of all foundations and transformer plinths;
- construction of an onsite substation and battery storage facility;
- excavation of trenches and cable laying adjacent to site tracks;
- movement onto site and erection of wind turbines;
- commissioning of the site; and
- restoration of borrow pits and temporary construction compounds.

60. Many of these operations will be carried out concurrently however it is expected that construction will predominantly follow in the order identified. This will reduce the overall length of the construction programme. In addition, development will be phased such that, at different parts of the site, the civil engineering works will be continuing whilst wind turbines are being erected. Site restoration will be programmed and carried out to allow restoration of disturbed areas progressively and as early as possible.

Windfarm Life and Decommissioning

61. It is not proposed to limit the lifespan of the proposed Development. This will mean that the assessments carried out to inform the EIA will consider the effects of the operational phase of the proposed Development in perpetuity. If decommissioning of the proposed Development is required it is considered that any impacts associated with the decommissioning of the proposed Development would be less than impacts experienced during the construction phase. Should consent be granted, it is anticipated that there would be a condition which would deal with the requirement to remove elements of the Development should they become non-operational for a defined period of time.

4 Planning Policy Context

62. As the generating capacity of the proposed development is anticipated to be greater than 50 MW, an application for consent will be sought under Section 36 of the Electricity Act, including deemed planning permission under Section 57 of the Town and Country Planning (Scotland) Act 1997 (as amended). Where deemed permission is sought under Section 57 of the Town and Country Planning (Scotland) Act 1997 (as amended), it is important to note that Section 25 'Status of the Development Plan' is not engaged.

63. It is now well established that in the case of an electricity licence application under the Act, deemed planning permission is 'directed' and therefore not considered to be 'determined'. In this respect, proposals cannot be determined under the Local Development Plan (LDP).

64. Schedule 9 of the Act sets out environmental features which the applicant should have regard to in formulating proposals, and give consideration to mitigation. The decision maker must have regard to these matters and determine whether the applicant has discharged the requirements placed upon them. Sub-paragraph 3 is relevant to an applicant if they hold a License at the date the application is submitted. SPR do hold such a licence. Sub Paragraph 3 states:

"*In formulating any relevant proposals, a licence holder or a person authorised by exemption to generate, transmit, distribute or supply electricity*

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

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

65. Sub-paragraph 3(2) imposes duties upon the Scottish Ministers in considering relevant proposals and states as follows:

"*In considering any relevant proposals for which his consent is required under section 36 or 37 of this Act, the Scottish Ministers shall have regard to —*

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

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

In sub-paragraph 3(3) there is a requirement for a licence holder *"to avoid, so far as possible, causing injury to fisheries or the stock of fish in any waters"*.

66. The EIA Report will not assess the proposed Development against the relevant national and local planning policy and renewable energy context; rather this will be done in a separate Planning Statement. The Planning Statement will consider the balance of effects of the proposed Development as set out in the EIA, in the context of national and local policy and other material considerations. It will also set out how the Applicant has discharged the requirements of Schedule 9.

4.1 National Planning Policy, Guidance and Advice

67. It should be noted that an EIA Planning Policy chapter is not a formal requirement under the EIA Regulations. It is not proposed to include an EIA Planning Policy chapter in the EIA Report but instead outline a summary of all relevant planning policy considerations as part of the Planning Statement, which will accompany the application for consent.

68. Where applicable, National planning policy, guidance and advice which are material considerations and are relevant to the proposed Development will be considered in the relevant specialist topics chapters of the EIA Report. These include, but are not limited to, the following documents:

- Scottish Planning Policy (Scottish Government, June 2014)

- The National Planning Framework 3 (Scottish Government, June 2014);
- Onshore Wind Turbines Specific Advice Sheet (Scottish Government, updated May 2014);
- Scottish Government Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments (Scottish Government, November 2018);
- Scottish Government Good Practice Principles for Shared Ownership of Renewable Energy Developments (Scottish Government, November 2018);
- Scottish Government Climate Change Adaptation Programme – 4th annual progress report (Scottish Government, May 2018);
- Delivering for Today, Investing for Tomorrow – The Scottish Government's Programme 2018-19 (Scottish Government, September 2018);
- Electricity Generation Policy Statement (Scottish Government, June 2013);
- Route map for Renewable Energy in Scotland (Scottish Government, December 2013);
- Planning Advice Note (PAN)Energy Storage Noise (Scottish Government, December 2013);
- PAN1/2011 Planning and Noise (Scottish Government, March 2011);
- PAN 2/2011 Planning and Archaeology (Scottish Government, July 2011);
- PAN 1/2013 Environmental Impact Assessment (Scottish Government, August 2013);
- PAN 51 Planning, Environmental Protection and Regulation (Scottish Government, October 2006);
- PAN 60 Planning for Natural Heritage (Scottish Government, January 2008);
- PAN 69 Planning and Building Standards Advice on Flooding (Scottish Government, August 2004);
- PAN 75 Planning for Transport (Scottish Government, August 2005); and
- PAN 79 Water and Drainage (Scottish Government, September 2006).

4.2 Scottish Government Policy and Targets

Draft Climate Change Bill

69. The Climate Change Bill will update Scotland's framework of statutory emission reduction targets by increasing the ambition enshrined in the Climate Change (Scotland) Act 2009. The provisions of the draft Bill are based upon the advice received by the Scottish Government from the Committee on Climate Change (CCC).

70. The key provision in the draft Bill is a more ambitious emission reduction target for 2050. Advice from the CCC is that a 90% reduction in greenhouse gas emissions by 2050 would be more consistent with limiting temperature rise to 1.5^{o}C than the current 80% target. The Scottish Government therefore proposes to increase the ambition of the 2050 target to a 90% greenhouse gas emission reduction from the baseline, recognising the social, environmental and economic benefits that this will deliver. In addition, the Government proposes to update the interim emission reduction target for 2020, to at least 56% and to set new interim targets for at least 66% in 2030 and at least 78% in 2040.

71. The proposed Bill is expected to become legislation in 2019.

Scottish Climate Change Plan

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

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

74. In terms of the electricity sector, the CCP states that:

- By 2032, Scotland's electricity system will supply a growing share of Scotland's energy needs and by 2030, 50% of all Scotland's energy needs will come from renewables (page 15).
- By 2032, Scotland's electricity system will be largely decarbonised and be increasingly important as a power source for heat and transport.

- Electricity will be increasingly important as a power source for heat and in transport to charge Scotland's growing fleet of ultra-low emission vehicles".

Scottish Energy Strategy

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

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

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

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

77. The Strategy adds that:

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

Onshore Wind Policy Statement

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

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

80. Chapter 1 is entitled 'Route to Market' and it sets out, in paragraph 2, that onshore wind, as a mature and established technology, is now amongst the lowest cost forms of generating electricity, renewable or otherwise. It adds that "*we expect onshore wind to remain at the heart of a clean, reliable and low carbon energy future in Scotland*".

81. Paragraph 3 continues to state that: "*In order for onshore wind to play its vital role in meeting Scotland's energy needs, and a material role in growing our economy, its contribution must continue to grow. Onshore wind generation will remain crucial in terms of our goals for a decarbonised energy system, helping to meet the greater demand from our heat and transport sectors, as well as making further progress towards the ambitious renewable targets which the Scottish Government has set*".

82. Paragraph 4 of Chapter 1 states that given the recognised contribution that onshore wind is expected to make to Scotland's future energy and renewable targets, that "*this means that Scotland will continue to need more onshore wind development and capacity, in locations across our landscapes where it can be accommodated*". The Statement continues the current approach as set out in Scottish Planning Policy (SPP) that, whilst there is a very strong need case for further onshore wind development, environmental considerations are factors to be taken into account in the operation of the planning system. This principle is reflected throughout the Statement.

83. Paragraph 8 of Chapter 1 emphasises the industrial opportunity presented by a growing onshore wind sector and it states that "*the extent to which we can continue to capture these benefits, remains a top priority for Scottish Ministers*".

84. Paragraph 25 of Chapter 1 outlines the Governments understanding of the progression in wind farm technology and subsequent design, supporting the delivery of larger turbines, stating that *"Scottish Government acknowledges the way in which wind turbine technology and design is evolving, and fully supports the delivery of large wind turbines in landscapes judged to be capable of accommodating them without significant adverse impacts."*

4.3 The Development Plans

85. The Site spans across two administrative boundaries thus the relevant LDPs covering the site (at the time of submission) are the South Ayrshire LDP (adopted September 2014) and the Dumfries and Galloway LDP (adopted September 2014). The proposed wind turbines would fall within the SAC administrative boundary resulting in the SAC Development Plan polices relevant to windfarm development being considered. The Site Entrance is located within the administrative boundary of D&GC with development in this area relating to traffic, thus all relevant D&GC policies will also be considered.

South Ayrshire Local Development Plan (2014)

86. The South Ayrshire Local Development Plan (SALDP), adopted in September 2014, is currently undergoing review with SAC preparing a new Local Development Plan (LDP2) which would replace the current SALDP[13]. The LDP2 is expected to be adopted by late 2019/ early 2020[14]. Currently, the Wind Energy Policy is considered to be the most relevant SALDP Policy to the proposed Development with the policy stating that proposals will be supported if:

a. *"they are capable of being accommodated in the landscape in a manner which respects its main features and character (as identified in the South Ayrshire Landscape Wind Capacity Study or in any subsequent updates to that study), and which keeps their effect on the landscape and the wider area to a minimum (through a careful choice of site, layout and overall design);*
b. *they do not have a significant detrimental visual impact, taking into account views experienced from surrounding residential properties and settlements, public roads and paths, significant public viewpoints, and important recreational assets and tourist attractions;*
c. *they do not have any other significant detrimental effect on the amenity of nearby residents, including from noise and shadow flicker;*
d. *they do not have a significant detrimental effect on natural heritage features, including protected habitats and species, and taking into account the criteria in LDP policy: natural heritage;*
e. *they do not have a significant detrimental effect on the historic environment, taking into account the criteria in LDP policy: historic environment and LDP policy: archaeology;*
f. *they do not adversely affect aviation, defence interests and broadcasting installations; and*
g. *their cumulative impact in combination with other existing and approved wind energy developments, and those for which applications for approval have already been submitted, is acceptable*".

87. **Table 4.1** lists the policies within the current LDP and supplementary guidance of relevance to the proposed Development which will be considered during the design and subsequent EIA.

Table 4.1: Relevant LDP Policies and LDP Supplementary Guidance Documents

LDP Policies	SG Documents
LDP Policy: Wind Energy	LDP SG: Wind Energy
LDP Policy: Renewable Energy	LDP SG: Dark Sky Lighting
LDP Policy: Landscape Quality	
LDP Policy: Protecting the Landscape	
LDP Policy: Woodland and Forestry	
LDP Policy: Preserving Trees	
LDP Policy: Dark Skies	
LDP Policy: Historic Environment	
LDP Policy: Archaeology	

[13] South Ayrshire Council, 2014, Local Development Plan
[14] South Ayrshire Council, 2018, Development Plan Scheme: Local Development Plan 2

LDP Policies	SG Documents
LDP Policy: Natural Heritage	
LDP Policy: Land use and Transport	
LDP Policy: Outdoor Public Access and Core Paths	

Dumfries and Galloway Local Development Plan (2014)

88. The Dumfries and Galloway Local Development Plan (DGLDP)[15] was adopted in September 2014. However, the current plan is undergoing review with D&GC undertaking work on a new Local Development Plan, the Local Development Plan 2[16], which will replace the current DGLDP. This is not expected to come into force until September 2019 but will be in force when section 36 consent is sought for the proposed Development. As such, policies from both the current LDP and the new D&GC "Proposed Plan" will be considered.

89. Approximately 7 km of access track is located within the D&GC boundary therefore Policy IN2: Wind Energy, Policy T1: Transport Infrastructure and Policy T2: Location of Development/ Accessibility of the DGLDP are considered to be of particular relevance to the proposed Development.

90. Policy IN2: Wind Energy holds relevance as the proposed Development would include site access for a windfarm. Policy IN2 states that the Council will support wind energy proposals which are located, sited and designed appropriately. This includes the extent which a development will impact on local communities, aviation and telecommunications as well as landscape and visual impacts and cumulative impacts.

91. Policy T1: Transport Infrastructure states that:

- "Proposals relating to existing and new transport infrastructure should accord with the regional and local transport strategies and also not have any adverse effects on designated Natura Sites" and;
- "Development proposals that have the potential to affect the performance or safety of the strategic transport network need to be appraised to determine their effects. The national and strategic role of these routes should not be compromised by development which individually or incrementally materially reduces the level of service of a route".

92. Policy T2 concerns the location and accessibility of certain developments. This is particularly relevant to the delivery and construction phase of the proposed Development which will involve the delivery of turbines and movement of construction vehicles as the access track begins in D&GC. This policy states that in certain circumstances, developers may be required to:

- prepare and implement travel plans to support a development proposal that will result in significant travel generation, by virtue of its size, nature, or location (as determined by the Council);
- prepare a Transport Statement or Transport Assessment and implement appropriate mitigation measures where required.

4.4 The Emerging Development Plans

South Ayrshire Council LDP2

93. The SAC is currently in the process of preparing a replacement Local Development Plan which will supersede the LDP currently in place. The Main Issues Report, published in November 2017, stated that a full review of spatial strategy, in compliance with Scottish Government requirements, had been carried out prior to the preparation of the LDP2. As such, it was not considered appropriate that a full policy review was conducted:

"*Given that South Ayrshire has recently undertaken a full review of its spatial strategy, and that this is in full compliance with the latest Scottish Government requirements, it is not considered appropriate to implement a full review. However, the proposed assessment of the Scenic Areas (Local Landscape Areas) in line with SNH latest guidance (Main Issue 8) can be incorporated into the wind farm spatial strategy to clarify and strengthen wider understanding of the characteristics and importance of local landscape types which can be affected by wind farm development*"

[15] Dumfries and Galloway 2014, Local Development Plan
[16] Dumfries and Galloway Council are in the examination stage of preparing their new LDP, the adoption of which is not anticipated until 2019.

94. Following on from the consultation period on the Main Issues Report, which ended on the 31st of January 2018, the next stage of the plan will involve the drafting of the Proposed Plan document, it is anticipated this will be published in the summer of 2019. This document will set out SAC preferred position on future strategies, policies and development Sites.

Dumfries and Galloway LDP2

95. The D&GC LDP2 is currently at the examination stage, the penultimate stage before adoption with a provisional adoption date of September 2019 is given. D&GC has published the Proposed Plan and the consultation period ended on the 30th of April 2018. Policy IN2, T1 and T2 of the LDP remain the same within LDP2 with no significant changes made.

4.5 Other Local Material Considerations

South Ayrshire Landscape Wind Capacity Study

96. The South Ayrshire Landscape Wind Capacity Study (SALWCS), recently updated in 2018, aims to provide guidance on the appraisal of windfarms and wind turbine proposals throughout South Ayrshire as well as informing strategic planning for wind energy developments in accordance with Scottish Planning Policy.

97. The SALWCS considers the landscape and visual sensitivity of 20 landscape character types within the South Ayrshire area to a range of wind turbine developments. These are primarily categorised on the basis of turbine height. This study also considers scope for repowering existing windfarms using larger wind turbines.

4.6 Shared Ownership and Community Benefit

98. The Scottish Government is keen to see developers share the benefits of renewable energy with local communities through opportunities to invest in renewable energy projects and to receive community benefit funds from them. The two benefits can be summarised as follows:

- Shared ownership is a structure which involves a community group as a financial partner in a renewable energy project; and
- Community benefit is a voluntary fund provided to the local community which is usually linked to the installed MW capacity of the operational windfarm.

99. The Scottish Government reiterated its commitment to shared ownership in the Energy Strategy and Onshore Wind Policy Statement, by stating:

> *"Our ambition remains to ensure that, by 2020, at least half of newly consented renewable energy projects will have an element of shared ownership.*
>
> *Shared ownership will form a key part in helping to meet our targets of 1 GW of community and locally owned energy by 2020, and 2 GW by 2030. We expect community involvement in onshore wind development to continue to play a vital role in reaching these targets"*

The Scottish Government promotes community involvement in renewable energy schemes through its suggested Good Practice Principles. In addition to promoting shared ownership and community benefit as good practice, the Scottish Government also promotes the development of community action plans which enable communities to collectively identify local initiatives which could be delivered by shared ownership and community benefit payments, thus enhancing the levels of benefit and meeting the local development needs of communities within areas hosting renewable energy developments. The EIA Report will consider the effects associated with shared ownership and community benefit.

4.7 Questions

Q4.1: Is the approach to consideration of relevant planning policies considered to be appropriate (i.e. that there will be no Planning Policy Context chapter in the EIA Report, with relevant policies being referred to in each specialist topic chapter, and covered in detail in the supporting Planning Statement)?

Q4.2: Are the policies identified in Table 4.1 appropriate for inclusion in the EIA Report and Planning Statement policy appraisal? Are there any others that should be considered?

Q4.3: Are there any other local material considerations of relevance to the proposed Development which should be considered?

5 Landscape and Visual Impact

5.1 Introduction

100. The Landscape and Visual Impact Assessment (LVIA) will consider direct and indirect effects upon landscape and on visual receptors. The landscape component will include receptors such as the physical landscape resource, landscape character, designated landscapes and wild land. The visual component will examine the nature and extent of effects on existing views and visual amenity. The effects of the proposed turbines, as well as the ancillary infrastructure (access track, masts, transformers, battery storage, and other potential co-located technologies) will be assessed during the construction and operational phases of the proposed Development. The LVIA will also consider cumulative effects, i.e. the incremental effects of the proposed Development in combination with other windfarm developments.

101. The LVIA will inform modifications and refinements to the layout design and will be undertaken following the approach set out in Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3).[17] The assessment will also draw upon current good practice guidance issued by Scottish Natural Heritage (SNH).[18]

5.2 Existing Conditions

5.2.1 Site and Proposed Study Area

102. The site forms part of an upland landscape which includes part of Glen Trool Forest and a series of hills which form a ridge along its northern edge: Pinbreck Hill, Polmaddie Hills, Cairn Hill, Fell Hill and Mid Hill. The majority of the site boundary is located in South Ayrshire; however, an access track would be located in part of Dumfries and Galloway, and connect to the A714 Girvan-Braehead road, north west of Cairnderry.

103. Coniferous plantation is the primary land use within the site although this is relatively varied, with different species, densities and age structure evident. A series of tracks provide access for management purposes and recreation. In the southern part of the site, there are three residential properties and these are also accessed via the track network. The ridgeline features areas of open moorland. There is one notable body of standing water within the site: Loch Scalloch. This is an upland loch which is in the north west of the site at approximately 340 m AOD. A series of burns drain the ridgeline, mostly running toward the south east. The operational Mark Hill Windfarm is close to the south west boundary of the site and running close to the northern edge of the site is an overhead electricity transmission line (OHL) supported by steel lattice towers.

104. A study area of 45 km from the outermost turbines in all directions is proposed for the LVIA, as recommended in current guidance for turbines over 150 m to blade tip.[19]

105. A Zone of Theoretical Visibility (ZTV) plan will be used to identify which landscape and visual receptors require consideration in the assessment, and which can be scoped out because they are unlikely to be significantly affected. While the design of the proposed Development is subject to change, the following figures are provided to illustrate the theoretical visibility of the current turbine layout:

- **Figure 5.1**[20] Maximum Blade Tip Height (200 m) ZTV and Suggested Viewpoint Locations; and
- **Figure 5.2** Maximum Hub Height (125 m) ZTV and Suggested Viewpoint Locations.

5.2.2 Landscape Character

106. SNH has recently made available their national Landscape Character Assessment (LCA)[21]; this is a digital, map-based resource which has been developed to update a suite of previous regional assessments, also published by SNH. The intention is that this new information reflects changes which have occurred in the landscape in the meantime and addresses inconsistencies found across the suite of earlier assessments, e.g. at boundaries between assessments or in the level of detail applied.

[17] Landscape Institute and Institute of Environmental Impact Assessment (2013), Guidelines for Landscape and Visual Impact Assessment, 3rd Edition.
[18] SNH (2018), A Handbook on Environmental Impact Assessment, Appendix 2: Landscape and Visual Impact Assessment, Version 5.
[19] SNH (2017), Visual Representation of Windfarms, Version 2.2.
[20] An A0 version of Figure 5.1 is provided as Figure 5.1a.
[21] SNH (2019), SNH National Landscape Character Assessment Introduction & Review Methodology.

107. In the new national LCA, areas of Scotland have been defined as landscape character types (LCTs). At the time of writing, although SNH has provided an online resource, there is no facility to obtain this information in a format which can easily be presented on drawings. In order to illustrate the information as best as possible, **Figure 5.3** has been generated using data previously available; while this is not up-to-date, a desktop review indicates that there is minimal variance between the new boundaries available online and those presented here. Subject to availability, it is intended that the LVIA will include the updated LCT boundary information.

108. There are four LCTs identified within the site boundary:

- 78: Plateau Moorland – Ayrshire;
- 174: Plateau Moorland with Forestry – Dumfries and Galloway;
- 81: Southern Upland – Ayrshire; and
- 82: Southern Upland with Forestry – Ayrshire.

109. The LVIA will consider the potential for direct effects upon LCTs within the site boundary and for indirect effects upon LCTs in the study area from which potential visibility is indicated by ZTVs.

110. Further information regarding the landscape character of the area is set out in the recently revised South Ayrshire Landscape Wind Capacity Study (SALWCS, 2018), published by South Ayrshire Council and SNH. This study assesses the capacity of the South Ayrshire landscape to accommodate windfarm development at a strategic scale. Whilst largely based on the earlier SNH LCA,[22] the SALWCS makes some minor modifications to the boundary and classification of some character types identified in the earlier assessment. The report will form a further source of information with regards to landscape character, sensitivity and capacity.

5.2.3 Landscape Designations

111. Nationally and locally designated landscapes within the study area are listed in **Table 5.1** and shown on **Figure 5.4**. As with LCTs, areas with theoretical visibility of the proposed Development will be described in the LVIA, and used as a means of identifying which designated areas require further assessment.

Table 5.1: Designated Landscapes within the Study Area

Name	Designation	Approximate Distance from the Site
Fleet Valley NSA	National Scenic Area	29.5 km south east of site boundary
South Ayrshire SA	Scenic Area	Partly within the site 0.0 km north and west of site boundary
East Ayrshire SLA	Sensitive Landscape Area	7.5 km east of site boundary
Galloway Hills RSA	Dumfries and Galloway Regional Scenic Area	0.3 km east of site boundary
Mochrum Lochs RSA	Dumfries and Galloway Regional Scenic Area	23.4 km south of site boundary
Rhins Coast RSA	Dumfries and Galloway Regional Scenic Area	25.9 km south west of site boundary
Machars Coast RSA	Dumfries and Galloway Regional Scenic Area	33.6 km south east of site boundary
Thornhill Uplands RSA	Dumfries and Galloway Regional Scenic Area	35.1 km east of site boundary
Solway Coast RSA	Dumfries and Galloway Regional Scenic Area	37.8 km south east of site boundary
Pladda SLA	North Ayrshire Special Landscape Area	37.9 km north west of site boundary
Holy Island SLA	North Ayrshire Special Landscape Area	43.3 km north west of site boundary

5.2.4 Dark Sky Park

112. The site is in Galloway Forest Park which has Gold Tier Dark Sky Park Status; relevant mapping[23] shows the site to be in the Dark Sky Park Buffer Zone. Although not a landscape designation, South Ayrshire Council planning policy[24] [25]aims to

[22] SNH (1998), SNH Review No. 111, Ayrshire Landscape Assessment.
[23] South Ayrshire Council (2014), Local Development Plan, Page 40.
[24] South Ayrshire Council (2014), South Ayrshire Local Development Plan, Page 51.
[25] South Ayrshire Council (2016), Supplementary Guidance: Dark Sky Lighting.

protect dark sky quality by controlling light pollution. It will therefore be necessary to consider the potential for lighting associated with the proposed Development as part of the LVIA.

113. Forestry and Land Scotland promotes 10 viewing locations in the Dark Sky Park Buffer Zone[26]. With reference to **Figure 5.2**, based on current design information, hub height lighting would not be visible from any of these locations. However, this will be reviewed as the design of the proposed Development progresses.

5.2.5 Wild Land

114. Wild Land Areas (WLAs) are not statutory designations, but NPF3[27] recognises wild land as a *"nationally important asset"* (NPF3, p.42), while SPP[28] notes that development plans *"should identify and safeguard the character of areas of wild land as identified on the 2014 SNH map of wild land areas"* (SPP, p.47) and lists areas of wild land as Group 2: Areas of Significant Protection (SPP, Table 1, p.39).

115. WLAs within the study area are listed in **Table 5.2** and shown on **Figure 5.4**. Assessment of effects on WLAs identified for inclusion within the detailed assessment of the LVIA will be undertaken in accordance with published guidance.[29]

Table 5.2: Wild Land Areas within the Study Area

Wild Land Area	Approximate Distance from the Site
The Merrick (1) WLA	3.3 km east of site boundary and 4.6 km east of developable area

5.3 Visual Receptors

116. The LVIA will consider potential effects upon visual receptors within the study area, i.e. the people who may be affected by changes in views resulting from the proposed Development. Visual receptors to be considered will include:

- people within settlements, including individual properties within 2 km of the nearest turbine;
- people travelling on major roads and railways;
- people using walking routes and cycle routes; and
- people visiting areas of interest such as visitor attractions, scenic viewpoints and hill summits.

117. As noted above, there are isolated residential properties within the site boundary and there are others within 2 km of the site. With reference to **Figure 5.1**, settlements in the study area with potential visibility of the current indicative layout include several along the North Ayrshire coast (e.g. Troon, Prestwick and Ayr), parts of the River Stinchar valley (e.g. Colmonell and Barr) and lowland areas south of the site (e.g. Barrhill, Creetown and Wigtown).

118. Key transport routes within the local area include the A714 Girvan-Braehead road, the A75 Dumfries-Stranraer road and the A77 Kilmarnock-Portpatrick road. Two branches of the Glasgow South Western Line railway run through the study area, connecting Ayr with Stranraer and Kilmarnock with Sanquhar.

119. Visual receptors also include people making recreational use of the area, e.g. those travelling on the core path network and long distance routes, cycling on the National Cycle Network (NCN) or walking towards landmarks such as hill tops or cairns. **Figure 5.5** shows several recreational routes within the study area and ZTV analysis will determine whether these are to be included in the LVIA. There are no Munros in the study area but there are four Corbetts – Shalloch on Minnoch, Merrick, Corserine and Cairnsmore of Carsphairn – from which there is indicated visibility at the summits. Several other recreational activities, including mountain biking, are known to be popular in the area and will be considered as part of the LVIA.

5.4 Design Considerations

120. Landscape and visual considerations, including the appearance of the proposed Development from key viewpoint locations, will play a major role in design of the proposed Development. The findings and feedback received on the baseline study, and initial field survey will identify potential sources of landscape and visual effects, which will inform an iterative design process.

[26] Forestry Commission Scotland (2010), Galloway Forest Dark Sky Park Leaflet.
[27] Scottish Government (2014), National Planning Framework 3.
[28] Scottish Government (2014), Scottish Planning Policy.
[29] SNH (2017), Assessing Impacts on Wild Land Areas – Technical Guidance (Consultation Draft)

The design will be continually reconsidered as it develops, to prevent and reduce potential landscape and visual effects. A clear set of objectives will be established based on best practice guidance, including the SNH publication Siting and Designing Wind Farms in the Landscape.[30]

5.5 Proposed Surveys and Assessment Methodologies

5.5.1 Surveys

121. Field survey work will be carried out during several visits, and records will be made in the form of field notes and photographs. Field survey work will include visits to the site, viewpoints, designated landscapes and WLA, and extensive travel around the study area to consider potential effects on landscape character and on experiences of views seen from designated landscapes, settlements and routes.

5.5.2 Visualisations

122. Wireframes and photomontages will be used to consider and illustrate changes to views. Photomontages will involve overlaying computer-generated perspectives of the proposed Development over the photographs of the existing situation to illustrate how the views will change against the current baseline. Other (cumulative) windfarms visible from each of the viewpoints will be shown on the wireframes. Visualisations will be prepared in accordance with current SNH visualisation guidance.[31]

123. Ancillary elements such as permanent anemometer masts, access tracks, battery storage, other potential co-located technologies and the on-site substation will be shown in photomontages for viewpoints within 5 km when they would be visible. Beyond 5 km it is considered unlikely that these ancillary elements would form more than a minor element of the entire development when compared to the turbines.

5.5.3 Landscape Effects

124. Predicted changes on both the physical landscape of the site and landscape character within the 45 km study area will be identified. Effects will be considered in terms of the magnitude and type of change to the landscape, including its key characteristics as set out in published landscape character assessments. The sensitivity of the landscape will also be taken into account, acknowledging value placed on the landscape through designation.

5.5.4 Visual Effects

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

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

127. Assessment of the visual effects of the proposed Development will be based on analysis of the ZTVs, field studies and assessment of representative viewpoints. **Figure 5.1** shows a maximum turbine blade tip height (200 m) ZTV of an indicative turbine layout, which is subject to further refinement, with proposed assessment viewpoint locations. **Figure 5.3** shows the maximum hub height (125 m) ZTV for the same indicative turbine layout. The assessment viewpoint locations have been selected to provide a representative range of viewing distances and viewing experiences, including views from settlements, points of interest and sequential views from routes. The list of proposed viewpoints for assessment is set out in **Table 5.3**.

[30] SNH (2017), Siting and Designing Wind Farms in the Landscape, Version 3a.
[31] SNH (2017), Visual Representation of Windfarms, Version 2.2.

Table 5.3: Proposed Assessment Viewpoints

VP	Viewpoint Name	Grid Reference		Distance from Site	Direction from Site	Elevation	Reasons for Selection
1	Maybole	229372	610548	18.2 km	North	142 m	Representative of view from settlement and for road users: a local road which is also part of NCN 7 and a South Ayrshire Core Path.
2	Wardlaw Hill	236015	632535	40.2 km	North	145 m	A hilltop location and site of a former fort.
3	Doughty Hill	232937	598468	6.1 km	North	283 m	Representative of views for road users: a local road, within a South Ayrshire Scenic Area, which is part of NCN 7 and a South Ayrshire Core Path.
4	Burnfoot & Lethanhill Memorial	243481	610376	20.4 km	North	282 m	Upland, path-side location within an East Ayrshire Special Landscape Area, which allows for local recreational access and features heritage interest.
5	Carrick Forest Road	238487	593938	4.9 km	North East	433 m	Representative of views for road users: a local road, within a South Ayrshire Scenic Area and on the edge of The Merrick Wild Land Area.
6	Cairnsmore of Carsphairn	259612	597988	29.8 km	East	797 m	A hilltop location, visited by recreational walkers and within a Dumfries and Galloway Regional Scenic Area.
7	Corserine	249752	587068	14.2 km	East	814 m	A hilltop location, visited by recreational walkers and within a Dumfries and Galloway Regional Scenic Area.
8	The Merrick	242757	585549	6.7 km	East	843 m	A hilltop location, visited by recreational walkers, within a Dumfries and Galloway Regional Scenic Area and The Merrick Wild Land Area.
9	A75 Point Nets	247197	557682	27.0 km	South East	1 m	A coastal location, close to the settlement of Creetown and within a Dumfries and Galloway Regional Scenic Area, adjacent to the A75.
10	Challoch	238581	567518	14.5 km	South	30 m	Representative of views for road users and nearby residents, adjacent to the A714.
11	SUW (near Garchew)	233800	575874	5.1 km	South	87 m	Representative of views for recreational walkers and local residents, this is a local road and part of the Southern Upland Way and a Dumfries and Galloway Core Path.
12	Mochrum Loch	230614	554686	26.4 km	South	75 m	Representative of views for local residents, this is a local road within a Dumfries and Galloway Regional Scenic Area.
13	B7027 Loch Maberry	228587	575976	4.8 km	South	124 m	Representative of views for road users and local residents, this location is adjacent to the B7027 and within a South Ayrshire Scenic Area.

VP	Viewpoint Name	Grid Reference		Distance from Site	Direction from Site	Elevation	Reasons for Selection
14	Myroch Point	212390	541657	42.35 km	South	8 m	Coastal location adjacent to the A716, within a Dumfries and Galloway Regional Scenic Area, and part of the Mull of Galloway Trail.
15	Craig Airie Fell	223601	573661	10.2 km	South West	320 m	A hilltop location visited by recreational walkers: part of the Southern Upland Way.
16	Knockdolian	211336	584807	14.7 km	West	265 m	A hilltop location, within a South Ayrshire Scenic Area, with views along the River Stinchar valley.
17	Colmonell	214950	586065	8.4 km	West	51 m	Representative of views for residents and road users, adjacent to the B734 and within a Dumfries and Galloway Regional Scenic Area.
18	A714 Laigh Letterpin	220363	592381	6.7 km	West	122 m	Representative of views for road users and residents, adjacent to the A714 and within a South Ayrshire Scenic Area.
19	Byne Hill	217860	594550	10.0 km	West	214 m	Representative of views for recreational walkers, a coastal hilltop location, within a South Ayrshire Scenic Area.
20	Barr	227345	594050	3.1 km	North West	104 m	Representative of views from settlement and road users (B734), within a South Ayrshire Scenic Area.

5.5.5 Night Time Assessment

128. In the interests of aviation safety, turbines over 150 m to tip height are required to incorporate visible lighting. Consequently, an assessment of the effects of aviation lighting will be carried out as part of the LVIA and included as a Technical Appendix to the EIA Report. It is suggested that the assessment be based upon the preparation of night time visualisations from the following proposed assessment viewpoints (please refer to **Table 5.3**):

- Viewpoint 3: Doughty Hill;
- Viewpoint 5: Carrick Forest Road;
- Viewpoint 10: Challoch;
- Viewpoint 11: SUW (near Garchew); and
- Viewpoint 13: B7027 Loch Maberry.

129. The baseline night time context at these locations will be described, with the related sensitivity identified and the magnitude of change arising from the proposed aviation lighting assessed. The predicted effects of aviation lighting on the visual amenity at these viewpoints will be drawn on to provide general comment on the likely effects across the wider study area.

130. Given the location of the proposed Development site in relation to the Galloway Forest Dark Sky Park, the Night Time Assessment Appendix will consider potential implications upon this and findings will be summarised in the main chapter. As above, based on current design information, hub height lighting would not be visible from any of the promoted Dark Sky Park locations. However, this will be reviewed as the design of the proposed Development progresses.

5.5.6 Wild Land

131. The Wild Land Assessment will consider the effects on the attributes and qualities of the WLAs within 45 km as they are experienced from within, not outside, the WLA. An understanding of the sensitivity of the receptor will be combined with a judgement on the magnitude of the effect, as required by GLVIA3.

132. The method set out in the 'Wild Land Areas – Technical Guidance' (SNH, 2017) applies the broad approach and principles set out within GLVIA3. The process is described in the guidance and summarised as follows:

- Define the study area and scope of assessment;
- Establish the baseline by identifying the key attributes and qualities of the WLA, and those likely to be significantly affected by the proposal where there is potential visibility of the proposed Development from within WLA;
- Assess sensitivity by identifying which wild land qualities of the WLA, including the physical attributes and perceptual responses that contribute to those qualities, are most sensitive to the type and scale of change proposed;
- Assess the potential effects by considering how the size or scale of change, extent and duration may impact upon individual attributes and qualities and / or combinations of attributes and qualities, drawing out which physical attributes and perceptual responses will be affected and how; and
- Provide judgement on the significance of effect.

5.5.7 Cumulative LVIA (CLVIA)

133. The cumulative landscape and visual assessment (CLVIA) will be carried out in accordance with the principles contained in SNH's Assessing the Cumulative Impact of Onshore Wind Energy Developments (March 2012).

134. A review of patterns of development will be provided for operational, consented and proposed windfarms which are the subject of a valid planning application, up to 60 km from the site, following SNH guidance. **Figure 5.6** shows the current cumulative context within 60 km.

135. The CLVIA will focus on wind energy developments considered to have potential to give rise to significant cumulative effects. Turbines with blade tip height below 50 m and single turbines beyond 5 km from the site will not be included. **Figure 5.7** illustrates the locations of operational, consented, proposed and scoping (subject to design information in the public domain) windfarms within 45 km of the site.

136. 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 windfarms that may or may not be present in the landscape in the future (i.e. including windfarms that are consented but unbuilt, undetermined planning applications or currently at scoping). Consideration will also be given to 'total' cumulative effects (assessment which considers all current and future proposals, including the proposed Development). Windfarm proposals that have been refused but that are going to appeal will also be considered in the assessment.

5.5.8 Residential Visual Amenity Assessment (RVAA)

137. There is no published guidance for the method or best practice approach for completing an assessment of effects upon residential visual amenity of properties in the vicinity of a proposed windfarm. Subsequently, the RVAA will be based upon LUC's previous experience completing such assessments and included as a Technical Appendix to the EIA Report. The evaluation of potential significant effects upon residential properties will also be based upon professional judgement supported by site surveys (where public access is available), photography, aerial imagery and wireframes.

138. A detailed assessment of potential visual effects on residential properties within a 2 km study area (measured from the nearest proposed turbines) will be undertaken as follows:

- Production of a ZTV for the 2 km study area including the location of all residential properties (with reference) indicated as having theoretical visibility of the proposed Development;
- A detailed description of existing and proposed views from the primary orientation of residential properties (or groups of properties) will be prepared, taking consideration of the distance and direction to the proposed Development, proportion of attainable view occupied and the context/ baseline situation at the residence (for example number of floors or the presence of curtilage vegetation) to determine the nature of the predicted change to residential visual amenity.

139. The assessment will also be supported by baseline photography (from the nearest publicly accessible location) and a wireframe of the proposed Development.

5.6 Approach to Mitigation

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

5.7 Questions

Q5.1: Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, including cumulative effects?

Q5.2: Are there any comments on the proposed list of assessment viewpoint locations, including the proposed locations for night time visualisations?

Q5.3: Are there any windfarm sites, in addition to those shown on Figure 5.7, to consider as part of the cumulative assessment?

Q5.4: Has the consultee identified any further landscape or visual receptors to be considered within the assessment (i.e. where it is expected that significant effects may occur)?

Q5.5: Are there any other relevant consultees who should be consulted with respect to the LVIA?

6 Hydrology, Hydrogeology, Geology and Soils

6.1 Introduction

This Section of the report sets out the proposed approach to the assessment of the potential effects of the proposed Development on the water environment (which includes hydrology and hydrogeology) and soils and geology (which includes an assessment of the distribution and thickness of peat at site) during the construction and operation of the windfarm.

6.2 Existing Conditions

141. The site is likely to be located on moderate to deep peat within the largely afforested area, The peat underlying the Site has been extensively modified by forestry with only small pockets of Class 1 Priority Peatland remaining (as shown on the SNH Carbon and Peatland Map); however, they fall within the developable area.

142. The presence of numerous drains across the site (both within and outside forestry) may afford opportunities to re-use peat in drain restoration and elevating of water tables. If deep peat is localised, the most appropriate form of peat management may be to avoid siting infrastructure in the deep peat areas through careful and iterative infrastructure design.

143. The Site spans across the River Cree Catchment. There are a number of watercourses and lochs which are situated within or border the Site. These include Clauchrie Burn, Polmaddie Burn, Cairnfore Burn, Fardin Burn, Gowan's Burn and Loch Scalloch. The Water of Minnoch and Loch Moan are located to the east and south of the Site respectively. Flood Risk Management Maps of the Site indicate that there is a high risk of riverine flooding with small pockets of land at high risk from surface water flooding.

144. In 2017, SEPA classed the overall status for Clauchrie Burn as Poor (unchanged from 2007) while Fardin Burn's overall status was classed as Bad (Moderate from 2007-2012; Poor from 2013-2016)[32].

145. Groundwater dependent terrestrial ecosystems (GWDTEs) may be present and these will require evaluation in conjunction with the team's ecology specialists to minimise the potential effect and identify appropriate mitigation measures if necessary.

6.3 Proposed Surveys and Assessment Methodologies

6.3.1 Guidance

146. The following guidance documents will be used to inform the assessment of effects of the proposed Development on hydrology, hydrogeology, geology and soils including peat:

Geology, Peat and Soils

- Engineering in the Water Environment: Good Practice Guide, River Crossings (SEPA, 2010);
- Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (SEPA, 2017);
- Guidance on Developments on Peatland – Site Surveys (The Scottish Government, 2017);
- Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (The Scottish Government, 2017);
- Managing Geotechnical Risk: Improving Productivity in UK Building and Construction (Clayton, 2001);
- Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste (joint publication by Scottish Renewables and SEPA, 2014);
- Good Practice during Windfarm Construction (co-authored by Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland, and Historic Environment Scotland, 2015).

Hydrology and Hydrogeology

- EC Water Framework Directive (2000/60/EC);
- Scottish Planning Policy (SPP), Scottish Executive, June 2014;

[32] Scottish Environmental Protection Agency, 2017, Water Environment Hub. Available at: https://www.sepa.org.uk/data-visualisation/water-classification-hub/ [Accessed 08/02/19]

- Water Environment and Water Services (Scotland) Act 2003;
- Water Environment (Controlled Activities) Regulations 2011;
- Forests and Water Guidelines, Forestry Commission, 2012;
- Land Use Planning System – SEPA Guidance Note 31 (Guidance on Assessing Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems), Version 3, SEPA, 11/09/2017;
- Control of Water Pollution from Linear Construction Projects – Technical Guidance, C648, CIRIA, 2006;
- Good Practice during Windfarm Construction, Ver1, a joint publication by Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland and Historic Environment Scotland, Version 3, September 2015;
- The SuDS Manual C753, CIRIA, 2015;
- Environmental Good Practice on Site C692, CIRIA, 2010.

6.3.2 Proposed Study Area

147. The study area will primarily be based upon the land within the redline boundary (including the access track), with a wider study area of 5 km downstream of the site, for hydrologically relevant designations and water supply related surface water receptors (following watercourse pathways), and 1 km beyond the site boundary for groundwater receptors.

6.3.3 Desk and Field Survey Method

148. The potential effects from the proposed Development on ground conditions and the water environment will be assessed by completing a desk study and field investigation followed by an impact assessment, the processes of which are detailed below.

Desk Study

149. An initial desk study will be carried out to establish and validate baseline characteristics through the review of relevant and available information relating to soils, geology, hydrology, and hydrogeology. This includes the review of information such as groundwater resources, licensed and unlicensed groundwater and surface water abstractions, public and private water supplies, surface water flows, flooding, rainfall data, water quality and soil data.

150. An additional review of published geological maps, OS maps, aerial photographs and Site-specific data such as site investigation data, geological and hydrogeological reports, digital terrain models (slope plans) and geological literature will also be carried out.

151. Data on private water supply (PWS) will be requested from both D&GC and SAC Environmental Health Officers. Any potential PWS will also be investigated and verified using DTM data with questionnaires issued to the relevant properties in order to determine precise locations of infrastructure.

152. The desk study will identify sensitive features which may potentially be affected by the proposed Development and will confirm the geological, hydrogeological and hydrological environment.

Field Surveys

153. A detailed site visit and walkover survey will be carried out to:

- verify the information collected during the desk and baseline study;
- undertake a visual assessment of the main surface waters and verify private water supplies, including their intakes that could be affected by the proposed Development;
- identify drainage patterns, areas vulnerable to erosion or sediment deposition, and any pollution risks;
- visit any identified GWDTEs (in consultation with the project ecologists);
- prepare a schedule of potential watercourse crossings;
- inspect rock exposures, establish by probing an estimate overburden thicknesses (a probe is pushed vertically into the ground to refusal and the depth is recorded);
- confirm underlying substrate, based on the type of refusal of the probe (solid and abrupt refusal-rock, solid but less abrupt refusal with grinding or crunching sound-sand or gravel, rapid and firm refusal-clay, gradual refusal-dense peat or soft clay);
- allow appreciation of the site, determining gradients, possible borrow pits, access routes, ground conditions, etc., and to assess the relative location of all the components of the proposed Development;

- complete a probing exercise using a 100 m grid that will identify areas of thick peat that will help to inform the design of the proposed Development (by inserting a probe into the ground and pushing into the peat to refusal then the depth is recorded); and
- confirm the distribution and depth of peat across areas of the site being considered for development only.

154. Peat probing completed as part of the initial field surveys referred to above will continue to be developed to inform the assessment of effects and more detailed design work. The following works will be carried out:

- peat depths within the proposed turbine area will be obtained using a 50 m grid where access is possible (the probing will also provide information of the substrate below the peat);
- a limited (in terms of aerial extent) geomorphological mapping exercise will be undertaken to link the topographic features with the underlying geology and to visit those areas of the Site that may be identified as potentially at risk from peat slide;
- the thickness of the peat will be established by probing and the underlying sub-strata confirmed by inspection of watercourses;
- the investigation will look at turbine locations, access routes and borrow pits for signs of existing or potential peat instability; and
- output from the field survey will comprise a record of investigation locations and summary of peat depths recorded.

155. When the design layout has been finalised, the hydrology specialist will return to site and carry out further peat probing along the infrastructure at 50 m and undertake 10 m crosshair probing at turbine locations. The further peat probing will ensure that all infrastructure locations and routes have sufficient peat depth information to support related studies on peat instability and peat excavation and re-use.

6.4 Assessment Method

156. The information obtained from the review of existing data, site surveys and guidance documentation will inform the assessment of any potential effects associated with the proposed Development. In the event that potential likely significant effects are identified, mitigation measures will be proposed.

157. The sensitivity of the receiving environment (i.e. the baseline quality of the receiving environment as well as its ability to absorb the effect without perceptible change) and the magnitude of impacts will each be considered through a set of pre-defined criteria. The combination of these two factors will define the significance of the effect, which will then be categorised into varying level of significance. This approach provides a mechanism for identifying the areas where mitigation measures are required, and for identifying mitigation measures appropriate to the risk presented by the proposed Development. It also allows effort to be focused on reducing risk where the greatest benefit may result. The assessment will consider the potential effects upon on surface water and groundwater quality, modification of surface water drainage patterns, private water supplies and soils arising from the construction and operation of the proposed Development.

158. A peat landslide hazard and risk assessment (PLHRA) will be carried out in accordance with the Scottish Government Peat Landslide Hazard & Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, 2017). The PLHRA will be informed by information gathered from peat depth models, site walkovers and detailed geomorphological mapping and terrain classification. The assessment will utilise a combined qualitative (contributory factor) and quantitative (factor of safety) approach to assess the likelihood of peat landslides, the consequences should peat landslide occur and appropriate mitigation measures based on calculated risk levels.

159. An assessment of Ground Water Dependent Terrestrial Ecosystems (GWDTEs) will also be undertaken based on NVC mapping undertaken by ecologists. If significant areas of moderate or high GWDTEs are located in proximity to proposed infrastructure, additional studies would be undertaken to define whether these are truly groundwater dependent, refine their extent, conceptualise the hydrogeology and assess if there are any potential effects to them. Where possible, the design will be modified to minimise potential effects on these features.

160. A peat management plan (PMP) will be prepared in accordance with ‘Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste’ (Scottish Renewables, SEPA, 2012). The PMP will be informed by peat depth probing as described above, and by a full site appraisal of potential re-use opportunities (e.g. mapping of drainage ditches, informal and industrial peat turbary, and landscaping requirements associated with infrastructure). Where

opportunities are identified to integrate the PMP with wider environmental enhancement measures, for example for peat restoration, the PMP will indicate the volume and type of peat (acrotelm / catotelm) to be used for this activity.

161. The assessment will also consider potential cumulative effects associated with other windfarm developments within 5 km of the site and within the same surface water catchments.

6.5 Potential Effects

162. Potential effects associated with the construction and/or operation of the proposed Development, prior to implementation of any avoidance or mitigation measures, include:

- Pollution of public/private drinking water supplies and high levels of suspended solids and turbidity in watercourses caused by sedimentation from excavated/stockpiled material during construction;
- Pollution of surface water and groundwater, including drinking water supplies, through operation of machinery (e.g. spillage of fuels, oils etc.) during construction and as a result of maintenance activities associated with the operation of the site;
- Modifications to natural drainage patterns, changes to runoff rates and volumes and a consequent increase in flood risk during construction and operation of the proposed Development due to increased areas of temporary and permanent hardstanding;
- Loss of/disturbance to peat/carbon rich soils;
- Loss of/disruption to potential GWDTEs;
- Reductions in natural flows arising should any temporary abstractions be required; and
- Localised flooding and bank erosion caused by impediments to flow, particularly in conditions of high discharge.

163. Consideration will be given to whether it is appropriate to scope out operational effects from further consideration. Good practice measures to be adopted during construction will be maintained during operation, which will have a lesser effect on the environment. This will be considered further as the project progresses.

6.6 Approach to Mitigation

164. Given SPR is committed to, and has prior experience of, implementing accepted good practice during construction and operation, and the current regulatory context, any potential effects on soils, geology and the water environment identified by the assessment will be addressed and mitigated by the conceptual site design and the application of best practice guidance to prevent, reduce or offset effects.

165. Consequently, a number of measures are not considered to be mitigation as such, but rather an integral part of the design and construction process. It is proposed that these will be taken into account prior to assessing the likely effects of the proposed Development. However, where appropriate, more tailored mitigation measures will be identified prior to determining the likely significance of residual effects.

166. Specific measures will also be detailed within the Draft Construction Environmental Management Plan (CEMP) and will include as a minimum:

- Adoption of best practice pollution prevention, drainage control and waste management procedures;
- Control of drainage and sediment runoff from excavation areas and access tracks;
- Control of drainage and sediment runoff during the construction of watercourse crossings;
- Control of concrete pouring; and
- Appropriate design of foundation installation, taking into account the presence of peat across the site, the management of soil water levels and the potential to generate excessive quantities of groundwater contaminated sediments.

167. Depending on the extent of peat across the site, it may not be possible to avoid the placement of infrastructure on areas of deep peat. However, the use of a development-wide peat depth model will enable the areas of deepest peat to be considered during layout design, and where possible avoided (subject to other key environmental constraints). Once fixed, there may be opportunities to reduce the amount of peat excavated according to choice of design (e.g. floating versus excavated track and piled versus gravity turbine foundation). While some excavated peat will be used in landscaping, every effort will be made to minimise this volume and to re-use in restoration or in support of wider environmental enhancement measures where opportunities to do so can be identified.

168. The afforested nature of the site may enable the re-use of peat to infill / block forest drains, and this alongside careful forest management proposals may enable production of an enhanced Peat Management Plan (PMP)/Habitat Management Plan

(HMP). Careful integration of the PMP and Peat Landslide Hazard and Risk Assessment (PLHRA) will be required to ensure that peat management (stockpiling, restoration proposals) do not reduce peat stability in critical areas.

169. Both infrastructure specific mitigation and site-wide good practice measures will be specified within the PLHRA and carried forward into the CEMP and Geotechnical Risk Register (GRR). In addition to mitigation through design of the layout, implementation of good practice construction measures and controls included within a CEMP, as noted above, it is envisaged that localised mitigation measures may be required and these will be identified through the EIA process.

6.7 Questions

Q6.1: Are the survey methods for assessing likely effects on peat considered to be appropriate?

Q6.2: Is it appropriate to consider scoping out operational effects on hydrology?

7 Ecology

7.1 Introduction

170. This section of the Scoping Report details the proposed approach to the ecological surveys and assessment which will be undertaken in accordance with current best practice guidelines. The ecology chapter of the EIA will assess the potential effects on ecological features as a result of the proposed Development, and will detail the proposed mitigation and/or compensation measures that will be implemented to prevent, reduce, or offset the effects.

7.2 Existing Conditions

171. Using Ordinance Survey (OS) mapping and aerial photography, the site is determined to comprise large blocks of plantation woodland of varying stages; including felled, re-planted and established woodland, and an open upland area to the north. A number of watercourses, and their associated tributaries, were identified within the Site, connecting to a number of waterbodies located in the local area.

7.2.1 Designated sites

172. **Table 7.1** details statutory designated sites[33], designated for their ecological interest, which are located within 5 km of the Site. This data is also presented within **Figure 7.1**.

Table 7.1: Designated Sites of Ecological Interest Located within 5 km of the Site

Site Name	Designation	Distance and Direction From Site	Designated Features
Feoch Meadows	Site of Special Scientific Interest (SSSI)	4 km west	Fen meadow; lowland neutral grassland.
Merrick Kells	SSSI	4.8 km east	Blanket bog; beetle assemblages.
Merrick Kells	Special Area of Conservation (SAC)	4.8 km east	Acid peat-stained lakes and ponds; acidic scree.

173. No non-statutory designated sites are located within 2 km of the Site; however, one pocket of woodland listed on the Ancient Woodland Inventory (AWI) is located approximately 1.4 km north of the Site.

7.3 Proposed Surveys and Assessment Methodologies

7.3.1 Guidance

All survey methods, in addition to assessment methods, will be undertaken in accordance with the following best practice guidelines:

- SNH (2019) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation;
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, freshwater, coastal and marine. Chartered Institute of Ecology and Environmental Management, Winchester;
- Scottish Badgers (2018) Surveying for Badgers: Good practice guidelines. Version 1;
- SEPA (2017) LUPS Guidance Note 4: Planning guidance on on-shore windfarm developments;
- Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologist: Good Practice Guidelines (3rd edition). The Bat Conservation Trust, London;
- Scottish Natural Heritage (2016) Badgers. Available online at http://www.snh.gov.uk/about-scotlands-nature/wildlife-and-you/badgers/;
- Dean, M., Strachan, R., Gow, D., and Andrew, R. (2016) The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Scheme). The Mammal Society, London;
- SEPA (2014) LUPS Guidance Note 31: Guidance on Assessing the Impacts of Windfarm Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems;
- Cresswell, W. J., Birks, J. D. S., Dean, M., Pacheco, M., Trewhella, W. J., Wells, D. and Wray, S. (2012) UK BAP Mammals Interim Guidance for Survey Methodologies, Impact Assessment and Mitigations. The Mammal Society, Southampton;
- Hundt, L. (2012) Bat Surveys – Good Practice Guidelines. 2nd edition. Bat Conservation Trust, London;

[33] SNH Sitelink. Available online at https://sitelink.nature.scot/map [Accessed February 2019]

- JNCC (2010) Handbook for Phase 1 habitat survey: a technique for environment audit. Peterborough;
- Harris, S., and Yalden, D., (2008) Mammals of the British Isles: Handbook. 4th edition;
- Scottish Fisheries Co-ordination Centre (2007) Habitat Surveys Training Course Manual;
- Rodwell, J. S., (2006) National Vegetation Classification: User's handbook. Peterborough;
- Joint Nature Conservation Committee (JNCC) (2004) Common Standards Monitoring Guidance for Reptiles and Amphibians. Version February 2004. JNCC, Peterborough;
- Sargent, G. and Morris, P., (2003) How to Find and Identify Mammals. The Mammal Society, London;
- Bang, P., and Dahlstom, P., (2001) Animal Tracks and Signs. Oxford University Press, Oxford;
- Rodwell, J. S., (1991, 1992, 1998, 2000) British Plant Communities. Vol 1-5. JNCC, Cambridge; and,
- Scottish Natural Heritage. Protected Species Advice for Developers. Available online at https://www.nature.scot/professional-advice/planning-and-development/natural-heritage-advice-planners-and-developers/planning-and-development-protected-animals.

7.3.2 Proposed Study Area

174. A desk study will be undertaken, to obtain baseline historic information relating to protected flora and fauna on all habitats located within the Site, up to and including a 2 km buffer. This will be extended to 5 km for records of bat species (further extended to 10 km for bats considered of high risk).

175. The proposed study areas for field surveys for protected species and habitats will be determined in accordance with best practice guidelines. Details of the proposed study areas are provided in **Table 7.2**, below.

Table 7.2: Proposed Study Areas for Ecological Field Surveys

Ecological Feature	Buffer Size to be Applied to Site Boundary	Buffer Area Reference	Survey Guidance
Habitats (Phase 1 habitat survey and National Vegetation Classification (NVC))	250 m	Habitat Survey Area	SEPA LUPS Guidance Note 31
Bats	200 m + rotor radius	Bat Survey Area	SNH (2019) Bats and Onshore Wind Turbines
Badger	100 m	Badger Survey Area	SNH Protected Species Advice for Developers: Badgers[34]
Otter	200 m	Otter Survey Area	SNH Protected Species Advice for Developers: Otter[35]
Pine Marten	250 m	Pine Marten Survey Area	SNH Protected Species Advice for Developers: Pine marten[36]
Water Vole	50 m	Water Vole and Red Squirrel Survey Area	SNH Protected Species Advice for Developers: Water vole[37]

[34] SNH. Protected Species Advice for Developers: Badger. Available online at https://www.nature.scot/sites/default/files/2019-01/Species%20Planning%20Advice%20Project%20-%20badger.pdf [Accessed February 2018]
[35] SNH. Protected Species Advice for Developers: Otter. Available online at https://www.nature.scot/sites/default/files/2019-01/Species%20Planning%20Advice%20Project%20-%20otter.pdf (Accessed February 2018)
[36] SNH. Protected Species Advice for Developers: Pine Marten. Available online at https://www.nature.scot/sites/default/files/2019-01/Species%20Planning%20Advice%20Project%20-%20pine%20marten.pdf (Accessed February 2018)

Ecological Feature	Buffer Size to be Applied to Site Boundary	Buffer Area Reference	Survey Guidance
Red Squirrel			SNH Protected Species Advice for Developers: Red squirrel[38]

7.3.3 Desk and Field Survey Methods

7.3.3.1 Desk Survey Methods

176. Organisations will be contacted with the aim of obtaining ecological records, located within the relevant study area, to provide wider context of the ecological value of the local area. The following organisations will be contacted:

- Local biological recording group, if present;
- Local bat group, if present;
- Local badger group or Scottish Badgers; and,
- Local red squirrel group or Forestry and Land Scotland.

177. Further to this, local records will be sought using freely available, online databases.

7.3.3.2 Field Survey Methods

7.3.3.2.1 Habitats

178. A Phase 1 Habitat Survey will be undertaken on all habitats located within Habitat Survey Area, in accordance with best practice[39] survey guidelines. The survey will aim to broadly map natural and semi-natural habitats with particular emphasis on identifying habitats of conservation interest (such as Annex 1 priority habitats, Scottish Biodiversity List (SBL) priority habitats, and potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs)).

179. Where habitats of conservation interest are recorded, further, more detailed National Vegetation Classification (NVC) surveys will be undertaken to provide an understanding of floral composition and characteristic of habitats. NVC surveys will be undertaken in accordance with published Rodwell guidance[40], making use of floristic tables where appropriate. Target notes, species lists and photographs will be taken to provide a visual context and to aid the analysis and assessment.

7.3.3.2.2 Bats

180. A suite of bat surveys will be undertaken on all habitats within the Bat Survey Area in accordance with the 2019 SNH Bats and Onshore Wind Turbines guidance[41]. Surveys will include:

- **Roost surveys:** to identify key features which could support maternity roosts and significant hibernation and/or swarming sites. In the event that suitable roosting sites are identified, further surveys may be required to identify presence or absence, and species, numbers, roost function and flightlines, where presence is confirmed; and,
- **Ground-level static surveys:** to be conducted using full spectrum automatic detectors throughout the developable area. Habitats within the developable area are considered of limited suitability to support bats, comprising coniferous plantation woodland. In addition, an initial desk study to obtain existing baseline bat records identified low levels of bat activity within 5 km of the Site. Therefore, the survey effort will reflect that of a low-risk site (i.e. one survey session per season). However, data will be analysed at the earliest opportunity with the aim of identifying high-risk species and/or high numbers of bat species, and amending the survey effort, where necessary. Surveys will comprise the deployment of detectors for a minimum of 10 nights during each survey season of spring (April-May), summer (June – mid-August) and autumn (mid-August – October) and will be focused in those parts of the site where turbines are most likely to be located.

[37] SNH. Protected Species Advice for Developers: Water Vole. Available online at https://www.nature.scot/sites/default/files/2019-01/Species%20Planning%20Advice%20Project%20-%20water%20vole_0.pdf (Accessed February 2018)
[38] SNH. Protected Species Advice for Developers: Red Squirrel. Available online at https://www.nature.scot/sites/default/files/2019-01/Species%20Planning%20Advice%20Project%20-%20red%20squirrel.pdf (Accessed February 2018)
[39] JNCC (2010) Handbook for Phase 1 Habitat Survey - A Technique for Environmental Audit. Peterburough
[40] Rodwell, J. S., (1991, 1992, 1998, 2000) British Plant Communities. Vol 1-5. JNCC, Cambridge
[41] SNH (2019) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation

Numbers of detectors will depend on number of turbines; a development of more than ten turbines will require ten detectors plus a third of additional potential turbine sites up to a maximum of forty detectors.

181. Transects provide bat activity as a snap-shot in time and are undertaken to complement data gathered from the static surveys. Due to the limited value transects add to the overall assessment, they have not been proposed within this Scoping Report. It is considered likely that the deployment of sufficient numbers of static detectors will enable a robust and accurate assessment of potential impacts to bats as a result of the development.

182. In addition, we do not propose to undertake static surveys at height as it is unlikely to increase the number of bat species recorded from those recorded at ground level using automated/static detectors.

7.3.3.2.3 Badger

183. The survey will assess the suitability of habitats, located within the Badger Survey Area, to support the species in accordance with recognised best practice[42]. Suitable habitat may comprise areas with shelter (such as scrub or woodland) located on free-draining soil, with connectivity to suitable foraging grounds (such as grazed/managed grasslands or arable fields). The badger survey will also aim to record evidence of badger including; sightings, foraging remains, hair and footprints, dung pits and latrines; and, setts.

Where a badger sett is recorded, it will be classified into sett categories dependant on a variety of characteristics including number of entrances, recent use and proximity to other setts in accordance with best practice.

7.3.3.2.4 Otter

184. The otter survey will aim to assess the suitability of all watercourses and waterbodies, located within the Otter Survey Area to support populations. Watercourses and waterbodies will be categorised into four suitability classifications based on a variety of characteristics including wet width, water depth, suitable foraging resources, suitable resting sites and connectivity to suitable habitats. Descriptions of suitability are provided in **Table 7.3**, below.

Table 7.3: Otter Habitat Suitability Description

Suitability	Description
Optimal	Typically larger, main watercourses (at least 1 m in wet width). These watercourses contain flow at all times of year (not just in spate) and will support foraging resources (such as amphibians and fish). Rocky banksides or vegetation overhangs will provide suitable resting places, and large boulders will provide ideal spraining sites.
Sub-optimal	Generally a substantial watercourse, greater than 0.5 m in width. These watercourses will comprise stone and rock substrate, with occasional boulders. There may be limited resting opportunities, however vegetation overhangs, and occasional rocky crevices may be present.
Suitable	These watercourses may be sporadically used by otter, with connectivity to optimal or sub-optimal watercourses. These watercourses themselves will typically be no wider than 0.5 m, with a relatively shallow flow of water. Substrate may comprise stone and earth and banksides may comprise grassland.
Unsuitable	Generally will be a narrow channel, which may contain very little water. The channel may be very densely vegetated with limited suitability to support otter foraging resources.

185. Where habitats are considered suitable, these will be surveyed in detail to record the presence of otter. Surveys will be undertaken in accordance with recognised best practice and will aim to identify presence such as sightings, spraint, feeding remains, prints, tracks and slides, and resting sites. Where resting sites are recorded, these will be assessed for their potential to be used as a breeding or natal site in accordance with best practice.

7.3.3.2.5 Water Vole

186. The aim of the water vole survey is to assess the suitability for all watercourses within the Water Vole Survey Area to support populations of water vole[43]. Watercourses will be classified into suitability depending on a variety of characteristics including

[42] Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1.
[43] Dean, M., Strachan, R., Gow, D., and Andrew, R. (2016) The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Scheme). The Mammal Society, London

bankside composition, substrate, water flow rate and bankside vegetation. Descriptions of watercourse suitability categories are detailed in **Table 7.4**, below.

187. Where watercourses are considered suitable, these will be surveyed with the aim of identifying and recording presence of water vole. Signs searched for will include feeding remains, foot prints, tunnels, latrines and burrows.

Table 7.4: Water Vole Habitat Suitability Description

Suitability	Description
Optimal	These watercourses will typically have a very slow flow rate, and will comprise peaty bankside and substrate. Banksides will also comprise tussocky vegetation, including rushes (a common food source of water vole). The watercourses will generally be deep to enable predatory escape.
Sub-optimal	Typically these watercourses will have a relatively slow flow rate. Banksides may be peaty however may not be very steep therefore not enabling burrows to account for varying water levels. Rushes will be present, providing foraging resource.
Suitable	Banksides may comprise earth allowing for some burrowing. Herbaceous vegetation will generally be lacking, and invertebrates, amphibians and fish will be sparse. Flow rate will be slow to moderate, however watercourse may comprise rocky substrate.
Unsuitable	Watercourses will comprise rock and stone substrate and banksides. The flow rate will be moderate or fast flowing and rushes will be absent from bankside vegetation Watercourses may also be heavily poached by livestock.
** Terrestrial populations of water vole have been recorded in habitats with no connectivity to wetland habitats. These habitats suitability classifications do not apply in these cases.*	

7.3.3.2.6 Pine Marten

188. A pine marten survey will be undertaken on all habitats within the Pine Marten Survey Area in accordance with best practice guidance[44]. The survey will assess habitat suitability to support populations of pine marten. Suitable habitat will include mature woodland and rocky crevices. Where suitable habitat is recorded, evidence of pine marten will be searched for including feeding remains, scat, footprints and dens.

7.3.3.2.7 Red Squirrel

189. A red squirrel survey will be undertaken in accordance with best practice guidelines[45] and aimed to assess suitability of habitats located within the Red Squirrel Survey Area to support the species. Suitable habitat includes cone-bearing coniferous plantation woodland located on free-draining soils, and connectivity to similarly suitable habitat. Where suitable habitat is recorded, this will be searched for evidence of red squirrel, including, sightings, feeding remains and dreys (resting sites).

7.3.3.2.8 Amphibians and Reptiles

190. Review of aerial imagery of the site appears to show rough and tussock grassland and areas of clear-fell woodland which is considered suitable habitat for amphibians and reptiles. As a result, their presence on site is assumed. A watching brief will be maintained throughout all field surveys to record direct observations of the amphibians in accordance with current best practice[46].

7.3.3.2.9 Surveys Scoped Out

191. Great crested newt surveys have been scoped out of the proposed surveys due to the upland nature of the site and the acidic quality of the aquatic habitats which are considered unsuitable to support the species. Further to this, no records of GCN were located within 5 km of the Site during a high-level desk study. It is considered unlikely that the species will be present within the Site and the surrounding habitats.

[44] Cresswell, W. J., Birks, J. D. S., Dean, M., Pacheco, M., Trewhella, W. J., Wells, D. and Wray, S. (2012) UK BAP Mammals Interim Guidance for Survey Methodologies, Impact Assessment and Mitigations. The Mammal Society, Southampton
[45] Forestry Commission (2009) Practical techniques for surveying and monitoring squirrels
[46] Froglife (1999) Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife Advice Sheet 10. Froglife, Halesworth.

192. No records of designated sites, designated for their fish or aquatic fauna, were identified within 5 km of the Site. The Development will be designed in accordance with relevant hydrological legislation (such as EC Water Framework Directive (2000/60/EC) and The Water Environment (Controlled Activities)) which will aim to reduce the potential risk of impacts to watercourses as a result of the Development. Further to this, mitigation measures will be put in place in accordance with SEPA's Guidelines for Pollution Prevention (GPPs) to minimise the risk of potential impacts to watercourses during construction of the Development (as detailed in Section 168, above). The results of field surveys, to assess watercourse suitability, or fish populations, are considered unlikely to change the approach to the assessment or the proposed measures put in place to protect the watercourse and as result, It is therefore considered that field surveys to assess watercourse suitability, or fish populations, will not be required to inform the assessment and therefore no surveys have been proposed within this Scoping Report.

7.4 Assessment Method

193. The assessment of potential effects on ecological interests will be based on CIEEM (2018) guidelines and will take into account relevant national and European legislation and policy. The assessment involves the following stages:

- Identifying the potential effects of the proposed Development;
- Accounting for potential effects in the design process as appropriate;
- Considering the likelihood of occurrence of remaining potential effects where appropriate;
- Defining the Nature Conservation Value of the important ecological features present;
- Establishing the magnitude of the likely effects (both spatial and temporal);
- Based on the above information, making a professional judgement as to whether or not the resultant effect is significant with respect to the EIA regulations;
- If a potential effect is determined to be significant and cannot be avoided through design changes, measures to mitigate or compensate for the effect are suggested where required;
- If required, considering opportunities for enhancement; and,
- Considering residual effects after mitigation, compensation or enhancement.

194. Nature Conservation Value is defined on the basis of the geographic scale and it is necessary to consider each receptor's conservation status, its distribution and its population trend (species) based on available historical records. The significance of potential effects is determined by integrating the assessments of Nature Conservation Value and Magnitude in a reasoned way.

195. A set of pre-defined significance criteria will be used in assessing the effects of the proposed Development on ecology. It requires to be established whether there will be any effects which will be sufficient to adversely affect the receptor to the extent that its conservation status deteriorates above and beyond that which would be expected should baseline conditions remain (i.e. the 'do nothing' scenario). Furthermore, these predictions will be given with a level of confidence relative to the effect being assessed where required.

196. An assessment of cumulative effects will be undertaken in accordance with CIEEM guidelines. Cumulative effects require the assessment of effects when the proposed Development is considered in combination with other windfarms. The context in which these effects are considered is heavily dependent on the ecology of the receptor assessed, but in all cases will involve consideration of the cumulative effects upon the receptor extents/populations relevant to that receptor.

7.5 Potential Effects

197. The assessment will concentrate on the effects of construction and operation of the proposed Development upon those ecological receptors identified during survey work and as advised by consultees. In general, effects upon the following will be assessed:

- Terrestrial habitats: effects include direct (i.e. derived from land-take) and indirect (i.e. changes caused by effects to supporting systems such as groundwater or overland flow);
- Aquatic habitats: effects are limited to the ecological effects of changes in water conditions through potential pollution effects. Hydrological effects are considered in the appropriate Chapter; and,
- Protected species and bats: effects considered include direct (i.e. loss of life as a result of the proposed Development; loss of key habitat; barrier effects preventing movement to/from key habitats; and general disturbance) and indirect (i.e. loss/changes of/to food resources; population fragmentation; degradation of key habitat, e.g. as a result of pollution).

7.6 Approach to Mitigation

198. Significant effects upon ecological receptors will be avoided or minimised where possible through the conceptual design process. Good practice during construction and operation of the proposed Development would also be implemented.

199. Where likely significant effects cannot be mitigated against, measures to prevent and reduce these adverse effects will be proposed.

7.7 Questions

Q7.1: Do consultees agree with the proposed survey approach to be undertaken?

Q7.2: Do consultees agree with the proposed assessment of the potential effects as a result of the Development?

Q7.3: Do consultees agree with those surveys which have been scoped out?

8 Ornithology

8.1 Introduction

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

201. The assessment will be undertaken in line with best practice and relevant European and national legislation, policy and guidance.

8.2 Existing Conditions

8.2.1 Designated Sites

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

- Glen App and Galloway Moors Special Protection Area (SPA), underpinned by Glen App and Galloway Moors Site of Special Scientific Interest (SSSI), **Table 8.1**;
- Merrick Kells SSSI; and
- Bogton Loch SSSI.

203. Glen App and Galloway Moors SPA is approximately 14 km to the south west of the Site boundary and is designated for breeding hen harrier (**Table 8.1**). On the basis of the Scottish Natural Heritage (SNH) guidance (2016[47]) and considering the afforested nature of the majority of the habitat within the Site boundary, connectivity between the proposed Development and the Glen App and Galloway Moors SPA is considered unlikely. It is therefore proposed that the Glen App and Galloway Moors SPA will be scoped out of the EIA.

204. Merrick Kells SSSI is approximately 4.7 km to the east of the Site boundary and is designated for an upland breeding bird assemblage. The SSSI Citation does not supply detail on the bird species present, however following consultation with SNH the key bird species included in the breeding bird assemblage are: black grouse, black-throated diver, golden plover, common sandpiper, curlew, golden eagle, greylag goose, peregrine falcon and snipe. On the basis of the SNH guidance (2016[47]), there is some potential for connectivity between the proposed Development and the Merrick Kells SSSI for black-throated diver (foraging range likely to be less than 10km) and golden eagle (6 km core foraging range[47]). Suitable habitat for breeding black-throated diver is likely to be minimal both within the Merrick Kells SSSI and within the proposed Development and connectivity is therefore considered to be minimal. Connectivity for golden eagle is also considered to be minimal considering the afforested nature of proposed Development. Furthermore, the South of Scotland Golden Eagle Project has confirmed that to date, there has been no tagged golden eagle activity around Clauchrie (*Pers comm.* 31st January 2019).

205. Bogton Loch SSSI is only just within 20 km of the Site boundary. Bogton Loch SSSI is designated for a breeding bird assemblage, however the only non-passerine bird species noted in the SSSI Citation is a small black-headed gull colony. On the basis of the Scottish Natural Heritage (SNH) guidance (2016[47] above), there is considered to be no potential for connectivity between the SSSI and the proposed Development. It is therefore proposed that the Bogton Loch SSSI will be scoped out of the EIA.

Table 8.1: Qualifying Features of the Glen App and Galloway Moors SPA (underpinned by the Glen App and Galloway Moors SSSI), Merrick Kells SSSI and Bogton Loch SSSI.

Site	Feature	Qualifying Feature Category	Condition	Description	Connectivity Distance (SNH 2016[47])
Glen App and Galloway Moors	Hen harrier *Circus cyaneus* Breeding	SPA, SSSI	July 2008: Favourable maintained	Breeding population of national and European importance: annual average of 10 breeding females (1994-98), representing 2% of GB population.	2 km

[47] SNH (2016) Assessing connectivity with Special Protection Areas (SPAs).

Merrick Kells	Breeding bird assemblage	SSSI	June 2010: Favourable maintained	Most important and varied system of patterned blanket bog in Britain supporting a breeding bird assemblage that includes: black grouse, black-throated diver, golden plover, common sandpiper, curlew, golden eagle, greylag goose, peregrine falcon and snipe.	N/A
Bogton Loch	Breeding bird assemblage	SSSI	June 2009: Favourable maintained	Freshwater loch with an extensive range of associated wetland communities supporting a breeding bird assemblage that includes: song thrush, grasshopper warbler, spotted flycatcher, willow tit, reed bunting and occasionally a small colony of black-headed gull.	N/A

8.2.2 Field Surveys

206. The following surveys have been undertaken to date for the proposed Development. The surveys have been undertaken in line with the appropriate SNH (2010[48], 2013[49], 2014[50] and 2017[51]) guidance with additional guidance from Gilbert *et al.* (1998[52]), Hardey *et al.* (2013[53]) and SNH (2007[54]) consulted where relevant and survey areas[55] are detailed below.

- Flight activity (Vantage Point, VP) surveys – November 2012 to March 2014, April to August 2018;
- Scarce breeding bird[56] surveys, 2 km survey area – May to July 2013, April to August 2014, January to August 2015, March to August 2017, April to August 2018;
- Black grouse surveys, 1.5 km survey area – April to May 2013, 2014 and 2015;
- Upland breeding bird surveys, 500 m survey area – April to July 2013, April to June 2018; and
- Winter walkover surveys, 500 m survey area – November 2012 to February 2013, December 2013 to January 2014, November to December 2018.

207. The following surveys will be completed between March and August 2019, following relevant guidance:

- Barn owl monitoring – March and April 2019; and
- Scarce breeding bird surveys – April to August 2019.

8.2.3 Ornithological Activity

208. The field surveys have revealed an assemblage of species typical of forested habitats in southern Scotland. Commercial Sitka spruce forestry plantation (considered to be of low ornithological value) is the dominant habitat within the Site.

209. As of the end of December 2018, ten Annex 1/Schedule 1 species have been recorded on Site (barn owl, golden eagle, golden plover, goshawk, hen harrier, honey buzzard, merlin, osprey, red kite and short-eared owl), of which only osprey and barn owl have been identified to be breeding or potentially breeding within the 2 km survey area.

210. In addition, three Birds of Conservation Concern (BoCC, Eaton *et al.* 2015[57]) Red listed species (black grouse, curlew and woodcock) commonly considered as target species have been recorded.

[48] SNH (December 2010) Survey Methods for use in Assessing the Impacts of Onshore Windfarms on Bird Communities.
[49] SNH (August 2013) Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms.
[50] SNH (May 2014) Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms.
[51] SNH (March 2017) Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms.
[52] Gilbert, G., Gibbons, D. W. and Evans, J. (1998) Bird Monitoring Methods. RSPB, Sandy.
[53] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013) Raptors: a field guide for surveys and monitoring (3rd edition). The Stationery Office, Edinburgh.
[54] SNH (2007) Black grouse survey methodology.
[55] Please note 'survey area' is defined as the area covered by each survey type at the time of survey whereas 'study area' is defined as the area of consideration of effects on each species at the time of assessment.
[56] Scarce breeding birds are those listed on Annex 1 of the EU Birds Directive or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and in the case of the proposed Development consists of any raptor and owl species listed on either Annex 1 or Schedule 1.

211. Targeted surveys for the breeding osprey located within the 2 km survey area were undertaken during the 2014, 2015 and 2017 breeding seasons. In addition to establishing breeding success, surveys aimed to identify regular flight paths to and from the nest in order to ascertain whether osprey would be commuting across the Site. Across all the survey years, osprey were only recorded overflying the Site on two occasions with the majority of the flights heading south west and north east from the nest (i.e. away from the proposed Development). In the context of the wider area, this flight direction is not unexpected as the distribution of suitable fishing waterbodies is focussed to the east and south of the Site (from Loch Doon and Loch Brandon in the north east to Loch Trool and Loch Maeberry in the south). No evidence of osprey fishing on Loch Scalloch (located within the Site boundary) was recorded.

212. Goshawk were recorded during scarce breeding bird surveys in the 2014 (one record), 2015 (one record), 2017 (two records) and 2018 (three records) breeding seasons with breeding behaviour (displaying and copulating) observed during the 2017 breeding season and an adult observed carrying prey in June 2018. Goshawk was also recorded on 16 occasions during flight activity surveys during the 2018 breeding season. Whilst no active nests were located in any years, the forest within and surrounding the Site provides suitable habitat for breeding and it is likely that a goshawk territory is present within 2 km of the Site.

213. Four locations within 1 km of the Site boundary were identified to have some barn owl suitability (low to moderate) with barn owl infrequently recorded using three of these locations for roosting. At two sites, potential breeding activity was recorded in 2013, 2014, 2015 and 2017, but breeding was not confirmed. No barn owls were recorded in 2018.

214. Hen harrier, honey buzzard, merlin, red kite and short-eared owl were all infrequently recorded within the survey area; however no signs of breeding were recorded across the surveys in 2013, 2014, 2015, 2017 and 2018. A single juvenile golden eagle was recorded over Loch Moan in June 2013 and there have been no further sightings or signs of a territory being established within 2 km of the Site. Furthermore, the South of Scotland Golden Eagle Project has confirmed that to date, there has been no tagged golden eagle activity around Clauchrie (*Pers comm.* 31st January 2019).

215. Black grouse were only recorded during the 2015 and 2017 breeding seasons (in addition, birds were heard outwith the survey area on two occasions during the 2018 breeding season) with only a single male recorded lekking on the western edge of the Site boundary on three occasions. A female was also recorded on one occasion during the 2015 breeding season.

216. Flight activity surveys recorded ten target species, collectively accounting for 47 flightlines, of which 38 were recorded at Potential Collision Height (PCH) and may therefore be included in any collision risk modelling, depending on their location in relation to the final turbine layout. **Table 8.2** and **Table 8.3** detail the species recorded.

Table 8.2: Summary of Target Species Recorded During Flight Activity Surveys, April 2018 to August 2018

Species	Total Number of Flightlines Recorded	Total Number of Birds Recorded	Total Bird Seconds Recorded	Total Bird Seconds Recorded at PCH
Golden plover	1	2	42	42
Goshawk	16	16	1005	1005
Greylag goose	13	26	1118	1013
Osprey	1	1	75	75
Pink-footed goose	2	235	35,640	35,640
Red kite	1	1	147	147

[57] Eaton M.A., Aebischer N.J., Brown A.F., Hearn R.D., Lock L., Musgrove A.J., Noble D.G., Stroud D.A. and Gregory R.D. (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746

Table 8.3: Summary of Target Species Recorded During Flight Activity Surveys, June 2013 to January 2014

Species	Total Number of Flightlines Recorded	Total Number of Birds Recorded	Total Bird Seconds Recorded	Total Bird Seconds Recorded at PCH
Black grouse	1	1	30	0
Greylag goose	3	32	1860	546
Hen harrier	7	8	711	619
Herring gull	1	5	150	150
Merlin	1	1	50	0

217. Limited breeding wader activity was recorded within the survey area as the majority of the proposed Development is situated within Sitka spruce forestry; however common sandpiper (one territory) was recorded breeding within the survey area in 2017.

8.3 Proposed Assessment Methodologies

8.3.1.1 Legislation, Policy and Guidance

218. The legislation and policies which are directly relevant to the assessment of ornithological effects have been summarised below. Refer to Chapter 4 (Planning Policy Context), for planning policies relevant to the proposed Development.

219. The assessment will be undertaken in line with the following European legislation and guidance:

- Directive 2009/147/EC on the Conservation of Wild Birds (Birds Directive);
- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (Habitats Directive);
- Environmental Impact Assessment Directive 2014/52/EU; and
- European Commission (2010) Natura 2000 Guidance Document 'Wind Energy Developments and Natura 2000'. European Commission, Brussels.

220. The following national legislation and policy will be considered as part of the assessment:

- The Nature Conservation (Scotland) Act 2004 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- Circular 1/2017; The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017; and
- Policy Advice Note PAN 1/2013 – Environmental Impact Assessment (Scottish Government 2013).

221. The following guidance will be considered as part of the assessment:

- Eaton M.A., Aebischer N.J., Brown A.F., Hearn R.D., Lock L., Musgrove A.J., Noble D.G., Stroud D.A. and Gregory R.D. (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708–746;
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester;
- Scottish Natural Heritage (SNH) (2000) Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action. SNH Guidance Note. SNH;
- SNH (2009) Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees;
- SNH (2012) Post-construction management of windfarms on clear-felled forestry sites; reducing the collision risk for Hen Harrier, Merlin and Short-eared Owl from Special Protection Areas;
- SNH joint publication (2015) Good Practice during Wind Farm Construction. Version 3 http://www.snh.gov.uk/docs/A1168678.pdf;
- SNH (2016) Assessing connectivity with Special Protection Areas (SPAs);
- SNH (2018a) Assessing Significance of Impacts from Onshore Wind Farms Out-with Designated Areas;
- SNH (2018b) Assessing the cumulative impacts of onshore wind farms on birds. SNH Guidance Note;
- SNH (2018c) Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland;

- Scottish Executive Rural Affairs Department (SERAD) (2000). Habitats and Birds Directives, Nature Conservation; Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds ('the Habitats and Birds Directives'). Revised Guidance Updating Scottish Office Circular No 6/1995;
- The Dumfries and Galloway Local Biodiversity Action Plan; and
- The Scottish Biodiversity List.

222. Surveys will follow the methodologies detailed in the guidance below:

- Gilbert, G., Gibbons, D. W. and Evans, J. (1998) Bird Monitoring Methods. RSPB, Sandy;
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013) Raptors: a field guide for surveys and monitoring (3rd edition). The Stationery Office, Edinburgh;
- SNH (2007) Black grouse survey methodology; and
- SNH (2017) Recommended Bird Survey Methods to Inform Impact Assessment of Onshore Wind Farms.

8.3.2 Proposed Study Area

223. The EIA Report will consider the following study areas[55]:

- Designated sites – 20 km study area (SNH 2016);
- Collision modelling – the results of the flight activity surveys will be used to inform collision modelling. A Collision Risk Analysis Area (CRAA) will be created using GIS Delunay triangulation[58] to create a windfarm area which will then be buffered by 500 m (as per SNH 2017);
- Scarce breeding birds[56] – 2 km study area (SNH 2017);
- Black grouse – 1.5 km study area (SNH 2017);
- Breeding upland waders and wintering waders, raptors, owls and wildfowl – 500 m study area (SNH 2017);
- Cumulative assessment – as per SNH (2018b), the NHZ level is considered practical and appropriate for breeding species of wider countryside interest.

8.3.3 Desk Study

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

- Dumfries and Galloway Raptor Study Group (DGRSG) – provision of historic raptor nest locations;
- SNHi Information Service [https://sitelink.nature.scot] for designated sites; and
- Any other relevant Environmental Statements/EIA reports or technical reports from other developments or proposed developments in the local area.

8.3.4 Assessment Method

225. The assessment method will follow the process set out in the relevant provisions of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 and The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (together, 'the EIA Regulations') and guidance on implementation of the Birds and Habitats Directive (SERAD 2000 and SNH 2018c).

226. The ways in which birds may be affected (directly or indirectly) by the construction, operation and decommissioning of the proposed Development are:

- Direct habitat loss through construction of the windfarm (e.g. turbine bases, tracks etc.).
- Indirect habitat loss due to birds avoiding the windfarm and its surrounding area. This may occur as a result of disturbance during construction, operation and maintenance and also due to increased visitor disturbance.
- Habitat modification due to associated changes in land cover (e.g. tree felling or effects on hydrology leading to altered suitability for foraging, breeding, etc.).
- Barrier effects in which birds avoid the windfarm and are therefore forced to take alternative routes to feeding or roosting grounds.

[58] Delaunay triangulation is a form of mathematical/computational geometry where a given set of points (in this case the turbine locations) are all joined to create discrete triangles. Further information is available here: https://uk.mathworks.com/help/matlab/math/delaunay-triangulation.html

- Death or injury through collision with turbine blades, overhead wires (if any), met masts, or fences (if any) associated with the windfarm.
- Any of the above effects acting cumulatively with those from other windfarm plans and projects (i.e. operational or consented developments and those currently in the planning process).

8.3.4.1 Methodology for Assessing Ornithological Features

227. The EIA report will include an Ornithological Impact Assessment (OIA). This will consider the potential direct, indirect and cumulative effects that the construction and operation of the proposed Development could have on ornithology. It will also consider the potential effects on statutory designated sites. The OIA will be supported by a technical appendix that will include all outputs from any collision modelling.

228. Effects on potential Important Ornithological Features (IOFs) (excluding SPAs but including SSSIs) will be assessed in relation to the species' reference population, conservation status, range and distribution. The assessment of potential effects will follow guidelines published by CIEEM (2018) and SNH (2017, 2018a).

229. The assessment involves the following process:

- Identification of the potential effects of the proposed Development;
- Consideration of the likelihood of occurrence of potential effects where appropriate;
- Defining the Nature Conservation Importance (NCI) and Conservation Status of the bird populations present to determine overall sensitivity;
- Establishing the Magnitude of the Likely Effect (both spatial and temporal);
- Based on the above information, a judgement is made as to whether or not the identified effect is significant with respect to the EIA Regulations;
- If a potential effect is determined to be significant, measures to mitigate or compensate the effect are suggested where required;
- Opportunities for enhancement are considered where appropriate; and
- Residual effects after mitigation, compensation or enhancement are reported.

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

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

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

8.3.4.2 Cumulative Effects

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

8.3.4.3 Species Scoped Out of the Assessment

234. On the basis of experience from other relevant projects (other regional projects and other projects of similar habitat) and policy guidance or standards (e.g. SNH 2018a), the following species are likely to be 'scoped out' since significant effects are unlikely:

- Common and/or low conservation species not recognised in statute as requiring special conservation measures, e.g. birds on Annex 1 to the EU Birds Directive or Schedule 1 to the Wildlife & Countryside Act 1981 (as amended);
- Common and/or low conservation species not included in non-statutory lists (e.g. Red and Amber-listed BoCC species), showing birds whose populations are at some risk either generally or in parts of their range;

- Passerine species, not generally considered to be at risk from windfarm developments (SNH 2018, 2017), unless being particularly rare or vulnerable at a national level.

8.4 Potential Effects

235. On the basis of the surveys undertaken at the Site, black grouse, barn owl, goshawk and osprey are considered to be the species most likely to be considered in the EIA Report as IOFs.

236. Cumulative effects will also be considered where relevant for all of the effects detailed below.

8.4.1 Construction/ Decommissioning Effects

237. Based on the available information to date from baseline surveys and the preliminary results from the desk-based study, the following construction and decommissioning effects are likely to be assessed:

- Habitat loss/alteration/fragmentation associated with the proposed Development, including loss of nesting habitat for target species, or any increased habitat suitability associated with any forest felling (e.g. for raptors, owls or black grouse); and
- Disturbance to target species (breeding raptors, owls and black grouse) associated with construction/decommissioning activities.

8.4.2 Operational Effects

238. Based on the available information to date from baseline surveys and the preliminary results from the desk-based study, the following operational effects are likely to be assessed:

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

8.5 Approach to Mitigation

239. Significant effects upon birds will be avoided/ minimised where possible within the design process. Good practice during construction and operation of the proposed Development will also be implemented.

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

241. Standard good practice (SNH 2015) measures will be applied to minimise any potential effects on breeding Schedule 1/Annex 1 raptors and owls within up to 800 m of the proposed Development, including appropriate mitigation/monitoring and license application/consultation with SNH. This would include (but is not limited to):

- Checks for breeding raptors and owls by a suitably qualified ornithologist prior to works undertaken between March and July;
- Appropriate buffers applied to any breeding attempts located; and
- Additional mitigation measures dependent on the outcomes of a risk assessment and site-specific conditions e.g. reduced speed limits and personnel to remain in vehicles along identified sections of tracks.

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

8.6 Questions

Q8.1: Confirmation that there is no connectivity between the Glen App and Galloway Moors SPA (and underpinning SSSI), the Bogton Loch SSSI or Merrick Kells SSSI and that these designated sites can therefore be scoped out of the EIA Report.

Q8.2: Do consultees agree that the range of ongoing surveys and those carried out to date (December 2018) are sufficient and appropriate?

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

Q8.4: Confirmation of the approach to the ornithological assessment is requested. Do consultees believe that there are further species or designated sites which need to be considered in the assessment?

Q8.5: Confirmation that the low conservation value species can be scoped out of the assessment is requested.

Q8.6: Do consultees agree that the proposed mitigation is sufficient and appropriate?

9 Noise

9.1.1 Introduction

243. During construction, noise can arise from both onsite activities, such as, the construction of onsite access tracks, turbine foundations, the control building (substation) etc., and also from the movement of construction related traffic both onsite and travelling on public roads to and from the proposed Development.

244. During their operation, windfarms have the potential to create noise effects through both aerodynamic noise and mechanical noise. Aerodynamic noise is caused by the interaction of the turbine blades with the air. Mechanically generated noise is caused by the operation of internal components, such as the gearbox and generator, which are housed within the nacelle of the turbine.

245. The noise assessment will therefore assess the effects of construction (including traffic) and operational noise of the proposed Development on nearby noise sensitive receptors (including cumulatively with other nearby windfarms as necessary).

9.2 Existing Conditions

246. The proposed Development is located in an area of relatively low population density, although there are a number of individual properties located to the south within the Site, including Shalloch Well, White Clauchrie and Ferter. The noise environment in the surrounding area is expected to be dominated by 'natural' sources, such as wind disturbed vegetation and forestry, watercourses (in places), birds and farm animals, with a varying influence of noise from traffic on the A714 and other local roads, including the B734 and B7027.

9.3 Proposed Surveys and Assessment Methodologies

9.3.1 Guidance

247. The noise assessment will be carried out in line with relevant legislation and standards, as well as having regard to the following guidance:

248.

- PAN 1/2011: Planning and Noise;
- Web Based Renewables Advice: Onshore Wind Turbines' (last updated May 2014);
- ETSU-R-97: The Assessment and Rating of Noise from Wind Farms';
- ISO9613: Acoustics – Attenuation of Sound During Propagation Outdoors Part 2: General Method of Calculation;
- Institute of Acoustics: A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (IOA GPG);
- BS5228-1: 2009: Code of Practice for Noise And Vibration Control on Construction And Open Sites - Noise;
- The Design Manual for Roads and Bridges (DMRB).

9.3.2 Proposed Study Area

249. The study area will comprise the nearest noise sensitive receptors considered to be representative of residential dwellings in the immediate vicinity that may experience noise effects from construction or operation of the proposed Development based on professional judgement and initial noise modelling.

9.3.3 Desk and Field Survey Method

250. Representative background noise survey locations will be chosen through consultation with an Environmental Health Officer from South Ayrshire Council. Monitoring at these properties will be undertaken for a minimum period of 2 to 4 weeks.

251. In this regard, it is necessary to establish the relationship between wind speed on the site and background noise levels at the nearest noise sensitive receptors. The existing background noise levels would be measured in accordance with the procedures set out in ETSU-R-97 and IOA GPG.

252. Wind data would be obtained on site at a representative location in line with IOA GPG guidance.

9.3.4 Assessment Method

9.3.4.1 Construction

253. In assessing the effect of construction noise and vibration, it is standard practice to accept that the associated works are of a temporary nature. The assessment of the temporary effects of construction noise is primarily aimed at understanding the need for dedicated management measures and, if so, the types of measures that are required. In this respect, relevant working practices, traffic routes, and proposed working hours will be considered in the assessment.

254. The assessment of potential effects due to noise emissions during construction will be undertaken in accordance with the BS 5228 British Standard guidance 'Code of practice for noise and vibration control on construction and open sites: Noise'. Predictions of construction noise will be made referencing typical activity emission levels and likely variations in noise levels at receptor locations closest to construction works, using the methodology set out in BS 5228 Part 1. This standard is referenced in Technical Advice Note to PAN 1/2011: Planning and Noise. This standard can be used to predict noise levels associated with the different construction activities used throughout the construction programme. Part 2 of the BS 5228 standard considers construction vibration and this will also be referenced.

255. Consideration will also be given to the potential effects of construction traffic on sensitive receptors in the area. Depending upon the outcome of the assessment of traffic, the effect of traffic on residential properties along the site access route will be assessed on the basis of the methodology within BS 5228-1, as well as the 'Calculation of Road Traffic Noise' (CRTN) publication, where appropriate. The methodology set out in CRTN will be used to determine the associated maximum total change in the average day time traffic noise level at representative properties along the site access route based on the predicted traffic changes. The significance of the effect of total traffic noise changes will be determined in accordance with the Design Manual for Roads and Bridges (DMRB) guidelines.

256. The assessment of construction noise and vibration will identify if and when predicted noise levels may be above standard guideline limits, taking into account the rural character of the area. Construction noise management procedures will also be determined.

257. Cumulative construction noise effects are generally unlikely to be significant but will be assessed if there is a likelihood that the construction programmes and the location of the works (including access routes) is likely to overlap significantly.

9.3.4.2 Operation

258. ETSU-R-97 recommends that windfarm noise for the quiet daytime periods in rural locations should be limited to 5 dB(A) above the prevailing background or a fixed minimum level within the range 35-40 dB LA90,10 min, whichever is the higher, and a fixed limit of 43dB(A) for night-time. The precise choice of criterion level within the range 35-40 dB(A) depends on a number of factors, including the number of dwellings nearby (relatively few dwellings suggest a figure towards the upper end), the effect of noise limits on the number of kWh generated (larger sites tend to suggest a higher figure) and the duration and level of exposure to any noise.

259. The ETSU-R-97 methodology will be adopted for the assessment of operational noise impact. In summary, the assessment will:

- Specify the type and noise emission characteristics of the wind turbines proposed for the site;
- Calculate noise emission levels due to the operation of the wind turbines as a function of site wind speed at the nearest noise sensitive receptors;
- Determine the quiet day time and night time noise limits from the measured background noise levels at the nearest noise sensitive receptors, following exclusion of atypical and rainfall periods (using measured data from a rain gauge);
- Compare the calculated windfarm noise emission levels with the derived noise limits and assess in the light of relevant planning requirements.

260. The acceptable limits for wind turbine operational noise are clearly defined in the ETSU-R-97 document and these limits should not be breached. Consequently, the test applied to operational noise is whether or not the calculated windfarm noise emission levels at nearby noise sensitive properties lie below the noise limits derived in accordance with ETSU-R-97. Depending on the levels of background noise the satisfaction of the ETSU-R-97 derived limits can lead to a situation whereby, at some locations under some wind conditions and for a certain proportion of the time, noise from the proposed Development may be audible.

261. The noise limits derived according to ETSU-R-97 guidance, for each noise-sensitive receptor, apply to the total noise produced by all windfarms. Therefore, potential cumulative operational noise levels, including existing, consented and application wind turbines in the area (including Mark Hill Windfarm), must be assessed relative to these limits.

9.4 Potential Effects

262. As discussed, possible noise and vibration effects associated with the construction and/or operation of the proposed Development include:

- effects of construction noise (including cumulatively) on receptors in the area surrounding the site, taking account of the construction works programme and construction traffic routes to, from, and on, site; and
- effects of operational turbine noise (including cumulatively) on receptors in the area surrounding the site.

263. On the basis of the work undertaken to date, the professional judgement and experience from other similar projects, it is considered likely that effects of vibration during operation of the site on receptors in the area surrounding the site can be scoped out.

9.5 Approach to Mitigation

264. Where significant construction noise and vibration effects are identified, measures to prevent, reduce, and where possible offset, these adverse effects will be proposed. Measures which may be utilised during construction of the proposed windfarm include:

- restricted hours of infrastructure works to avoid sensitive periods;
- the fitting of equipment with appropriate noise control measures (e.g. silencers, mufflers and acoustic hoods);
- the positioning of temporary site compounds as far as practicably possible from neighbouring residential properties; and
- additional good practice measures as set out in BS5228:2009.

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

9.6 Questions

Q9.1: Confirmation is sought that it is considered appropriate to scope out operational effects of vibration.

Q9.2: Do consultees agree that the proposed scope of the assessment is both sufficient and appropriate?

10 Cultural Heritage

10.1 Introduction

266. The 'cultural heritage' of an area comprises archaeological sites, historic buildings, gardens and designed landscapes, historic battlefields and other historic environment features. It also includes features or places in the landscape that have the capacity to provide information about past human activity, or 'intangible' aspects which have cultural significance due to associations with, for example, literary or artistic works, folklore or historic events. The 'setting' of an asset within the wider landscape may contribute to its cultural heritage significance.

267. Historic landscape is not treated as a heritage asset for the purposes of this assessment except where a defined area of landscape has been designated for its heritage interest (including Conservation Areas and areas included in the Inventory of Gardens and Designed Landscapes). It is recognised that all landscapes have an historic dimension and this will be considered as part of the assessment of landscape character.

268. It is important to note that, although any effects on the significance of heritage assets due to change in their setting are likely to be visual in nature, the assessment of these visual effects is distinct from the superficially similar assessment of visual change in the LVIA. The assessment of effects on setting may be informed by visualisations prepared as part of the LVIA but the conclusions reached regarding visual change in the setting of a heritage asset are distinct.

10.2 Existing Conditions

269. There is one Schedule Monument, the Cairnderry chambered cairn, located within the site as well as a number of known Historic Environment Records (HERs). These assets are typically cairns, enclosures and possible farmsteads. The presence of these assets highlights that there is potential for buried historical remains within the site.

270. As shown in **Figure 10.1**, within 5 km of the site, there are 12 Scheduled Monuments, including Rowntree Tollhouse and Inn (approximately 35 m east), Corrafeckloch hut circle and field system (approximately 2 km east) and Suie Tollhouse (approximately 200 m south east).

271. There is one Category A Listed Building within 5 km, Kildonan House, located approximately 4.5 km south west near Barrhill. There are nine Category B Listed Buildings within this area, predominately centred around the villages of Barr, Barrhill and Bargrennan. There are no Category C Listed Buildings located with 2 km of the site.

272. The South Ayrshire Conservation Area is located approximately 3 km north of the site in the small village of Barr. There are no Gardens and Designed Landscapes within 5 km.

10.3 Potential Effects

273. Potential effects on cultural heritage associated with the construction and/or operation of the proposed Development include:

- direct effects through partial or total removal during ground breaking operations on known or currently undiscovered buried remains of archaeological interest;
- indirect effects on the settings[59] of cultural heritage assets including those resulting from intervisibility between an asset and the proposed Development; and
- cumulative effects on settings of cultural heritage assets with other existing or proposed Developments.

10.4 Proposed Surveys and Assessment Methodologies

10.4.1 Guidance

274. The following guidance documents will be used to inform the assessment:

- HESPS (2016) Historic Environment Scotland Policy Statement;
- SNH) (2018) Environmental Impact Assessment Handbook, Version 5;
- Historic Environment Scotland (2016) Managing Change in the Historic Environment Guidance Notes – Setting;
- The Chartered Institute for Archaeologists (2014) Code of Conduct; and
- The Chartered Institute for Archaeologists (2017) Standard and guidance for historic environment desk-based assessment.

[59] Historic Environment Scotland's guidance document 'Managing Change in the Historic Environment: Setting' notes that: "Setting can be important to the way in which historic structures or places are understood, appreciated and experienced. It can often be integral to a historic asset's cultural significance".

10.4.2 Desk and Field Survey Method

275. The desk study will identify any cultural heritage issues within the study area and will include the following tasks:
- consultation with the West of Scotland Archaeology Service (WoSAS) Historic Environment Record (HER) as well as the South Ayrshire and Dumfries and Galloway Councils for site-specific information;
- consultation with Historic Environment Scotland (HES) as appropriate for designated assets;
- consultation of web-based facilities for other information;
- map regression using historic mapping sources to identify changes and development of the historic landscape;
- review of available Historic Landscape Characterisation;
- a review of aerial photographs (National Collection of Aerial Photography, Edinburgh);
- review of any appropriate geotechnical data including peat probing and sampling data;
- relevant assessments for nearby developments, particularly the cultural heritage assessment undertaken for Mark Hill, Kilgallioch and Arecleoch Windfarms; and
- online data on designated assets including Scheduled Monuments, Listed Buildings and Gardens and Designed landscapes.

276. A walkover survey will be carried out targeting all areas of potential ground disturbance within the site inner study area (ISA). It is proposed that the walkover survey will be undertaken once the layout of the proposed Development has progressed and likely infrastructure locations have been identified. The aims of the site walkover would be to assess the potential of direct and indirect effects upon known heritage assets, and to check for evidence of any further unknown heritage assets within the site. The findings of the walkover will be taken into account during the final design of the proposed Development to prevent or reduce effects as far as it is reasonably practicable.

277. Visits to designated and undesignated heritage assets within the outer study area (OSA) would also be undertaken to evaluate their setting where theoretical visibility is likely, and this information would also feed into the design of the proposed Development.

10.4.3 Proposed Study Area

278. As highlighted above, the ISA will include all land within the site encompassed by the redline boundary.

279. In agreement with HES, South Ayrshire and Dumfries and Galloway Councils, the OSA will extend:
- Up to 2 km from proposed outermost turbines: Category C Listed Buildings and any undesignated asset of local importance which has a wider landscape setting contributing substantially to its cultural significance.
- Up to 5 km from proposed outermost turbines: Scheduled Monuments, Category A and B Listed Buildings and undesignated assets of more than local importance within the ZTV or with wider relevant views of the proposed Development.

280. The assessment of cumulative effects on the settings of heritage assets will also be undertaken, employing the 5 km study area.

10.4.4 Assessment Method

10.4.4.1 ISA

281. All known heritage assets and unknown buried archaeological remains will be assessed for their potential to be affected by direct effects from construction. All heritage assets within the ISA will be considered for operational effects upon their setting also.

282. The predicted significance of direct effects will be determined through a standard method of assessment based on professional judgement, considering both the sensitivity of the heritage asset and the magnitude of change expected. The predicted significance of direct effects, which measures the degree of change to the baseline condition of a feature that will result from the construction of one or more elements of the proposed Development, will be determined through the combination of these elements. Where no effect would arise, either as a result of design mitigation to avoid heritage assets, or through the application of construction phase mitigation to mark-off assets for avoidance, the result would be no effect.

283. Effects considered to be of major or moderate significance will be deemed to be significant in the context of the EIA Regulations.

10.4.4.2 OSA

284. Scheduled Monuments and Category A and B Listed Buildings within 5 km (2 km for Category C Listed Buildings) and with predicted visibility of the proposed Development, based on assessment of the final blade tip height ZTV will be assessed for operational setting effects.

285. Consultation will be undertaken with HES, South Ayrshire and Dumfries and Galloway Councils to identify which assets should be assessed for setting effects, as informed by the blade tip ZTV. Visualisations (in the form of wirelines or photomontages) will also be agreed through consultation and produced from the key cultural heritage features assessed.

286. For each asset where a potential effect on setting has been identified, the assessment of possible effects will adopt the following approach:
- Identification of the characteristics of the setting of the asset;
- Assessment of the sensitivity of that setting;
- Identification of how the presence of the Proposed Development will affect that setting (magnitude of effect); and
- Assessment of significance of effect.

287. Based on the final turbine layout being assessed, heritage assets not likely to have intervisibility with the proposed Development will be scoped out of the detailed assessment.

10.4.4.3 Cumulative Effects

288. Cumulative effects can occur when other existing or proposed developments are also visible in views that are relevant to the setting of a heritage asset. Cumulative effects are considered in cases where an effect of more than negligible significance will occur as a result of the proposed Development. Other existing or proposed windfarm developments will be included in the cumulative assessment where they also lie within 5 km of the asset. A cumulative effect is considered to occur where the magnitude of the combined effect of two or more developments is greater than that of the developments considered separately.

289. The visualisations provided to support the setting effects assessment of the proposed Development will also show those cumulative schemes that will be at least theoretically visible from the represented viewpoint locations.

10.5 Approach to Mitigation

290. SPR 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.

291. Where adverse effects on cultural heritage are identified, measures to prevent reduce, and/or where possible offset, these effects will be proposed. Measures which may be adopted include:
- the micro-siting of site components away from sensitive locations;
- the fencing-off or marking out of sites or features in proximity to working areas;
- an archaeological watching brief, if required, during construction activities in, or in proximity to, areas of particular concern;
- survey, excavation and recoding of features directly affected by the proposed windfarm;
- implementation of a working protocol should unrecorded archaeological features be discovered; and
- the undertaking of all archaeological fieldwork in line with a written scheme of investigation agreed with the local authority archaeologist.

292. Setting effects will be avoided or reduced where possible through design.

10.6 Questions

Q10.1: Confirmation is requested that the cultural heritage study areas are considered appropriate for the assessment.

11 Traffic and Transport

11.1 Introduction

293. This chapter of the EIA Report will consider the potential environmental effects associated with increased road traffic generated during the construction phase of the proposed Development, including access routes and measures to minimise disruption to the local road network. Cumulative effects will also be assessed.

11.2 Existing Conditions

294. Access to the Site would be via an existing entrance on the A714 approximately 9 km south east of Barrhill, via an existing entrance adjacent to Goat's Burn to the south of Creeside Farmstead and Wheeb Bridge, utilising an unclassified forest track. The access track and bell mouth junction with the A714 would be used to facilitate turbine delivery and construction traffic to the Site.

295. The study area for the assessment of traffic and transport will be predicated on the proposed routes to site from the external road network. Turbine delivery and all abnormal indivisible loads (AILs) would be from Cairnryan and/or Glasgow, via the A75 and A714 to the site access along the A714 from Newton Stewart. The proposed route has been previously used for turbine delivery for the now operational Arecleoch and Kilgallioch Windfarms and has therefore been proven capable of turbine delivery. Additionally, parcels of land previously secured as part of the Arecleoch and Kilgallioch Windfarms can be utilised by the proposed Development with SPR having carried out further engineering studies, including swept path analysis of the route for larger turbine types.

11.3 Potential Effects

296. At this stage, the potential effects of the proposed Development include effects of construction traffic on existing traffic flows and the local road network (which will be quantified through comparison of existing traffic flows and vehicle composition (baseline data) with the flows predicted as a result of the construction of the proposed Development). Cumulative effects of construction traffic with other developments on traffic flow will also be assessed as necessary.

297. On the basis of the work undertaken to date, professional judgement and experience from other similar projects, it is considered likely that the effect of operational and maintenance vehicles on existing traffic flows and the local road network can be scoped out of detailed assessment given that the greatest intensification of traffic will be during the construction phase.

11.4 Proposed Surveys and Assessment Methodologies

11.4.1 Guidance

298. The assessment will be based on guidance provided by the Institute of Environmental Assessment (1993) (now the Institute of Environmental Management and Assessment), guidelines prepared by the Institution of Highways and Transportation for Traffic Impact Assessment (1994) and 'Transport Assessment Guidelines' published by Transport Scotland, 2012.

11.4.2 Desk and Field Survey Method

299. It is anticipated that the main sensitive receptors to increased traffic as a result of the proposed Development will be located along the A714 between Girvan and Newton Stewart as well as the properties within the Site boundary, namely, Shalloch Well, White Clauchrie and Ferter. As such, the study area will be defined as:

- the A714 south from the access track entrance south of Wheeb Bridge to Newton Stewart and the roundabout junction with the A75.
- the A714 north from the access track entrance south of Wheeb Bridge to the roundabout junction with the A77.

300. It is anticipated that existing traffic count data (Annual Average Daily Flow (AADF)) at suitable locations along the A714 will be sourced from South Ayrshire and Dumfries and Galloway Councils through consultation. For the nearby Arecleoch Windfarm Extension, a recent Automatic Traffic Count (ATC) survey has been commissioned on the A714 as well as a 12 hour turning count at the junctions of Gowlands Terrace and Main Street which could be potentially re-used to inform this assessment. Where suitable traffic count data is not available, it may be necessary to undertake further baseline traffic count surveys. The location and details of any new surveys would be agreed with South Ayrshire and Dumfries and Galloway Councils in advance, but it is likely that any new counts would comprise of 7-Day 24 hour ATC surveys for the A714 between Girvan and Newton Stewart.

301. Injury accident data for the roads within the study area will be obtained to ensure any road safety issues are identified.

11.5 Assessment Method

302. The assessment will be structured around the consideration of potential environmental effects related to increased traffic volumes within the study area as identified by the IEMA Guidelines, namely:
- severance;
- driver delay;
- pedestrian delay and amenity;
- accidents and safety;
- dust and dirt.

303. The IEMA guidelines suggest that to determine the scale and extent of the assessment, and the level of effect a development will have on the surrounding road network, the following two 'rules' should be followed:
- Rule 1 - Include road links where flows are predicted to increase by more than 30% or where the number of HGVs is predicted to increase by more than 30%; and
- Rule 2 - Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

304. Rules 1 and 2 are used as a screening tool to determine whether or not a full assessment of effects on routes within the study area is required as a result of intensification of road traffic. Where anticipated construction traffic volumes are not greater than 30% (or 10% at sensitive locations), a detailed assessment of effects is not necessary.

305. The assessment will be based on the following traffic distribution scenarios given that this is currently unknown:
- 100% of construction traffic travelling from Glasgow harbour to site via the A714 south from the access track entrance south of Wheeb Bridge to Newton Stewart and the roundabout junction with the A75, to represent a maximum intensification of traffic along this route.
- 100% of construction traffic travelling from Cairnryan harbour to site via the A714 north from the access track entrance south of Wheeb Bridge to the roundabout junction with the A77 to represent a maximum intensification of traffic along this route.
- 100% of general construction HGVs approaching the site from the west routing through Pinmore, Pinwherry, Ballochmorrie and Barrhill to represent maximum intensification of traffic at these sensitive receptors.
- 100% of general construction HGVs approaching the site from the east routing through Newton Stewart to represent maximum intensification of traffic at these sensitive receptors.

306. To assess a worst case scenario, predicted traffic flows of the construction month(s) with the greatest predicted traffic volumes will be compared with projected traffic flows (at the time of construction) at the chosen assessment locations. It is also considered good practice to assume that not all stone requirements will be sourced from onsite borrow pits, so a proportion of the estimated requirements will be factored into total predicted construction traffic volumes to represent a worst case traffic volume scenario. For the purposes of the assessment, it is assumed that all vehicles associated with the construction of the proposed Development will be HGVs or abnormal loads, thus providing a robust assessment as there will be a number of LGVs in practice.

307. Where worst case predicted construction traffic volumes are greater than the Rule 1 and 2 thresholds, the significance of the effects on receptors will be evaluated against the IEMA Guidelines and, where possible, in line with the criteria used for the other environmental topic areas covered in the EIA Report. These criteria are subjective but take into account the numbers of receptors affected, their sensitivity, the length of the period for which they will be affected and professional judgement. Therefore, it should be noted that an increase in total traffic or HGV levels of more than 30% (or 10% depending on the sensitivity of the area) does not necessarily equate to a significant effect.

308. The EIA chapter will include a brief construction works programme, a description of the type of vehicles used during the construction phase and an estimate of the number of trips anticipated to be generated by HGVs, LGVs and other vehicles.

309. There are a number of other proposed windfarm developments in South Ayrshire and Dumfries and Galloway which may have overlapping construction periods, including Knockodhar to the north, Areclecoh Extension, Drumford and Arnsheen – Knowe to the south and Bargrennan to the south east (all currently at scoping). Whilst it is unlikely that there will be any significant cumulative traffic effects associated with these developments commencing in tandem with the proposed

Development, this will be discussed with South Ayrshire and Dumfries and Galloway Councils during consultation and worst case cumulative effects will be assessed in the EIA Report if required.

310. An Abnormal Loads Assessment report will be prepared for the candidate turbine selected and submitted as a Technical Appendix to the main EIA Report. The report will detail the proposed route from the port of entry to the site and will identify any potential pinch points on the route. Swept path plans will be prepared to investigate the impact of transporting abnormal loads and mitigation measures will be detailed where necessary.

11.6 Approach to Mitigation

311. A Traffic Management Plan (TMP) would be prepared prior to the commencement of the proposed Development. The implementation of TMPs and coordination of site construction works for windfarms on similar construction programmes is also considered to provide suitable mitigation to avoid significant cumulative effects.

11.7 Questions

Q11.1: Confirmation is sought on the acceptability of the proposed study area and assessment method.

12 Socio-Economics, Tourism and Recreation

12.1 Introduction

312. This chapter will consider the potential socio-economic, tourism and recreation effects that may occur from the proposed Development during construction and operation (including cumulatively with other windfarms). This will involve the identification of the existing socio-economic, tourism and recreation baseline conditions in the site and surrounding area, and consideration of potential direct and indirect effects on employment and economic benefits (including community benefit and any shared ownership initiative proposed), recreation and tourism activity through both quantitative and qualitative assessment.

12.2 Existing Conditions

12.2.1 Socio-Economics

313. Onshore wind currently supports around 7,500 jobs in Scotland (or 58% of total onshore wind employment across the UK). SPR currently owns and operates five onshore windfarms in South Ayrshire region (Arecleoch, Mark Hill, Kilgallioch, Dersalloch and Glen App) as well as a number of others in south west of Scotland, including the wider Ayrshire and Dumfries and Galloway area. SPR recognises the importance of the economic benefits to Scotland and the wider UK from investment in onshore wind generation. In the period 2016-2017, SPR constructed 8 onshore windfarms in south west Scotland, with a combined capacity of 474 MW, resulting in an estimated £1.6 billion investment. As of 2018, SPR's established presence in South Ayrshire has resulted in the contribution of over £5.5m of community benefits to local communities, including Dumfries and Galloway this figure is over £9m.

12.2.1.1 South Ayrshire

314. There are some 112,700 people living in the South Ayrshire area, 59.6% of whom are aged between 16 and 64. This is below the Scottish average (64.4%)[60] and is reflected in the economic activity being slightly lower than the national equivalent (72.6% compared to 77.6% in Scotland)[61]. According to the National Records of Scotland[62], the population is expected to fall to 111,472 by 2026 (0.9% decrease). The 45 to 64 age group is expected to have the largest percentage decrease (-11%) whereas the 75 and over age group will see the largest percentage increase (+30%). This contraction in the working age population is likely to affect economic activity.

315. The qualifications profile of local authority residents is not notably different than Scotland. However unemployment is higher than the Scottish average (4.6% of 16-64 years old compared to 4.2%). The largest employing industries in the South Ayrshire area are health, wholesale and retail trade, manufacturing and accommodation and food service activities[63].

12.2.1.2 Dumfries and Galloway

316. There are some 149,200 people living in the Dumfries and Galloway area, 59.2% of whom are aged between 16 and 64. This is below the Scottish average (64.4%)[64] and is reflected in the economic activity being slightly lower than the national equivalent (74.4% compared to 77.6% in Scotland)[65]. According to the National Records of Scotland[66], the population is expected to fall to 147,234 by 2026 (1.5% decrease). The 45 to 64 age group is expected to have the largest percentage decrease (-12%) whereas the 75 and over age group will see the largest percentage increase (+28.2%). This contraction in the working age population is likely to affect economic activity.

[60] Nomis, 2017, Labour Market Profile – South Ayrshire: Total Population (2017)
[61] Nomis, 2018, Labour Market Profile - South Ayrshire: Employment and Unemployment (Oct 2017-Sept 2018)
[62] National Records of Scotland, 2016, South Ayrshire Council Area Profile: 2016-based Population Projections by Council Area in Scotland
[63] Nomis, 2017, Labour Market Profile –South Ayrshire: Employee Jobs (2017)
[64] Nomis, 2017, Labour Market Profile –Dumfries and Galloway: Total Population (2017)
[65] Nomis, 2018, Labour Market Profile –Dumfries and Galloway: Employment and Unemployment (Oct 2017-Sept 2018)
[66] National Records of Scotland, 2016, Dumfries and Galloway Council Area Profile: 2016-based Population Projections by Council Area in Scotland

317. The qualifications profile of local authority residents is generally lower than that of Scotland. However unemployment is lower than the Scottish average (3.2% of 16-64 years old compared to 4.2%). The largest employing industries in the Dumfries and Galloway area are health, wholesale and retail trade, manufacturing, accommodation and food service activities and education[67].

12.2.2 Tourism

12.2.2.1 South Ayrshire

318. In 2017, South Ayrshire welcomed 670,000 domestic visitors resulting in a spend of £144 million (representing over 6% in terms of volume and over 5% in terms of domestic value in Scotland). Across the same period, there were 74,000 international visits raising £41 million (representing 2% in terms of volume and over 2% in terms of total international tourism in Scotland). In 2016, 6,000 people were employed in South Ayrshire's tourism industry, generating £126.4 million for the regional economy[68]. This compares to figures from 2015 when approximately 6000 people were employed in tourism which generated £108.8 million for the regional economy[69]. Tourism is therefore a growing industry in South Ayrshire.

319. The top three reasons for visiting Ayrshire and the Isle of Arran in 2016 according to the latest VisitScotland survey[70], 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%);
- to explore local history and culture (34%)

320. 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.

12.2.2.2 Dumfries and Galloway

321. In 2017, Dumfries and Galloway welcomed 653,000 domestic visitors resulting in a spend of £129 million (representing over 6% in terms of volume and over 4% in terms of domestic value in Scotland). Across the same period, there were 34,000 international visits raising £42 million (representing 1% in terms of volume and over 2% in terms of total international tourism in Scotland). In 2016, 6,000 people were employed in Dumfries and Galloway's tourism industry, generating £168.2 million for the regional economy[71]. This compares to figures from 2015 when approximately 6500 people were employed in tourism which generated £132.7 million for the regional economy[69]. From an economic perspective, tourism is therefore a growing industry in Dumfries and Galloway.

322. The top three reasons for visiting Dumfries and Galloway in 2016 according to the latest VisitScotland survey[72], in which respondents were able to provide more than one response, were:

- to see the scenery and landscape (63%);
- holidayed here before and wanted to return (43%);
- to get away from it all (41%)

323. The top three popular activities were: sightseeing (70%), a short walk or stroll (61%) and visiting a historic house, stately home or castle (48%).Whilst equivalent local data is not available; it is considered that broadly similar reasons for visiting the local area will apply.

324. The closest tourist attractions in the surrounding area include Glentrool Visitor Centre and Café (located approximately 4 km south of the Site access), RSPB Scotland Wood of Cree Nature Reserve (approximately 11 km south), Galloway Forest Dark Skies Park (located within the Galloway Forest park approximately 4 km to the south east) and Peinn Mor Pottery (approximately 6 km to the west). Further afield, Glenapp Castle is located 17 km to the south west near the coastal village of Ballantrae.

[67] Nomis, 2017, Labour Market Profile – Dumfries and Galloway: Employee Jobs (2017)
[68] VisitScotland, 2018, Visitors to Ayrshire and Arran
[69] VisitScotland, 2017, Tourism in Scotland's Regions 2016
[70] VisitScotland, 2016, Scotland Visitor Survey 2015 and 2016: Regional Results – Ayrshire & The Isle of Arran
[71] VisitScotland, 2018, Visitors to Dumfries and Galloway
[72] VisitScotland, 2016, Scotland Visitor Survey 2015 and 2016: Regional Results – Dumfries and Galloway

325. A range of accommodation types are also provided within the vicinity of the A714 and surrounding villages, including hotels and B&Bs. Pebbles Spa and Leisure, Stinchar Holiday Cottages, Bennane Shore Holiday Park and Spa and Glentrool Camping and Caravan Site are all located within 15 km of the Site.

12.2.3 Recreation

326. There are currently no formal recreational activities undertaken on the site, although it is acknowledged that existing forestry tracks within the site may be used for walking, particularly to gain access to the Galloway Forest Park, Glentrool Forest and southern reaches of the Galloway Hills. Girvan and Newton Stewart are the closest sizeable settlements approximately 11 km to the north west and south east of the Site respectively. Girvan is a popular base for exploring the coast, including the Ailsa Craig offshore as well as inland excursion to the Carrick Forest. The area is also popular for golfing with The Trump Turnberry Resort located approximately 8 km north of Girvan. Newton Stewart overs a base for exploring the southern reaches of the Galloway Hills and Galloway Forest Park, popular with mountain bikers and hillwalkers. Both towns also offer a base for fishing, which is popular in the area, including the River Stinchar approximately 4.5 km south of the Site and Loch Moan adjunct to the south east of the Site.

327. National Cycle Network Route 7 (Lochs and Glens (South)) which links Carlisle to Glasgow via the Ayrshire coast runs adjacent to the eastern periphery of the Site boundary and runs in parallel with Core Paths SA1. Core Paths SA52/53/54/55 are situated approximately 2 km to the north of the site near the village of Barr as set out in the South Ayrshire Core Paths Plan[73].

12.3 Potential Effects

328. Potential effects which will be considered in the EIA are as follows:

- Direct employment and economic effects (positive): jobs and gross value added (GVA) wholly or largely related to construction, operation and maintenance of the proposed Development.
- Indirect employment and economic effects (positive): jobs and GVA generated in the study area economy in the chain of suppliers of goods and services to the direct activities during construction and operation.
- Induced employment and economic effects (positive): jobs and GVA created by direct and indirect employees' spending in the study area or in the wider economy.
- Effects on visitor infrastructure, including attractions, accommodation and other facilities and destinations, including visual amenity of tourists.
- Effects on recreational activities within the site and surrounding area, including enhanced recreational opportunities (positive) and potential effects on visual amenity (negative).
- Cumulative employment and economic effects, tourism effects and recreational effects.

12.4 Proposed Surveys and Assessment Methodologies

12.4.1 Guidance

329. There is no established guidance for undertaking a social and economic assessment as part of a wider EIA. The proposed method for assessment, based on experience on similar projects, is detailed below and will take into consideration any matters raised in this scoping exercise.

12.4.2 Proposed Study Areas

330. The study areas proposed for the assessment are outlined below.

12.4.2.1 Socio-Economics

331. The study area for the socio-economic assessment will be based on the administrative areas of South Ayrshire and Dumfries and Galloway. This is intended to encompass the area within which significant effects on employment and the local economy could occur. This area is required for certain receptor groups because the majority of the business and labour market effects that could occur would be experienced by population and business centres located across South Ayrshire and Dumfries and Galloway.

12.4.2.2 Tourism

332. The study area for the tourism assessment will be defined by a 15 km radius from the proposed Development. Facilities or notable points of focus for visitor attraction within this area will be reviewed and consideration given to those with visibility of

[73] The South Ayrshire, Adopted Core Paths Plan, 2014

the proposed Development as informed by the ZTV. If any significant tourism facilities are located just outside the boundary of the study area, these will also be included.

12.4.2.3 Recreation

333. The study area for the assessment of potential direct effects on recreation will focus on the site itself and up to 2 km for the assessment of indirect effects on key nearby routes, i.e. the visual amenity effects on users identified as key recreational receptors in the landscape and visual impact assessment (LVIA).

12.4.3 Desk and Field Survey Method

334. Desk based study and consultation are considered to be the most appropriate means of collecting data for the assessment.

12.4.4 Assessment Method

335. Criteria for determining the significance of socio-economic, tourism and recreation effects (both positive and negative) will consider the magnitude of effects (e.g. the number of people, recreational activities or economic activities affected). However, when applying the criteria, professional judgement will be used and consideration taken of receptor sensitivity on a case by case basis, where appropriate.

336. Effects associated with the construction phase of the proposed Development will be considered temporary and short term. Effects associated with the operational phase of the proposed Development will be considered to be long term.

337. Major and moderate effects will be considered significant in the context of the EIA Regulations.

12.4.4.1 Socio-Economics

338. 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.

339. Direct construction employment effects will largely be based on the anticipated full time equivalent (FTE) jobs likely to be generated. Both leakage[74] and displacement[75] 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 anecdotal studies[76].

340. For direct employment during operation, again both leakage and displacement factors will be applied to the estimated FTEs to be generated in relation to repair and maintenance 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 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.

341. Reference will be made to the Scottish Economic Strategy[77], South Ayrshire Economic Development Strategy[78] and Dumfries and Galloway Economic Development Strategy[79] to inform the assessment of socio-economics.

[74] Leakage refers to the proportion of output which benefits those outside the project's target area or group. In other words, if the output were employment, the leakage would relate to how many construction jobs would be secured by people who don't live within the study areas.
[75] Displacement refers to the proportion of project outputs accounted for by reduced outputs elsewhere in the target area.
[76] BVG Associates, 2017, Economic Benefits from Onshore Wind Farms.
[77] Scottish Government, 2015, Scotland's Economic Strategy.
[78] South Ayrshire Council, 2013, South Ayrshire Economic Development Strategy 2013 – 2023
[79] Dumfries and Galloway Council, 2016, Dumfries and Galloway Economic Development Strategy 2016-2020,

342. 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.

12.4.4.2 Tourism

343. Based on professional judgement and latest up-to-date evidence, a judgement will be made as to the likely indirect effect that the proposed Development will have on tourism activities within 15 km of the site during construction and operation. The assessment will also consider the visual amenity of tourists, given that one of the key reasons for visiting South Ayrshire and Dumfries and Galloway is for landscape and scenery. As such, reference will be made to the expected effects upon viewpoints of relevance to tourism included in the LVIA.

344. Reference will be made to the Scottish Tourism Strategy to inform the assessment.

345. Cumulative effects will draw on existing evidence of the effects of windfarms on tourism.

12.4.4.3 Recreation

346. As per the tourism assessment, based on professional judgement and latest up-to-date evidence, a judgement will be made as to the likely effect that the proposed Development will have on recreation, both within the site (direct effects) and in the surrounding area (up to 5 km) in the form of visual amenity (indirect effects). Cognisance will also be had to the potential positive effects of enhanced recreational opportunities once the proposed Development is operational. These effects will also be assessed cumulatively.

12.5 Approach to Mitigation

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

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

349. It is considered that there are opportunities to enhance positive effects resulting from the proposed Development, including:
- Local promotion of contract and supply chain opportunities in the construction and operation phases to maximise the use of local business and labour resources.
- Skills development and training programmes to increase local take up of training, apprenticeship and employment opportunities associated with the proposed Development.
- Establishing effective linkages with local job centres, employability programmes and partners.
- Promotion of the wider area and its opportunities as part of the marketing of the proposed Development.

12.6 Questions

Q12.1: Is the scope of the assessment appropriate?

Q12.2: Are the proposed study areas suitable?

Q3: Are there any particular sources of information that should be considered?

13 Other Issues

13.1 Introduction

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

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

351. Predicted effects for all topics will be judged as being either significant or not significant and will be determined through a standard method of assessment based on professional judgement. Where a 'significant effect' is identified, this will be considered as significant in the context of the EIA regulations.

13.2 Aviation and Telecommunications

352. Wind turbines produce electromagnetic radiation which can potentially cause interference to telecommunication system signals such as terrestrial fixed microwave links, terrestrial radio telemetry links and television broadcasts. Furthermore, as identified in the Scottish Government Specific Advice Sheet for Onshore Wind Turbines (May 2014), wind turbines can affect navigation and surveillance systems (including RADAR) and other equipment and the use of aerodromes.

353. Preliminary online data from NATS shows that the proposed Development would not be visible to Primary Source Radar (PSR). The Site is approximately 85 km to the south west of Glasgow Airport and 42 km south west of Glasgow Prestwick Airport, although the proposed Development is not within their statutory safeguarding area and is not within radar sight of either airport. The site is also in Low Flying Area 16 military aircraft zone safeguarded by the MoD.

354. An assessment of civil and military aviation, defence and telecommunication issues will be undertaken and will include consultation with the organisations listed in **Appendix A**, as well as any others recommended by these stakeholders. Input will be obtained from specialist consultants should any issues be identified that require mitigation or detailed technical assessment, including line-of sight assessments.

355. It is current Civil Aviation Authority (CAA) policy that aviation warning lights are required to be fitted to wind turbines greater than 150 m tall. The implications of this for visual amenity will be considered in the EIA Report as detailed in **Chapter 5** above. As the Site is located within the buffer zone of the Galloway Forest Dark Sky Park, radar activated aviation lighting will be considered for the proposed Development.

356. As effects relate to the location of the turbines and their design and only occur during the operational phase of the proposed Development due to the movement of the turbine blades, it is proposed to scope out construction effects.

13.3 Shadow Flicker

357. Shadow flicker occurs when a certain combination of conditions prevail at a certain location, time of day and year. It firstly requires the sun to be at a certain level in the sky. The sun then shines onto a window of a residential dwelling from behind the wind turbine rotor. As the wind turbine blades rotate, this causes the shadow of the turbine to flick on and off. This may have a negative effect on residents in affected properties. If shadow flicker cannot be avoided through design, technical mitigation solutions are available, such as shutting down turbines when certain conditions prevail.

358. In the UK, significant shadow flicker is only likely to occur within a distance of ten times the rotor diameter (of a wind turbine), from an existing residential dwelling and within 130 degrees either side of north[80].

[80] Parsons Brinckerhoff Consultants on behalf of DECC (2010) Update of UK Shadow Flicker Evidence Base.

359. The rotor diameter of the proposed turbines would not exceed 150 m; so the potential area in which shadow flicker could occur would be up to 1,500 m from the proposed turbine locations. Once the final turbine layout and parameters are fixed, the locations of residential properties in proximity to the site will be verified and if any are situated within ten rotor diameters from the proposed turbine positions, a shadow flicker model will be run to predict potential levels of effect.

360. If no properties are located within 1,500 m of proposed turbine locations then shadow flicker will be scoped out of the assessment.

13.4 Climate and Carbon Balance

361. Whilst, by its very nature, the proposed Development will reduce demand for fossil fuel electricity generation and thus providing a benefit to the Scottish Government's targets, further consideration of the proposed Development in terms of climate change mitigation and adaptation will be given in the EIA, following best practice guidance[81] [82].

362. To support the assessment of the proposed Development on climate change mitigation, a carbon balance calculation will be undertaken using the Scottish Government's web-based calculator[83]. The main aims of the calculation will be: to quantify sources of carbon emissions associated with the proposed Development (i.e. from construction, operation and transportation of materials, as well as loss of peat as relevant); to quantify the carbon emissions which would be saved by constructing the proposed Development; and to calculate the length of time for the project to become a 'net avoider', rather than a 'net emitter' of carbon dioxide emissions. The length of time is termed the 'payback time'.

363. An assessment of the effects of the proposed Development on the ability of receptors to adapt to future climatic conditions will also form part of the climate change assessment. This will include the identification of the likely consequences of climate change for baseline conditions/assessment findings, and the resilience of proposed mitigation measures to any projected changes in extreme weather, including heavy rainfall events. The latest climate change projections (UKCP18) will be used. To inform the adaptation assessment, each topic chapter in the EIA Report will include a climate change section within the baseline information setting out how the current baseline conditions are likely to change under the chosen projections.

13.5 Population and Human Health (including Dust)

364. The assessment of potential health effects will be undertaken in the context of noise, socio-economics and recreation and shadow flicker where scoped into the EIA. The assessment will also consider the health effects of dust emissions of construction activities on nearby receptors. The DMRB[84] states that dust generated during construction should be mitigated and that the locations of 'sensitive receptors' within 200 m of construction activities should be identified and mitigation measures to reduce dust effects be applied. As such, all receptors within 200 m of potential dust sources will be considered as potential receptors.

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

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

13.6 Major Accidents and Disasters

367. The proposed Development is not located in an area with a history of natural disasters such as extreme weather events, and the construction and operation of the proposed Development would be managed within the requirements of a number of health and safety related Regulations, including the Construction (Design and Management) Regulations 2015 and the Health and Safety at Work etc. Act 1974. However, a screening exercise would be undertaken to identify further detail that may need to be provided (in relation to flood risk or peat slide risk for example).

13.7 Questions

368. **Q13.1. Are the scopes of the proposed assessments appropriate?**

[81] IEMA, (2017), Assessing Greenhouse Gas Emissions and Evaluating their Significance.
[82] IEMA (2015), Climate Change Resilience and Adaptation,
[83] Calculating Potential Carbon Losses & Savings from Wind Farms on Scottish Peatlands - Technical note - Version 2.10.0
[84] Design Manual for Roads and Bridges (DMRB), Volume 11 Environmental Assessment Techniques, Part 1, Air Quality

369. **Q13.2. Are there any particular consultees, in addition to those included in Appendix A, who should be contacted to inform the assessment of effects included in this chapter?**

APPENDIX A: PROPOSED SCOPING CONSULTEES

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

Consultee	Related EIA Topic
Scottish Goverment Energy Consents Unit (ECU)	All topics
South Ayrshire Council	All topics
Dumfries and Galloway Council	Landscape and Visual Amenity, Ecology and Ornithology, Cultural Herigare, Traffic and Transport, socio-economics.
Scottish Environment Protection Agency (SEPA)	Hydrology, Peat, Ecology, Carbon Emissions
Scottish Natural Heritage (SNH)	Landscape and Visual Amenity, Ecology and Ornithology
Historic Environment Scotland (HES)	Archaeology and Cultural Heritage
West of Scotland Archaeology Service (WOSAS)	
Barhill Community Council	Socio-Economics
Barr Community Council	
Pinmore and Pinwherry Community Council	
Cree Valley Community Council	
VisitScotland	
British Horse Society	
Marine Scotland	Hydrology and Ecology
Forestry Commission Scotland (FCS)	Forestry and Land Use
Scottish Water	Public Water Supply Infrastructure
RSPB Scotland	Ornithology
Fisheries Management Scotland	Ecology
Ayrshire Rivers Trust	
River Stinchar Salmon Fisheries Board	
John Muir Trust	Landscape and Visual Amenity, Land Use
Mountaineering Council of Scotland	
Scottish Wild Land Group	
National Air Traffic Services (NATS) Safeguarding	Aviation and Defence
Civil Aviation Authority (CAA)	
Defence Infrastructure Organisation (DIO)	
Glasgow Prestwick Airport	
Scottish Wildlife Trust	Ecology and Ornithology
Transport Scotland	Access, Traffic and Transport
Scottish Rights of Way and Access Society (ScotWays)	
Joint Radio Company (JRC)	Telecommunications
British Telecom (BT)	
Ofcom	
The Coal Authorty	Land Use
The Crown Estate	

APPENDIX B: LIST OF SCOPING QUESTIONS

Scoping Report Chapter	Questions
4. Planning Policy Context	**Q4.1**: Is the approach to consideration of relevant planning policies considered to be appropriate (i.e. that there will be no Planning Policy Context chapter in the EIA Report, with relevant policies being referred to in each specialist topic chapter, and covered in detail in the supporting Planning Statement)?
	Q4.2: Are the policies identified in Table 4.1 appropriate for inclusion in the EIA Report and Planning Statement policy appraisal? Are there any others that should be considered?
	Q4.3: Are there any other local material considerations of relevance to the proposed Development which should be considered?
5. Landscape and Visual Impacts	**Q5.1**: Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, including cumulative effects?
	Q5.2: Are there any comments on the proposed list of assessment viewpoint locations, including the proposed locations for night time visualisations?
	Q5.3: Are there any windfarm sites, in addition to those shown on Figure 5.7, to consider as part of the cumulative assessment?
	Q5.4: Has the consultee identified any further landscape or visual receptors to be considered within the assessment (i.e. where it is expected that significant effects may occur)?
	Q5.5: Are there any other relevant consultees who should be consulted with respect to the LVIA?
6. Hydrology, Hydrogeology, Geology and Soils	**Q6.1**: Are the survey methods for assessing likely effects on peat considered to be appropriate?
	Q6.2: Is it appropriate to consider scoping out operational effects on hydrology?
7. Ecology	**Q7.1**: Do consultees agree with the proposed survey approach to be undertaken?
	Q7.2: Do consultees agree with the proposed assessment of the potential effects as a result of the Development?
	Q7.3: Do consultees agree with those surveys which have been scoped out?
8.Ornithology	**Q8.1**: Confirmation that there is no connectivity between the Glen App and Galloway Moors SPA (and underpinning SSSI), the Bogton Loch SSSI or Merrick Kells SSSI and that these designated sites can therefore be scoped out of the EIA Report.
	Q8.2: Do consultees agree that the range of ongoing surveys and those carried out to date (December 2018) are sufficient and appropriate?
	Q8.3: Are there any other relevant consultees who should be contacted or other information sources referenced, with respect to the ornithology assessment?

	Q8.4: Confirmation of the approach to the ornithological assessment is requested. Do consultees believe that there are further species or designated sites which need to be considered in the assessment?
	Q8.5: Confirmation that the low conservation value species can be scoped out of the assessment is requested.
	Q8.6: Do consultees agree that the proposed mitigation is sufficient and appropriate?
9. Noise	**Q9.1:** Confirmation is sought that it is considered appropriate to scope out operational effects of vibration.
	Q9.2: Do consultees agree that the proposed scope of the assessment is both sufficient and appropriate?
10. Cultural Heritage	**Q10.1:** Confirmation is requested that the cultural heritage study areas are considered appropriate for the assessment.
11. Traffic and Transport	**Q11.1**: Confirmation is sought on the acceptability of the proposed study area and assessment method.
12. Socio-Economics	**Q12.1**: Is the scope of the assessment appropriate?
	Q12.2: Are the proposed study areas suitable?
	Q12.3: Are there any particular sources of information that should be considered?
13. Other Issues	**Q13.1**. Are the scopes of the proposed assessments appropriate?
	Q13.2. Are there any particular consultees, in addition to those included in Appendix A, who should be contacted to inform the assessment of effects included in this chapter?

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