



Areacleoch Windfarm Extension

EIA Report Non-Technical Summary

Table of contents

Preface	2
1 Introduction	3
2 Renewable energy policy	5
3 Environmental Impact Assessment	6
4 Site selection, alternatives and design strategy	7
4.1 Site selection	7
4.2 Design approach	7
5 Windfarm proposal	9
6 Legal and policy framework	12
6.1 Legislative context	12
6.2 Development Plan position	12
6.2.1 South Ayrshire Local Development Plan (2014)	12
6.2.2 South Ayrshire Local Development Plan Supplementary Guidance: Wind Energy 2015	13
6.2.3 Dumfries and Galloway Local Development Plan (2014)	13
7 Scoping and consultation	14
7.1 Scoping	14
7.2 Consultation	14
8 Technical information	15
8.1 Landscape and visual	15
8.2 Ecology	16
8.3 Ornithology	17
8.4 Hydrology, hydrogeology, geology and soils	18
8.5 Archaeology and cultural heritage	19
8.6 Access, traffic and transport	19
8.7 Noise	20
8.8 Socio-economics and land use	21
8.9 Other Issues	23
8.10 Forestry	24
8.11 Schedule of Commitments	25
9 Summary	26
10 Benefits of the proposed Development	27
11 References	29

List of Figures

Figure 1: Site Location

Figure 2: Proposed Site Layout



Arecleoch Windfarm Extension

Preface

1. This document is the Non-Technical Summary of the Environmental Impact Assessment Report (EIA Report) and has been prepared to accompany the planning application for the proposed Arecleoch Windfarm Extension. The proposed Development is located approximately 3 km south west of Barrhill in South Ayrshire, centred on NGR NX 19194 80689, as shown on **Figure 1**. The proposed Development would be known as the Arecleoch Windfarm Extension.
2. The EIA Report comprises the following:
 - Volume 1 Non-Technical Summary;
 - Volume 2 Written Statement;
 - Volume 3 Figures; and
 - Volume 4 Technical Appendices.
3. Hard copies of this NTS are available free of charge from:

SLR Consulting Limited
Floor 2
4/5 Lochside View
Edinburgh Park
Edinburgh EH12 9DH
Tel: 0131 335 6830
4. Hard copies of the EIA Report may be purchased by arrangement from the above address for £1,000 per copy, or £15 per DVD/USB. The price of the hard copy reflects the cost of producing all of the Landscape and Visual photographs at the recommended size. As such, a DVD version is recommended.
5. A copy of the NTS will be made available for download from the SPR corporate website at:
https://www.scottishpowerrenewables.com/pages/arecleoch_windfarm_extension.aspx
6. A hardcopy of the EIA Report is available for viewing by the public during normal opening hours at the following locations:
 - Barrhill Memorial Hall, Main Street, Barrhill, KA26 0PP;
 - Colmonell CE Centre, Main Street, Colmonell, KA26 0RY;
 - South Ayrshire Council, Burns House, Burns Statue Square, Ayr, KA7 1UT
 - Dumfries & Galloway Council HQ, Kirkbank House, English Street, Dumfries, DG1 2HS; and
 - Scottish Government Library, Victoria Quay, Edinburgh, EH6 6QQ.
7. Comments in relation to the application for consent should be forwarded to the address below:

Energy Consents Unit
Scottish Government
4th Floor
5 Atlantic Quay
150 Broomielaw
Glasgow G2 8LU

Email: representations@gov.scot

Web: www.energyconsents.scot/Register.aspx

EIA Report Non-Technical Summary

1 Introduction

8. This Non-Technical Summary (NTS) summarises the Environmental Impact Assessment (EIA) Report for the proposed Arecleoch Windfarm Extension. The EIA Report accompanies an application for planning permission under Section 36 of the 1989 Electricity Act. The proposed Development will constitute a Schedule 2 development as provided for by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations).
9. Arecleoch Windfarm Extension is referred to in this NTS and in the EIA Report as 'the proposed Development'. The proposed Development forms an extension to the adjacent 60 turbine Arecleoch Windfarm and comprises 13 turbines with a maximum height to blade tip of 200 metres (m) providing an installed capacity in the region of 72.8 megawatts (MW), together with associated infrastructure.
10. The area required for the proposed Development is approximately 1,440 ha, located approximately 3 km south west of Barrhill, approximately 3.3 km south of the village of Pinwherry and 3.5 km south east of the village of Colmonell within South Ayrshire as shown on **Figure 1**.
11. Environmental effects of the proposed Development have been considered as part of an iterative design process and included within the Environmental Impact Assessment (EIA). The results of the EIA are presented within the EIA Report and summarised in this NTS. The EIA Report informs readers of the nature of the proposed Development, likely significant environmental effects and measures proposed to protect the environment, during site preparation, construction, and the operation of the proposed Development.
12. Assessments as reported in this EIA Report have been informed by work undertaken as part of the EIA process. Further details on the Site history and selection are provided Section 4 of this NTS.
13. The proposed Development would produce between approximately 200 GWh and 230 GWh of electricity annually (based on an average capacity factor of between 31-36 % estimated for the Site based on a 5.6 MW turbine). This equates to the annual power consumed by approximately 53,000 – 60,000 average UK households¹ (depending on the actual turbines installed). By using the latest turbine technology, each turbine at the proposed Development could produce 4 to 4.5 times the annual electricity of an existing Arecleoch Windfarm turbine and in total around 75 – 85% of the annual output of Arecleoch Windfarm. This would be achieved with an additional 22% of the number of turbines (13 turbines compared to 60 at Arecleoch).
14. ScottishPower Renewables is part of the ScottishPower group of companies operating in the UK under the Iberdrola Group, one of the world's largest integrated utility companies and a world leader in wind energy. ScottishPower now only produces 100% green electricity – focusing on wind energy, smart grids and driving the change to a cleaner, electric future. The company is investing over £4m every working day in 2019 to make this happen and is committed to speeding up the transition to cleaner electric transport, improving air quality and over time, driving down bills to deliver a better future, quicker for everyone.
15. ScottishPower Renewables is at the forefront of the development of the renewables industry through pioneering ideas, forward thinking and outstanding innovation. Its ambitious growth plans include expansion of its existing onshore wind portfolio, investment in new large scale solar deployment and innovative grid storage systems including batteries. The company is also delivering the Iberdrola Group's offshore windfarms in the Southern North Sea off East Anglia as part of an international pipeline of projects across Europe and the USA.

¹ Calculated using the most recent statistics from the Department of Business, Energy and Industrial Strategy (BEIS) showing that annual UK average domestic household consumption is 3,781kWh (RenewableUK, 2018).

16. With over 40 operational windfarms, SPR manages all its sites through its world leading Control Centre at Whitelee Windfarm, near Glasgow. SPR has long been involved in south west Scotland and currently owns and operates five onshore windfarms in the South Ayrshire region (Arecleoch, Mark Hill, Kilgallioch, Dersalloch and Glen App) and a number of others in the wider Ayrshire and Dumfries and Galloway regions.

2 Renewable energy policy

17. The UK Government and the Scottish Government are committed to ensuring that an increased proportion of electricity is generated from wind power and other renewable energy sources. Improvements in technology have resulted in the cost of wind power converging towards the costs of conventional sources of electricity.
18. The Climate Change Delivery Plan: Meeting Scotland's Statutory Climate Change Targets was published in 2009, setting out the high level measures required in each sector to meet Scotland's statutory climate change targets to 2020. The Climate Change (Scotland) Act was passed in August 2009, creating a statutory framework for greenhouse gas emission reductions and required Scottish Ministers to set annual targets for Scottish emissions from 2010 to 2050.
19. The Climate Change (Scotland) Act 2009 aims for an 80 % reduction in Scotland's greenhouse gas emissions by 2050 and includes an interim target of a 42 % reduction by 2020 (compared to 1990 levels). In 2007 the Scottish Government set a target for the supply of 50 % of Scotland's electricity from renewable sources by 2020, and in May 2011 revised its targets and now aims to provide 100 % of Scotland's electricity generation from renewable sources by 2020.
20. The 2020 Routemap for Renewable Energy was published in June 2011. This document sets out a Scottish Government target to meet an equivalent of 100 % demand for electricity from renewable energy by 2020. Given the proven status of the technology, and the known and anticipated quantity of applications in the system, the Routemap notes that onshore wind is expected to provide the majority of capacity in the timeframe of the 2020 renewable electricity targets.
21. In September 2015, the Scottish Government published the 2020 Routemap for Renewable Energy in Scotland-Update. The foreword of this document advises that provisional figures show that renewable sources generated 49.8 % of gross electricity consumption in 2014. While this suggests that Scotland is on target to meet the interim target of 50 % by 2015 it is clear that Scotland should not underestimate the challenges that lie ahead in meeting future targets. The document is clear that onshore wind has a pivotal role in delivering the 2020 renewable energy targets for Scotland.
22. In December 2017, the Scottish Government published the Scottish Energy Strategy. The Energy Strategy sets out the Scottish Government's vision for the future energy system in Scotland, for the period to 2050. The strategy is designed to provide a long term vision to guide detailed energy policy decisions over the coming decades. It articulates the priorities for an integrated system-wide approach that considers both the use and the supply of energy for heat, power and transport.
23. The SES advises that for Scotland to meet the domestic and international climate change targets, the Government will set a new 2030 'all-energy' target for the equivalent of 50% of Scotland's heat, transport and electricity consumption to be supplied from renewable sources. The SES advises that onshore wind development is essential to Scotland's transformation to a fully decarbonised energy system by 2050 and brings opportunities which underpin our vision to grow a low carbon economy and build a fairer society.

3 Environmental Impact Assessment

24. Under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations), the proposed Development is considered likely to have significant effects on the environment and must undergo the process of EIA and an EIA Report must be submitted with the application.
25. Potential environmental effects have been assessed to identify any that may be significant in the context of the EIA Regulations. Mitigation is proposed where possible to prevent, reduce or offset significant effects.
26. In accordance with the EIA Regulations, the assessment has also considered 'cumulative effects'. By definition these are effects that result from incremental changes caused by past, present or reasonably foreseeable actions together with the proposed Development.

4 Site selection, alternatives and design strategy

4.1 Site selection

27. SPR's site selection process is designed to identify potential windfarm sites that are financially and technically viable, environmentally acceptable, most likely to obtain planning approval, and make meaningful contributions to Scotland's targets for renewable energy generation.
28. SPR is committed to avoiding the development of windfarms in areas where there would be an unacceptable effect on environmentally designated sites and where mitigation measures are likely to be unacceptable. SPR is also committed to not considering sites that have an unacceptable effect on landscape character or amenity of National Parks and National Scenic Areas, and special consideration is attributed to internationally and nationally important species and habitats in the wider area.
29. Site selection work by SPR is an ongoing process, whereby a list of candidate sites is maintained and updated as new opportunities are identified and candidate sites move into development. Candidate sites are identified initially through a desk-based exercise which includes the consideration of issues such as site capacity, distance from properties, exposure and topography, site access and proximity to a potential electricity grid connection point.
30. The proposed Development Site was short-listed due to a number of factors, including the following:
- there are no international or national statutory designations for landscape and nature conservation in, or within close proximity of, the turbine area of the Site;
 - there are no planning policies which, in principle, preclude wind energy development. The Site is located within an area which the Local Development Plan has identified as having potential for windfarm development. Further information on this is provided in Chapter 4 of the EIA Report: Renewable Energy and Planning Policy;
 - initial desk-based studies and wind monitoring onsite suggest that there is likely to be a good wind resource and the Site is available for wind energy development;
 - potential connection options to the electrical grid system including the possibility to connect the proposed Development onsite substation to the substation at the nearby Kilgallioch or Mark Hill Windfarms;
 - it has good access from the public road network particularly for longer blades which allows consideration of larger turbines to make the best use of the expected wind resource; and
 - the Site is a reasonable distance away from the nearest residential properties.
31. In addition, Scottish Planning Policy (SPP) (June 2014) provides support for wind development in principle and encourages local authorities to guide developments towards appropriate locations. Paragraph 154 states that planning authorities "*should support the development of a diverse range of electricity generation from renewable energy technologies – including the expansion of renewable energy generation capacity*".
32. SPP Paragraph 155 also states that "*development plans should seek to ensure an area's full potential for electricity and heat from renewable sources is achieved, in line with national climate change targets.*" In response to these policy requirements South Ayrshire Council (SAC) has undertaken a landscape capacity study (2018) to identify those landscapes which, in principle, have the capacity to accommodate wind turbines. SAC has identified the Site as having the capacity to accommodate wind turbines and this has helped inform the site selection process.

4.2 Design approach

33. The purpose of a windfarm is to harvest the energy of the wind and convert this to electricity. The process of turbine siting is a balance between maximising energy yield, and minimising potential for adverse environmental effects. The main environmental parameter affecting design is often landscape and visual effect, but other factors such as ornithology, noise and ecological effects also carry considerable weight.

-
34. This combination of environmental, design and technical parameters has, through the iterative process of the environmental assessment, resulted in the proposed layout. It is considered that the proposal therefore represents an optimum fit within the technical and environmental parameters of the project. A range of layout options were refined through an iterative process of design.
35. Based on analysis and field work observations, a design concept for the proposed Development was generated identifying the preferred areas for turbines within the Site. The main design objectives were as follows:
- avoid the ridgeline and upper eastern slopes at the north east of the Site around Shiel Hill;
 - limit proximity to closest residential receptors;
 - limit impacts on priority peatland and carbon areas;
 - respect other environmental constraints;
 - create a scheme which maximises the potential of the Site to generate and store renewable energy; and
 - use of the existing infrastructure (tracks and borrow pits on the Site) as far as practicably possible.
36. The main landscape and visual design factors and other considerations that were identified comprised the following:
- proximity to and visibility from residential properties as well as the settlements of Barrhill to the north east and Colmonell to the north;
 - visibility from the more sensitive landscapes of the Stinchar, Duisk and Glen Tig Valleys;
 - achievement of a layout which achieves a reasonably balanced group of turbines when seen from key receptor locations in the surrounding landscape;
 - consideration of the cumulative landscape and visual impacts from the proposed Development in addition to the Arecleoch Windfarm, as well as other nearby consented wind farms; and
 - cumulative noise impact.
37. The layout and design of the proposed Development were considered as part of an iterative design process aimed at reducing the potential landscape and visual effects of the windfarm whilst taking into account other Site constraints and commercial requirements.
38. An iterative design approach works in tandem with the EIA process and allows a receptive design process where incremental changes in layout and design result from a continually developing understanding of environmental considerations. This iterative approach allows potential environmental effects, as they are identified, to be minimised through alterations in design.
39. It is considered that the design respects the form of the underlying landscape and its scale. Wind energy development is clearly a key characteristic of the existing baseline landscape and visual context, and it is expected to continue to be for the foreseeable future; this has been an important consideration in the design of the proposed Development.

5 Windfarm proposal

40. The layout of the proposed Development is shown on **Figure 2**. The proposed Development would comprise 13 three-bladed horizontal axis turbines up to 200 m tip height with a combined rated output in the region of 72.8MW. The layout of the proposed Development is shown on **Figure 2** which includes:
- turbine foundations;
 - crane hardstandings;
 - transformer/switchgear housings located adjacent to turbines;
 - new and upgraded access tracks including watercourse crossings where necessary;
 - underground electrical cabling;
 - substation compounds including control buildings, external equipment and ancillary grid service equipment/battery storage;
 - one permanent anemometer mast;
 - up to four temporary Power Performance Masts;
 - close circuit television mast(s);
 - communication mast(s);
 - site signage;
 - search areas for up to six borrow pits; and
 - one temporary construction compound area.
41. The proposed Development would also require forest restructuring works to enable construction and operation of the windfarm.
42. Turbines would be in excess of 150m to blade tip and would need to be lit with medium intensity (2000 candela) steady red aviation warning lights (with dimming option) as per Article 222 of the UK Air Navigation Order (ANO) 2016.
43. In addition, it is proposed to explore the possibility of using 'smart' aviation lighting (aviation obstruction lighting detection system) whereby the lights would only be switched on when low altitude aircraft approach them. The CAA is in the process of consulting on a new policy statement on En-Route Aviation Detection Systems for Wind Turbine Obstruction Lighting Operation. SPR has had an opportunity to review the CAA's proposal as part of an industry working group considering this guidance. It is expected that this guidance will be finalised and released during 2019. SPR's calculations from the draft guidance estimate that the upper boundary of this volume would be around 2500 ft above ground level and bounded by 4 km horizontal distance (see **Chapter 15: Other Issues**). The aviation lighting would not be activated when commercial airlines pass over the Site as such aircraft ordinarily operate in Controlled Airspace (CAS), the base of which CAS over the Site being 5,000 ft and above.
44. Given the lights are only required for general aviators flying at night in the vicinity of the Site at altitudes of up to 2500 ft, it is anticipated that the lights will be rarely on in this quiet airspace.
45. It is estimated that approximately 122,413 m³ of stone aggregate would be required for construction of the proposed Development. It is anticipated that stone aggregate would be sourced from up to six onsite borrow pits and used for the construction of the proposed Development including access tracks, crane hardstandings, substation compound, construction compound and laydown areas. This includes suitable capping material to form a hard wearing surface on the access tracks. However for the purposes of considering the worst case traffic impact within this EIA Report, it has been assumed that 100% of the required aggregate would be imported.
46. An area of approximately 135 ha of forestry would require to be felled during the construction phase to accommodate the proposed turbines and associated infrastructure. There would be a 60.1 ha net loss of stocked woodland area as a result of the proposed Development. In line with the Scottish Government's Control of Woodland Removal Policy, compensatory planting of an area equivalent to the net loss would be undertaken.

-
47. As a result of any possible issues encountered during site construction (e.g. unsuitable ground conditions), it may be necessary to microsite elements of the proposed Development (i.e. revise the location of infrastructure to a more suitable place). It is proposed that a 50 m micrositing tolerance from turbines and other infrastructure would be applied to the proposed Development and that within this distance any micrositing would be agreed in advance with specialist advisors such as ecologists and/or archaeologists.
48. Technical studies have been undertaken to identify potential access routes to the proposed Development Site, and these have been supplemented by the experience gained during the construction of Arecleoch and Kilgallioch Windfarms. This has enabled the identification of routes for the road transportation of abnormal loads such as wind turbine components (e.g. tower sections, nacelle and blades) using specialised heavy transport vehicles as well as Heavy Goods Vehicles (HGVs) and other vehicles.
49. It is proposed that the wind turbines would be likely delivered to the George V Dock in Glasgow. The turbines would be moved from the port of entry to the Site under escort. The port of Cairnryan has some restrictions including limited water depth and port handling facilities/component storage and may limit the use of this port, however this will also be considered and from here turbines would be moved south along the A77, A751, A75 and then the unclassified road past Newton Stewart and then north along the A714 to the Site entrance at Wheeb Bridge. In the case of George V Dock the turbines would be moved along the A74 (M) to the M6 where they would be turned northwards at junction 44, along the A75 to the unclassified road past Newton Stewart where they would join the A714. This route has previously been used during the construction of Kilgallioch Windfarm.
50. HGV construction vehicles would mainly use the access from Wheeb Bridge, however it is anticipated that the Site entrance at Bents Farm may be used for some construction traffic and also used for Light Goods Vehicle (LGV) during operation. It is also proposed that the unclassified Barrhill to New Luce road may be used for some LGV traffic during construction and operation. New access tracks would be required within the Site and existing access tracks may require upgrading.
51. An ancillary services facility is proposed within the control compound / sub-station location. The facility would be able to undertake a range of ancillary services as welcomed by National Grid, such as storing electricity, both importing and exporting power to the National Grid network as required and allowing the grid to manage both supply and demand (balancing services). The facility may also offer other services to National Grid such as frequency control, reactive power compensation and re-starting the electrical grid in the event of failure ('black start').
52. Amongst a range of services, the 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.
53. The compound would comprise of a range of electrical grid equipment, such as, but not limited to:
- Control building;
 - Energy storage, e.g. battery containers, with up to 20MW of battery equipment;
 - Transformers;
 - Other electrical equipment;
 - HVAC Coolers; and
 - Electrical cabling.
54. The grid connection point for the proposed Development is subject to confirmation by the network operator/owner. The precise route of the grid connection cabling has not yet been determined and the assessment of its effects are not identifiable because it has yet to be designed and applied for.
55. The grid connection is likely to require consent under Section 37 of the Electricity Act 1989 which is the subject of a separate consenting process to this planning application. The grid connection application would be made by ScottishPower Energy Networks (SPEN) who are the network owner in the area of the proposed Development and who would own assets beyond the Site substation.
56. There is no proposal to limit the lifetime of the proposed Development. Therefore, the EIA Report considers the effects of the operational phase of the proposed Development, without limitation to a defined period of time such as 25 years. Should

consent be granted, it is anticipated that there would be a condition which would deal with the requirement to remove turbines if they become non-operational for a defined period of time.

6 Legal and policy framework

6.1 Legislative context

57. The proposed Development comprises 13 turbines with a maximum height to blade tip of 200 m providing an installed capacity in the region of 72.8 MW, together with associated infrastructure and as such an application for planning permission under Section 36 the 1989 Act is being made to the Scottish Governments Energy Consents Unit. The proposed Development will constitute a Schedule 2 development as provided for by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations).

6.2 Development Plan position

58. The EIA Report is prepared in respect of a development which will be considered in the context of Section 36 of the Electricity Act 1989 (Section 36 Application). In the consideration of the application the Scottish Ministers' have a duty to fulfil the requirements of Schedule 9 (paragraph 3) of the Electricity Act 1989. This requires the Scottish Ministers to consider 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"*. In addition, the Scottish Ministers are required to assess whether the applicant has fulfilled the requirement to *"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"*.

59. In the case of Section 36 Applications the role of the Development Plan is not the same as in the case of the Town and Country Planning (Scotland) Act 1997. The test set out in Section 25 of the Town and Country Planning (Scotland) Act 1997 which sets out that development must accord with the terms of the Development Plan is not engaged in the case of a S36 application. The Development Plan is nonetheless material to the determination of the application.

60. The majority of the Site is located within the administrative area of SAC. The Site entrance is located within the administrative area of Dumfries & Galloway Council (D&GC). The Development Plan for the Site therefore comprises:

- South Ayrshire Local Development Plan (2014) and associated Supplementary Guidance; and
- Dumfries and Galloway Local Development Plan (2014) and associated Supplementary Guidance.

61. The Development Plan will be considered for the proposed Development within that administrative area. As the proposed turbines would be located in SAC the Development Plan policies relevant to windfarm development will be considered. In the case of the development in D&GC the development relates to traffic and the traffic and transport policies will be considered.

6.2.1 South Ayrshire Local Development Plan (2014)

62. The South Ayrshire Local Development Plan was adopted in September 2014 (the SALDP). Preparation of a new Local Development Plan (SALDP2) is underway with the proposed plan due to be published in the summer of 2019 and a period of consultation to follow. It is expected that SALDP2 will be adopted in 2020. The SALDP is therefore considered to be a relevant and up to date Local Development Plan. The Wind Energy Policy is considered to be the most relevant SALDP Policy to the proposed Development. The SALDP Wind Energy Policy states 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."

63. The following policies are also considered to be relevant to the proposed Development and will be considered during the design and development of the proposed windfarm:

LDP Policy: Renewable Energy;
LDP Policy: Landscape Quality;
LDP Policy: Protecting the Landscape;
LDP Policy: Woodland and Forestry;
LDP Policy: Preserving Trees;
LDP Policy: Historic Environment;
LDP Policy: Archaeology;
LDP Policy: Natural Heritage;
LDP Policy: Land use and Transport;
LDP Policy: Outdoor Public Access and Core Paths;
LDP Policy: Water Environment;
LDP Policy: Agricultural Land;
LDP Policy: Air, Noise and Light Pollution;
LDP Policy: Minerals and Aggregates; and
LDP Policy: Dark Skies.

6.2.2 South Ayrshire Local Development Plan Supplementary Guidance: Wind Energy 2015

64. The South Ayrshire Local Development Plan Supplementary Guidance: Wind Energy 2015 (the SGWE) adopted in December 2015 outlines the Spatial Framework for wind energy development within South Ayrshire. This Spatial Framework identifies areas which have potential for windfarm development and those which do not, or those which require significant protection. The Site for the proposed Development is located in areas identified as 'Areas with potential for Windfarm development' and 'Area of significant protection'.

65. In addition to the SGWE, the Supplementary Guidance refers to the South Ayrshire Landscape Wind Capacity Study (SALWCS) (updated in 2018) which provides advice on landscape sensitivities, thresholds and cumulative issues amongst other things. The SALWCS places the Site within a Landscape Character Type (LCT) that has been identified as a Search Area for the Large Typology (Turbines >70m).

6.2.3 Dumfries and Galloway Local Development Plan (2014)

66. The Dumfries and Galloway Local Development Plan (DGLDP) was adopted in September 2014. D&GC are currently working on a new Local Development Plan which will supersede the DGLDP, however this is not expected to come into force until September 2019. The DGLDP is therefore considered to be a relevant and up to date Local Development Plan Policy. Policy T1 Transport Infrastructure is considered to be the most relevant DGLDP policy to the proposed Development. 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.

67. DGLDP Policy IN2: Wind Energy, also has some relevance as the proposed Development would include a Site access for windfarm development. Policy IN2 states that proposals will be assessed against set considerations, including the following:

- landscape and visual impact;
- cumulative impact;
- impact on local communities; and
- impact on aviation and defence interests.

68. The impact on local communities as a result of the transportation of the turbines is considered in the EIA Report.

69. There is no relevant Supplementary Guidance which relates to the type of works proposed in the Dumfries & Galloway Council (D&GC) area.

7 Scoping and consultation

70. The purpose of scoping and pre-application consultation is to:

- ensure that statutory consultees and other bodies with a particular interest in the environment are informed of the proposal and provided with an opportunity to comment at an early stage in the EIA process;
- obtain baseline information regarding existing environmental site conditions;
- establish key environmental issues and identify potential effects to be considered during the EIA;
- identify those issues which are likely to require more detailed study and those which can be justifiably excluded from further assessment; and
- provide a means of confirming the most appropriate methods of assessment.

7.1 Scoping

71. In October 2018 an EIA Scoping Report was prepared and submitted to the Energy Consents Unit (ECU) to accompany a formal request for ECU to provide a scoping opinion.

72. The request for a scoping opinion formed the basis for early consultation with a number of organisations, who were asked for relevant information, opinions on the proposed Development and views on the proposed assessment methodologies.

73. The output from all the consultation responses collated during the Scoping process is addressed in the EIA Report.

7.2 Consultation

74. The process of consultation is critical to the development of a comprehensive and balanced EIA Report. Views of the key statutory and non-statutory consultees serve to focus the environmental studies and to identify key specific issues which may require further investigation.

75. A comprehensive understanding of the requirements/views of consultees has been sought as part of the EIA process. This has informed the project development and EIA process undertaken for the proposed Development. In addition to the public consultation undertaken between 2018 and 2019, a range of statutory bodies, non-statutory bodies, community councils and landowners were consulted specifically in relation to the proposed Development.

76. Public consultation is seen as a key element of the Environmental Impact Assessment process. Further information on this is contained in the Pre-Application Consultation Report that is provided alongside the application for consent.

8 Technical information

8.1 Landscape and visual

77. Chapter 7 of the EIA Report, landscape and visual impact assessment (LVIA), evaluates the effects of the proposed Development. The LVIA considers direct effects on the landscape, effects on how the landscape is perceived and the effect on visual amenity within the study area. Effects arising from the addition of the proposed Development to other windfarms in the area are also considered (cumulative effects). The LVIA has assessed the potential for significant landscape and visual effects over a 45 km study area focussing the detailed assessment within a 20 km area.
78. The proposed Development is located on an upland landscape and the scale and characteristics of the upland landscape are considered suitable for windfarm development. The approach to landscape and visual assessment employed field surveys within the agreed study area and a detailed desk study including the generation of Zone of Theoretical Visibility (ZTV) maps which determined those receptors (landscape or visual receptors) with potential visibility of the proposed Development. Visualisations of the proposed Development were produced from agreed viewpoints to help inform the assessment. In addition, cumulative wireframes, ZTVs and diagrams from sequential routes were also produced.
79. With the proposed Development structures in excess of 150 m the proposed Development turbines would require to be marked with medium intensity visible aviation lights as a result it was also required to undertake a visual assessment of turbine lighting. As noted in Section 5 above, it is proposed that SPR would explore the possibility of using 'smart' aviation lighting whereby the lights would only be switched on when low altitude aircraft approach them. If this technology were to be deployed and given the lights are only required for general aviators flying at night in the vicinity of the Site at altitudes of up to 2500 ft, it is anticipated that the lights would be rarely on in this quiet airspace. The LVIA however has assessed the 'worst case' scenario in that the lights are permanently lit.
80. The assessment has identified that the significant landscape and visual effects of the proposed development would be relatively contained within the surrounding landscape. The physical landscape effects of the proposed Development on forestry landscape elements are considered to be not significant. Significant landscape effects within the Plateau Moorlands with Forestry and Windfarms (18c) Landscape Character Type (LCT) would extend to around 3 km to the north and west as far as Pinwherry and Ford Hills which contain the effect from the Stinchar Valley; 5 km to the south, across the minor road to Luce from Barrhill and as far as the existing Kilgallioch Windfarm; 2-3 km to the north east as far the Duisk Valley and 5 km to the east defined by the west slopes of the upper Duisk Valley. Significant effects within the Intimate Pastoral Valley (13) LCT would be restricted to the Duisk Valley, effects within the Stinchar Valley assessed as negligible and Not Significant. Significant effects within the Glen Tig (14) LCT would be restricted to the eastern end of the glen (limited to the area immediately surrounded by the Plateau Moorlands with Forestry and Windfarms (18c) LCT. Significant effects are also found for Plateau Moorlands with Forestry and Windfarms (18c) LCT when the proposed Development is introduced into the consented and application cumulative scenarios. Significant effects within the South Ayrshire SLA are limited to the area within the Duisk Valley of the Intimate Pastoral Valley (13) LCT and the eastern area of Glen Tig (14) LCT. It is considered that other designations in the study area have no potential for significant effects including areas of Regional Scenic Area (RSA), Sensitive Landscape Area (SLA), National Scenic Area (NSA) and Garden and Designed Landscapes (GDL). It is also considered that the Galloway Forest Park, Merrick Wild Land Area or Dark Sky Park have no potential for significant effects.
81. The assessment of effects on views is informed by a series of 22 viewpoints that were selected, in agreement with Scottish Natural Heritage (SNH) and SAC, to represent visibility from a range of receptors and distances throughout the study area. 7 of these viewpoints were found to have significant effects. Significant visual effects including viewpoints and visual receptors as a result of the proposed Development but also including cumulative scenarios for consented and application schemes are largely found to occur to the north and east of the proposed Development. The majority of significant visual effects would occur within approximately 5 km but do extend to around 7 km along the A714 and from the elevated landform of Knockdolian. None of the settlements considered in the LVIA were considered to experience significant effects. The A714 would have significant effects on a localised section of the route although significant sequential effects were not predicted. The Southern Upland Way would not experience significant sequential effects. The Residential Visual Amenity Assessment (RVAA) predicted significant effects for 2 properties although no overbearing effects were identified. The visual effects of turbine lighting were considered from 4 agreed viewpoints. Of these 4 locations, significant effects were identified at all 4

locations for the 2000cd intensity scenario and not significant at all 4 locations for the 200cd intensity scenario. Road users at Viewpoint A are also predicted to experience not significant effects for the 2000cd scenario.

82. The assessment has identified that the significant landscape and visual effects of the proposed Development would be contained within a relatively localised area around the Site when compared with other windfarm developments of this scale. Significant landscape character effects are assessed to occur within a maximum of 3 km from the nearest turbine to the north and north west, increasing to 5 km to the north and east. Significant visual effects have been identified as occurring out to 7 km. In landscape and visual terms, it is considered that there is scope for windfarm development within the large scale upland landscape of the Plateau Moorlands with Forestry and Windfarms (18c) LCT. Whilst significant effects extend to the nearby Duisk Valley and parts of Glen Tig, the proposed Development would appear set back from the edges of this upland area when viewed from the surrounding valleys and glens and would add to an existing pattern of development (namely the Arcleloch, Kilgallioch and Mark Hill Windfarms) experienced from the immediately surrounding landscape and visual resource. Whilst the proposed Development would extend the overall footprint of windfarm development in this area it would not in itself contribute to the coalescence of the existing or consented windfarms in the area.
83. It is considered that the landscape is capable of accommodating the proposed Development, and that significant effects on the existing landscape character or visual amenity are relatively contained.

8.2 Ecology

84. Chapter 8 of the EIA Report has considered the potential effects on the ecological features from the proposed Development (and cumulatively with other developments) associated with the construction and operation of the proposed Development. The assessment method followed the guidance detailed by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2018).
85. It was possible to scope out most species and habitats recorded in the relevant study areas from the assessment by virtue of their low conservation value, the type and frequency of field signs present, the small extent of the sensitive habitat, or the negligible scale of potential effects. The Important Ecological Features (IEFs) taken forward for assessment were wet modified bog, *Nyctalus bats* (*noctule* and *Leisler's bat*) and pipistrelle bat species (common and soprano pipistrelle).
86. Wet modified bog within the study area is considered to be of Local Nature Conservation Value and was considered in more detail for the assessment. Conservation status of this habitat is 'Bad' and 'Declining' at the UK level however within the study area, the habitat has been heavily influenced by anthropogenic impacts, with the single largest factor being the widespread commercial conifer plantation and its associated drainage, drying and shading effects. Direct and indirect habitat loss due to land take for infrastructure and disturbance of the bog's hydrology were assessed. 2.12 ha of direct and 6.4 ha of indirect habitat loss is predicted to occur. The magnitude of impact at a local or regional context is considered to be negligible in spatial (geographic) terms, and long-term. Taking account the value and condition of the bog within the Site and the magnitude impact, the effect was considered to be negligible and not significant under the EIA Regulations. There are no significant residual effects predicted on wet modified bog.
87. As no significant effects are predicted upon habitats as a result of the proposed Development, no further specific mitigation or enhancement is required in addition to the in-built mitigation and assumed good practice measures to be implemented as standard (e.g. pollution prevention measures through the Construction Environment Management Plan (CEMP) and presence of an Ecological Clerk of Works (ECoW) to inform micro-sting if required.
88. Potential operational effects on *Nyctalus* and pipistrelle bats were assessed. With all three potential roost sites at distances of over 200 m from turbine locations and over 150 m from any other infrastructure, the only impact assessed was collision risks to commuting and foraging bats during the operational phase, a low activity level and low collision risk for *Nyctalus* species was demonstrated. Impact magnitude was concluded to be negligible in spatial (geographic) terms and long-term. Although a collision risk may exist for *Nyctalus* species, collision rates due to the proposed Development alone during operation would not be significant in a regional population context. For Pipistrelle bats, a moderate activity level and medium collision risk was demonstrated for pipistrelle species within a Site context. Impact magnitude was concluded to be moderate in spatial (geographic) terms and long-term. It was determined that during operation unmitigated collision rates due to the proposed Development would be significant in a local population context for both soprano and common pipistrelle. In addition to the standard build-in mitigation (50 m buffer from blade tip to forest edge), additional mitigation measures are proposed and detailed in Technical Appendix 8.4 Bat Monitoring and Mitigation Plan. Mitigation would consist of curtailment of all turbines while they are idling i.e. below the cut-in wind speed at which electricity generation occurs (feathering) between the

months of April - October between sunset and sunrise each year for the lifetime of the proposed Development and monitoring of activity and carcass searches. This reduces the residual effect to negligible and not significant for *Nyctalus* and pipistrelle species. A cumulative negligible adverse effect which is not significant was concluded for *Nyctalus* and pipistrelle spp., given the mitigation measures proposed.

8.3 Ornithology

89. Chapter 9 of the EIA Report considers the potential effects of the proposed Development on birds. It details the methods used to establish the bird species and populations present, together with the process used to determine their Nature Conservation Importance. The ways in which birds might be affected (directly or indirectly) by the construction and operation of the proposed Development are explained and an assessment is made with regards the significance of these effects.
90. A programme of ornithological surveys was conducted at the proposed Development and within its environs from January 2014 to December 2014; then from April to August 2017; and from April 2018 to March 2019. These surveys allowed a description of the bird assemblages and their use of the area including flight activity which then allowed an assessment of the potential effects of the proposed Development on birds to be carried out.
91. Survey effort for flight activity was completed for over 1380 hours of watches over three breeding seasons and two non-breeding seasons. Vantage point surveys were undertaken from seven watch points which were changed between the 2014 and 2017 survey periods to take into account an alteration to the survey area. Dedicated surveys for scarce breeding raptors and owls, along with searches for black grouse and nightjar were undertaken in all the breeding periods. Surveys for breeding birds of open ground were also undertaken. Walkover surveys were also undertaken during the non-breeding periods.
92. The bird assemblages of the proposed Development and its environs are typical of a commercial plantation forest in this region. The proposed Development does not apparently underlie any major aerial routes of bird movements, either for breeding birds commuting between nest sites and feeding areas, for migratory birds, or for over-wintering birds flying between feeding and roosting locations.
93. Data from the surveys were used to assess the potential effects of the proposed Development on the bird assemblage. In order to do this accurately the data were tailored to the relevant buffers of the proposed Development recommended by SNH Guidance prior to inclusion in the assessment.
94. The potential impacts resulting from the proposed Development on birds are:
- habitat modification and direct habitat loss due to land-take, changes in land management, and tree felling during construction and operation;
 - indirect habitat loss due to displacement of birds as a result of construction and maintenance activities or due to the presence of operational turbines close to nesting or feeding sites or habitual flight routes;
 - collision with rotating turbine blades during the operational phase (i.e. killing or injuring birds); and
 - cumulative impacts within the regional population arising from the potential impacts during the operational phase taken along with those impacts predicted for other windfarm developments in the region.
95. The significance of the potential effects of the proposed Development on birds was determined by considering the nature conservation importance of each key receptor species, the potential magnitude of each effect spatially and temporally, including their behavioural sensitivity to potential effects. In making judgements on significance, consideration was given to the conservation status of, and trends within, regional populations and how the proposed Development may influence change in conservation status. Detectable changes in regional populations of receptor species are automatically considered to be significant effects under the EIA Regulations (i.e. no distinction is made between effects of “major” or “moderate” significance). Non-significant effects include all those which are likely to result in barely detectable “minor” or non-detectable “negligible” changes in the conservation status of regional populations.
96. Overall only one species of nature conservation importance (goshawk) warranted assessment of potential adverse effects. All other species either had too few records or the species concerned were deemed insensitive to windfarm development.
97. The felling of trees in relatively small areas to allow construction of the turbines and associated infrastructure could potentially lead to the loss of some nesting areas for this species, both during the construction and the operation of the proposed

Development. However, the remaining forest contains other suitable stands of trees and further stands would become suitable as younger trees mature. The conservation status of goshawk in Scotland is favourable, and the population in the region is large enough to sustain even the loss of this one pair from the population if they were unable to immediately relocate within the forest. The adverse effect of this loss of habitat was therefore assessed as negligible and not significant under the EIA Regulations.

98. Disturbance of any nesting attempts during the construction phase would be avoided through the embedded measures of a Bird Protection Plan. Displacement of foraging birds during construction and operation is possible. Goshawk is known to be relatively tolerant of human activities, and a pair of this species is currently nesting successfully in the working commercial plantation forest, within 300 m of a current windfarm track and 650 m of an operational wind turbine. It can therefore be considered that this pair is relatively tolerant of human activities and structures. The adverse effect of potential disturbance on the regional goshawk population was assessed as negligible and not significant under the EIA Regulations.
99. Mortality through collision with rotating turbine blades was predicted to have adverse effects of negligible impact on the regional population and thus was also not significant under the EIA Regulations.
100. The contribution of adverse effects accrued by the proposed Development to regional populations would be undetectable and so cumulative effects of the proposed Development with other existing and planned windfarm developments in the region are judged unlikely to have a significant effect on existing bird populations.
101. Overall, it is concluded that construction and operation of the proposed Development will not have a significant effect on birds under the terms of the EIA regulations.

8.4 Hydrology, hydrogeology, geology and soils

102. Chapter 10 of the EIA Report considers matters relevant to hydrology, hydrogeology, geology and soils. The proposed Development has been assessed in relation to the potential impact it may have on these areas during the construction and operational phases.
103. Information on the study area was compiled using baseline data from desk study and field work. The assessment was undertaken considering the sensitivity of any receptors identified during the baseline study and considering any mitigation measures incorporated as part of the site design.
104. The Site design has largely avoided the few smaller areas of deep peat and it has been shown that the relatively shallow soils that would be excavated as a consequence of the proposed Development can be readily accommodated on site.
105. The proposed Development is located in the catchments of the Water of Tig and the Cross Water. Fisheries data has shown the presence of salmon, trout, eel and lamprey in these catchments downstream of the study area. Private Water Supplies (PWS) from surface and groundwater have been shown to be located within 1 km of the Site. The proposed Development is therefore considered to be in the vicinity of sensitive receptors relating to the water environment. The site lies outside any floodplains.
106. Good practice measures have been identified to reduce pollution, erosion and sedimentation effects during the construction period, including adhering to good practice guidance and carrying out confirmatory water quality monitoring.
107. Specifically, measures have been proposed to safeguard the local watercourses which discharge to the Cross Water and Water of Tig. Measures have also been proposed to safeguard local water abstractions. These measures include, maintaining a standoff of at least 50 m from any part of the proposed Site infrastructure to watercourses and establishing a water quality monitoring programme to record water quality which can be used to assess for trends in water quality during Site construction and operation.
108. Measures have also been proposed to manage the quantity and quality of runoff that could be generated by the proposed Development. Sustainable Drainage Systems (SuDS) have been proposed to assure that the rate of runoff from the Site post development is no greater than that prior to development so as not to increase flood risk. The proposed SuDS measures allow the quality of water to be managed at source prior to any discharge being made. No direct discharge of water is proposed to watercourses.

109. A Peat Landslide Hazard Risk Assessment (Technical Appendix 10.1), has been carried out at the study area. This assessment found three areas within the Site with a significant stability hazard ranking. Once embedded mitigation and the proposed mitigation of micrositing access track has been taken into account, the revised hazard ranking is assessed as insignificant.
110. The above measures have been shown to eliminate any significant residual effect associated with the construction and operation of the proposed Development. All potential effects on hydrology, hydrogeology, geology and soils have therefore been assessed as negligible, after the incorporation of mitigation measures. The lack of significant effects relates primarily to the proposed 'Good Practice Measures', proposed water quality monitoring and the iterative design process, which effectively act as 'designed-in' mitigation which is described in Chapter 2 of the EIA Report. Specifically, a programme of water monitoring would be required prior to any construction activity and during construction of the wind farm which would need to be agreed with South Ayrshire Council, the Scottish Environment Protection Agency and Ayrshire Rivers Trust. This would include monitoring PWS sources and watercourses identified at potentially at risk without incorporation of best practice construction and mitigation techniques. No other further surveys or monitoring is considered necessary.
111. In addition, it is concluded that the proposed Development would not result in a cumulative effect on hydrology, hydrogeology, geology and soils.

8.5 Archaeology and cultural heritage

112. Archaeology and cultural heritage is considered in Chapter 11 of the EIA Report. A baseline study and impact assessment of the cultural heritage of the Site and the surrounding region has been undertaken. This assessment has been undertaken in accordance with national legislation, national and local government policies, and takes cognisance of the guidance documents of the Chartered Institute for Archaeologists. In order to complete the assessment, Historic Environment Scotland, Dumfries and Galloway Council and West of Scotland Archaeology Service (WoSAS) (acting on behalf of South Ayrshire Council) were consulted with regard to heritage assets within their respective remits.
113. The assessment includes a consideration of all direct impacts on all known designated and non-designated cultural heritage assets within the boundary of the proposed Development. The baseline condition for the area of the proposed Development incorporates a study of heritage assets within the existing Arcleloch Windfarm, the application boundary plus a 250 m buffer around these combined areas (known as an Inner Study Area), to create a predictive model of the probability for potential buried archaeological remains to exist.
114. There is moderate potential for unknown prehistoric sites within the proposed Development boundary. The potential for unknown Roman and early medieval remains is low across the Site. The potential for unknown medieval remains is low to moderate. The potential for unknown post-medieval sites is considered to be low.
115. No direct impacts above negligible on recorded assets are predicted. Mitigation measures were recommended with respect to potential unrecorded heritage assets. The resulting residual effect is assessed as not significant.
116. Indirect impact upon asset the setting of heritage assets was assessed for all assets within the Inner Study Area and of national and regional importance within an Outer Study Area of up to 5 km from the turbine locations, and for selected nationally important assets where distant views to and from the asset may be important for the understanding and appreciation of the asset. Within the Inner Study Area, the significance of operational effects on setting for the heritage assets in the study areas are nil to negligible, except for very slight impacts on the setting of Loch Hill Standing Stone (asset reference SLR No 27), Markdhu Cairn (SM4861), the Auchenflower designed landscape (WoSAS PIN 53505), and the Darconnar cairn (WoSAS PIN 11522). The potential operational impacts on the setting of heritage assets are not considered to be significant.

8.6 Access, traffic and transport

117. Chapter 12 of the EIA Report considers the transportation impacts associated with the proposed Development.
118. There are two key forms of potential impact from proposed windfarm developments: those from the transport of turbine components on over-sized Heavy Goods Vehicles (HGVs) and those as a result of the import of general construction materials. Both forms of potential impact are considered in the Chapter.

119. Turbine components would likely be delivered to the George V Dock in Glasgow by sea and from there to the proposed Site access by road, carried as abnormal loads. Construction materials would be sourced as locally as possible (from on Site where possible) and would access the Site via two existing locations. The first access is close to Wheeb Bridge on the A714 south of Barrhill and the second is close to Bents Farm north of Barrhill. The majority (80%) of construction HGVs would use the access at Wheeb Bridge with the access at Bents Farm being used for 20% of the HGV traffic and 80% of the light vehicle traffic.
120. This Chapter has been prepared according to the guidance document 'Transport Assessment and Implementation: A Guide' published by the Development Department of the Scottish Executive in 2005. It also takes account of the Institute of Environmental Management and Assessment (IEMA) guidelines and other departmental design standards as referenced.
121. During operation, the proposed Development would generate occasional maintenance trips, which would not lead to any variation in the baseline traffic flows beyond that of every day fluctuation. The Chapter therefore focussed on potential impacts associated with the construction phase.
122. The assessment is based around a number of 'worst case' assumptions made for the purpose of forming a robust assessment:
- all construction materials are assumed to be sourced from off-site locations, thus ensuring that the estimated level of trip generation is considered as a maximum; and
 - future traffic increases associated with the windfarm are measured against existing traffic flows, with no allowance for any growth in baseline traffic, thus ensuring that the highest level of impact is assessed.
123. The onsite borrow pits have been identified as able to supply the Site with all of the material required to construct the access tracks which would further reduce the amount of HGV movements required to build the windfarm.
124. The assessment concludes that the transportation effects during the construction phase would not be significant following the implementation of good practice measures, which include:
- A detailed Traffic Management Plan that would be put in place and agreed with Police Scotland, Ayrshire Roads Alliance, Dumfries and Galloway Council and Transport Scotland, prior to the commencement of development, a road condition survey (including assessment of existing structures as appropriate) prior to the construction period and a similar assessment following completion of the works;
 - A Traffic Control system which will deploy a range of measures including coordinating on site deliveries and collections and tracking movements on to and off Site;
 - The provision of accurate directions to delivery drivers to ensure that they are able to efficiently locate site entrances to avoid impacting local residents;
 - Ensuring all HGVs delivering materials to the Site are roadworthy, adequately maintained and sheeted as required;
 - Deploying adequate traffic management and banksmen for the movement of HGVs and abnormal loads; and
 - Maximising HGV loads to ensure that part load deliveries would be minimised.

8.7 Noise

125. Chapter 13 of the EIA Report presents an assessment of the potential construction and operational noise effects of the proposed Development on the residents of nearby dwellings. Noise would be emitted by equipment and vehicles used during construction of the proposed Development and by the turbines during operation. The level of noise emitted by the sources and the distance from those sources to the receiver locations are the main factors determining levels of noise at receptor locations.
126. Construction noise has been assessed by a desk-based study of a potential construction programme and by assuming the proposed Development is constructed using standard and common methods. Noise levels have been calculated for receiver locations closest to the areas of work and compared with guideline and baseline values. Construction noise, by its very nature, tends to be temporary and highly variable and therefore much less likely to cause adverse effects. The effect of traffic associated with construction on existing roads and Site tracks was also considered.

127. Various mitigation methods have been suggested to reduce the effects of construction noise, the most important of these being suggested restrictions of hours of working. It is concluded that noise and vibration generated through construction activities would have a negligible to slight temporary adverse effect which is not significant.
128. Operational turbines emit noise from the rotating blades as they pass through the air. This noise can sometimes be described as having a regular 'swish'. The amount of noise emitted tends to vary depending on the wind speed. When there is little wind the turbine rotors would turn slowly and produce lower noise levels than during high winds when the turbine reaches its maximum output and maximum rotational speed. Background noise levels at nearby properties would also change with wind speed, increasing in level as wind speeds rise due to wind in trees and around buildings, etc.
129. Noise levels from operation of the turbines have been predicted for those locations around the Site most likely to be affected by noise. Surveys have been performed to establish existing baseline noise levels at a number of these properties and supplemented by historically measured results. Noise limits have been derived from data about the existing noise environment following the method stipulated in national planning guidance. Predicted noise levels take full account of the potential combined effect of the noise from the proposed Development along with the operational Arcleloch, Kilgallioch and Mark Hill Windfarms, as well as the consented Chirmorie Windfarm. Other, more distant windfarms were not considered as they do not make an acoustically relevant contribution to cumulative noise levels.
130. Predicted operational noise levels have been compared to the limit values to demonstrate that turbines of the type and size which would be installed can operate within the limits so derived. It is concluded therefore that operational noise levels from the proposed Development would be within levels deemed, by national guidance, to be acceptable for wind energy schemes and therefore not significant.

8.8 Socio-economics and land use

131. The assessment of socio-economic effects sets out the likely socio-economic effects, including effects on tourism and recreation, and land use effects associated with the proposed Development and assesses the likely significance of such effects.
132. For the purposes of assessing socio-economic issues (employment and economy), a Wider Study Area (WSA) has been set primarily at the area of the South Ayrshire and Dumfries & Galloway administrative areas but extending to the rest of Scotland where relevant. For the purposes of assessing effects on tourism and recreation receptors, the study area is a more local area (Local Area of Influence or LAI) defined as an area extending approximately 5km from the Site boundary.
133. The Site is currently in commercial forestry use and has limited opportunities for recreation. There is a Core Path, SA62, that passes through the site, and a long distance route, the Whithorn Way, that crosses the access road.
134. Recreational resources and receptors considered as part of the assessment include Galloway Forest Park which fronts the A714 to the north of Wheeb Bridge, and the Whithorn Way, a long distance route, that crosses the access road approximately 6km west of Wheeb Bridge. No other recreational assets are directly affected by the proposed Development, although the Southern Uplands Way, one of Scotland's Great Trails, passes 2.4 km to the south east of the Site boundary and there is a small number of core paths within the LAI. The principal community within the LAI is Barrhill and there are a number of accommodation businesses in the LAI, several of which are accessed directly from the A714.
135. Communities around the Site include Barrhill, Pinwherry and Colmonell support a small number of tourism assets such as accommodation businesses, shops and pubs, and other businesses are located sporadically around the Site.
136. Proposed development expenditure during the construction phase is estimated to be approximately £97 million and there is expected to be a peak workforce of 120 workers with around 141 FTE jobs created during the wider construction phase. Some of these workers would be drawn from the local area and many more would be drawn from Scotland as a whole. In assessing the proportion of expenditure that would be spent in the local and regional economy, approximately £2 million of this expenditure would be spent in the WSA economy while £18 million would be spent in Scotland as a whole.
137. Expenditure on goods and services together with spending by employees have been assessed in terms of their effects on the local and national labour markets:

- During the 18 months' construction phase, the proposed Development is expected to support, in net terms, 13 person-years of employment benefiting local residents. This represents an overall contribution to employment in the WSA of just 0.01%, and an increase in demand for construction workers in the local economy of just over 0.2% which would be negligible (but positive). Nationally (for Scotland as a whole) the proposed Development would be expected to support approximately 212 person-years of employment.
 - During the operational phase the proposed development is expected to require between 3 and 5 new full time employees (engineers and technicians) locally and a further 2-3 posts would be created elsewhere in Scotland. In addition, the project would contribute between 10 and 14 net additional (FTE) jobs to the local economy over its operational life and a similar number to the Scottish economy as a whole, i.e. a net additional 20 – 28 FTE in total. The effect on employment during the operational phase is considered to be negligible (but positive).
138. The local economy would also be expected to be boosted by a total of £0.95 million of net GVA during the construction period. The Scottish economy would benefit by some £15 million net GVA. During the operational phase, based on a nominal 40 year period for the purposes of analysis, the proposed Development would contribute some £42 million in GVA to the local economy through direct, indirect and multiplier effects, and over £116 million to the economy of Scotland as a whole. This would also be negligible (but positive) and not significant.
139. Procurement of goods and services can have an important effect on the local economy. Information from other projects developed by SPR indicates that a wide selection of supply chain businesses could expect to benefit from the investment in the local and Scottish economy, including haulage, aggregates supply, forestry services, building services, fencing, and security. At this stage in the development process it is not possible to quantify economic benefits in respect of individual supply chain companies, as contracts would not be let until consent is granted. However, it is evident from recent SPR experience in Scotland (including the eight windfarms in south west Scotland subject of a report by BVG Associates which looked at economic benefits created by eight SPR onshore windfarms in south west Scotland commissioned between 2016 and 2017) that suppliers of a wide range of goods and services within South Ayrshire, Dumfries & Galloway and Scotland as a whole would obtain benefit from the proposed Development. SPR is committed to employing good practice measures with regard to maximising local procurement and would adopt established good practice measures such as 'Meet the Developer / Contractor Days'.
140. In terms of the tourism and visitor economy, a number of published studies have been reviewed which indicate that the presence of the proposed development would not have a deterrent effect on people visiting the area. For both construction and operational phases, therefore, the socio-economic effects at the level of the WSA are considered to be beneficial but not significant.
141. With regard to recreation and tourism assets, no significant direct or indirect adverse effects are expected during construction of the proposed Development either within the Site (including the access track which would cross the Whithorn Way) and on local roads, specifically the A714, subject to adoption of appropriate good practice management of construction traffic). Beneficial effects (also not significant) may be experienced by some businesses, such as accommodation businesses and shops, that supply goods and services to construction workers. Embedded mitigation incorporated into the scheme to ensure adoption of good practice management is set out in an outline Construction Environmental Management Plan and in an outline Construction Traffic Management Plan which will be provided prior to the commencement of development. No significant adverse effects have been identified during the operational phase, including effects on users of long distance routes and the Galloway Forest Park and Dark Skies Park. During the operational phase, effects on recreation within the Site would be enhanced by the creation of new forest tracks that could be used for recreational purposes. Whilst this has potential to extend the recreational use of the Site, the primary use would remain commercial forestry and the likely effect is considered to be not significant (but beneficial).
142. SPR is committed to offering a package of community benefits to local communities that could include the opportunity for community benefit and to invest in the operational windfarm. It is expected that any proposed income streams would provide a long term, flexible revenue which could be used to support community projects within South Ayrshire and Dumfries & Galloway. A range of options would be available to local communities who would have the flexibility to be able to choose how the money is spent and prioritise it on the things which matter most to them. The Barrhill Community Action Plan 2017-2022 gives an indication as to the type of initiatives that might be considered important within the Barrhill Community Council area, including the following:
- energy efficiency measures for residential properties;

- improve broadband and mobile phone services;
 - IT, social media and communications training;
 - more health education and activities; and
 - improved visitor information and services.
143. To date, SPR has voluntarily awarded over £5.7 million in community benefit funding to South Ayrshire communities (and a nearly £5.5 million to communities in Dumfries and Galloway). A wide range of local projects and community initiatives in South Ayrshire have been supported by the funds including:
- 224 community facilities and services projects totalling £602,237;
 - 74 community or local event projects totalling £218,490;
 - 27 environmental projects totalling £219,861;
 - 15 heritage projects totalling £87,441;
 - 25 skills and employment projects totalling £183,067;
 - 143 sport and recreation projects totalling £561,503; and
 - 158 youth and education projects totalling £602,237.
144. A further community benefit allocation of more than £600,000 is expected to have been paid by the end of the calendar year in 2019² bringing the total figure paid out to South Ayrshire communities to over £6 million.
145. Examples of jobs and training opportunities that have been funded by SPR's community benefit packages in South Ayrshire and Dumfries and Galloway:
- Ailsa Horizons Ltd – Extend Carrick Rural Opportunities Project to tackle local unemployment and underemployment;
 - 2017 Newton Stewart initiative - Project Officer to improve the appearance and facilities in the town;
 - 2018 Girvan Community Sport Hub - To fund a six-month employability pilot project seeking to identify, recruit, train and support six young people into employment in the South Carrick area; and
 - 2018 Barrhill Community Interest Company - Employment of Village Handyman.
146. Benefits would accrue from the scale and nature of the proposed income streams, which would include the proposed Development, and, depending on the choices made, could have a positive effect on the physical and mental well-being of local residents as well as economic benefits. The long term nature of the income, arising from community benefit, would allow the community to plan ahead, to draw in other sources of match funding to maximise the benefits and investment projects could be designed to match local priorities.
147. Cumulative effects have been considered in respect of both construction and operational phases. Although an overlap between the construction programmes of the proposed Development and nearby windfarms could reduce the beneficial effect to the local employment market and economy due to competition for resources, the effect would be relatively small and there would be no change to the significance of the effect which would remain as not significant.
148. Overall the proposed development is expected to have a positive economic effect that is not significant in EIA terms, and no significant adverse effect on land use, tourism and recreation. Benefits arising through spending by construction workers and operational staff, as well as through benefits packages (including potential for investment) would support local businesses and communities.

8.9 Other Issues

149. A number of other issues associated with windfarm development were considered in Chapter 15, including potential effects on aviation and defence, telecommunications, television reception, air quality, shadow flicker, population and human health, risk of accidents and natural disasters (as required by the EIA Regulations), environmental management, and carbon balance.
150. No significant disruption to telecommunications and television reception is anticipated as a result of the proposed Development, and no effects on aviation safety have been identified that cannot be mitigated by technical solutions.

² Not including indexation or top ups. Anticipated amount of remaining funds awarded to South Ayrshire by the end of the calendar year 2019 is c. £627,000.

151. As the proposed turbines would be in excess of 150m to blade tip, they would be required to be lit pursuant to Article 222 of the UK Air Navigation Order (ANO) 2016, with medium intensity (2000 candela) steady red aviation warning lights. Candela is the intensity or brightness of the light source and 1 candela is roughly equivalent to the light from a single candle.
152. It is acknowledged that the Site is in the Transition Zone to the Galloway Dark Sky Park so consideration is required to minimise lighting impacts. According to Civil Aviation Authority (CAA) policy, the lights can operate in a lower intensity mode *“if the horizontal meteorological visibility in all directions from every wind turbine generator in a group is more than 5 km”*. In these circumstances the 2000 candela lights could be operated at 200 candela. It is therefore proposed that visibility sensors are installed at the proposed Development and if visibility is restricted to 5 km or less the lights would operate at 2000 candela. The 2017 CAA Policy Statement further modifies Article 222 to permit only one level of intermediate lights, halfway up the tower, and at reduced intensity (32 candela rather than 2000 candela). In addition, it is proposed to explore the possibility of using ‘smart’ aviation lighting (aviation obstruction lighting detection system) whereby the lights would only be switched on when low altitude aircraft approach them.
153. Given the lights are only required for general aviators flying at night in the vicinity of the Site at altitudes of up to 2500 ft, it is anticipated that the lights will be rarely on in this quiet airspace. Periphery lights would also be lit with infra-red lighting to meet the MoD’s low flying requirements (to be agreed with the MoD prior to turbine instalment).
154. Shadow flicker can arise from the moving shadow of the turbine rotor blade passing over a narrow opening such as the window of a nearby residence. A nearby derelict property (Glenour) has been assessed as having potential to receive up to 24.2 hours of shadow flicker per year, less than the 30 hours acceptable limit stipulated in guidance and therefore not significant.
155. The potential for adverse effects on local air quality during construction is considered to be minor, temporary and not significant. During operation, the proposed Development would contribute to a beneficial effect on local and global air quality, by avoiding emissions due to the generation of electricity by burning fossil fuels. A carbon assessment has been undertaken to estimate the potential savings in carbon dioxide (CO₂) emissions by the proposed Development replacing other electricity sources. The proposed Development has a payback time of approximately 2.2 years and displacement of 96,807 tonnes of CO₂ per year over a fossil fuel mix of electricity (2.42 million tonnes assuming a 40 year lifetime for the purposes of the carbon calculator). This would positively contribute to meeting Scotland’s targets for reducing greenhouse gas emissions.
156. The potential for adverse effects on human health during construction and operation, such as noise, pollution and amenity issues have been assessed in Technical Chapters 7 to 14 and are considered to be minor, and not significant once the proposed mitigation is in place.
157. With regards to the potential for accidents, the vulnerability of the proposed Development to major accidents and natural disasters, such as flooding, sea level rise, or earthquakes, is considered to be low and all relevant risk factors are considered to be negligible.
158. Waste and environmental management would be controlled through the CEMP, site specific waste management plan and the mitigation proposed in Chapter 16: Schedule of Commitments.

8.10 Forestry

159. The full assessment of the effects on forestry is provided in Technical Appendix 3.2 of the EIA Report which evaluates the potential effects of the proposed Development on the woodland resource. It describes the plans as a result of the proposed Development for felling, restocking and forest management practices, the process by which these were derived, and the changes to the physical structure of the forest. It further discusses the issue of forestry waste arising from the proposed Development,
160. The proposed Development lies within existing commercial forestry plantations. The forestry is owned by the Scottish Ministers and managed by Forestry and Land Scotland. The total study area extends to 5,155.5 ha and is comprised of State owned and managed woodlands. Felling would be advanced on 135 ha.
161. The location of turbines and infrastructure is heavily influenced by environmental constraints and technical considerations, e.g. sensitive habitats, wind capture, ground conditions, etc. The final location of turbines and infrastructure takes the various Site constraints into consideration.

162. Felling is required for infrastructure and construction of the proposed Development. It is assumed that where possible due to the age of the crops the proposed Development infrastructure will be “keyholed” into the crops, where only the crops required for the infrastructure and its associated buffer zones will be cleared. Where this is not possible the crops will be felled back to the nearest wind firm edge or management boundary.
163. The proposed Development felling programme would largely be driven by technical constraints. Within forests and woodlands, areas of crop may require to be felled to accommodate the construction and operation of the proposed Development. In this case, taking into account technical and environmental constraints, a 2.5 ha (90 m radius) keyhole was adopted around each turbine location within woodland for construction, operation and environmental mitigation. There would be an area of additional disturbance at each turbine location over and above the keyhole which would be required to accommodate the infrastructure required for the erection of the proposed turbines in this case. A 10 m buffer will be applied around each item of infrastructure, in addition to the area required for the infrastructure. An indicative 30 m wayleave corridor has been applied to all roads to be used for turbine delivery and construction purposes. This would be reviewed at the detailed design stage post consent and prior to construction.
164. The species composition of the forest would change as a result of the proposed Development forestry proposals. In particular, the area of productive conifer woodland would decrease by 90.7 ha whilst the area of broadleaf woodland would increase by 30.6ha. As a result, there would be a net loss of woodland area of 60.1 ha.
165. In order to comply with the Scottish Government’s Control of Woodland Removal Policy, compensation planting would be required to mitigate for the loss of woodland area. The Applicant is committed to providing appropriate compensatory planting. The extent, location and composition of such planting to be agreed with SF, taking into account any revision to the felling and restocking plans prior to the commencement of operation.
166. The crops will be replanted except where required for infrastructure associated with the proposed Development. Brash would be left in situ to provide nutrients for the next rotation where the crops are being replanted as per standard forestry practice. Where crops are not being replanted, brash would be removed and treated in line with the waste hierarchy as per the Waste (Scotland) Regulations 2012, as would stumps, which would be left in situ as per good practice guidance, except where excavated as part of the construction activities, or treated if excavated.
167. In areas of lower yielding crops into which the proposed Development infrastructure would be ‘keyholed’. The objective would be to recover as much merchantable timber as possible and, failing that, to treat them in line with the waste hierarchy outlined above. Where suitable, whole trees would be extracted and used in the biomass market. As a result, it is anticipated the forestry waste arising from the works will be minimal.
168. It is proposed that full consideration and further clarification on forestry waste is included in a Forestry Waste Management Plan to form part of the Construction Environmental Management Plan (CEMP) during the detailed planning phase following receipt of planning consent and prior to commencement of construction.

8.11 Schedule of commitments

169. Chapter 16 provides an overview of the mitigation and monitoring proposed within the preceding EIA Report Chapters.

9 Summary

170. Environmental constraints and considerations have been taken into account in the Site layout and windfarm design. This has enabled potentially significant effects to be avoided. Further measures to prevent or reduce any remaining significant environmental effects are described within each environmental discipline Chapter of the EIA Report.
171. Mitigation measures as detailed in the EIA Report have been identified to protect the environment prior to or during construction and operation of the proposed Development.
172. SPR and the Principal Contractor would oversee operations and ensure that mitigation measures are implemented and activities carried out in such a manner as to minimise or prevent effects on the environment. The Principal Contractor would be supported by specialists such as an Ecological Clerk of Works to ensure that the mitigation measures are implemented effectively.
173. The proposed Development represents various design changes including minimising the number of turbines and siting them away from local landscape and visual concerns, in particular proximity to and visibility from residential properties and the settlements of Barrhill to the north east and Colmonell to the north. Visibility from the more sensitive landscapes of the Stincher, Duisk and Glen Tig Valleys was also a key consideration, as was the achievement of a layout which provides a reasonably balanced group of turbines when seen from key receptor locations in the surrounding landscape. Consideration of the cumulative landscape and visual impacts and cumulative noise impact from the proposed Development in addition to the Arecleoch Wind Farm, as well as other nearby consented wind farms was an integral part of the design approach.
174. Provided that the proposed mitigation measures are successfully implemented, the residual effects related to most environmental disciplines would not be considered significant effects in the context of the EIA Regulations.
175. All onshore windfarm development is likely to give rise to some significant landscape and visual effects. In the case of the proposed Development, the significant effects on landscape character and visual amenity would be contained within a relatively moderate area around the Site when compared with other wind farm developments of this scale. It is considered that the landscape is capable of accommodating the proposed Development, and that significant effects on the existing landscape character or visual amenity are relatively contained.
176. The proposed Development would represent an important environmental benefit in that it involves the generation of electricity from a renewable energy source that would reduce or avoid the use of fossil fuels through the contribution of electricity generated from other sources of energy. Burning fossil fuels produces carbon dioxide which contributes to global warming. The proposed Development has a payback time of approximately 2.2 years.

10 Benefits of the proposed Development

177. The Proposed Development will deliver the following key benefits:

- Production of between approximately 200 GWh and 230 GWh of electricity annually (based on an average capacity factor of between 31-36 % estimated for the Site based on a 5.6 MW turbine) which equates to the annual power consumed by approximately 53,000 – 60,000 average UK households³ (depending on the actual turbines installed).
- Potential to provide a range of ancillary grid services to National Grid such energy storage which would provide back-up power to National Grid for the benefit of providing stability to the electricity supply network and meet our increasing demands for cleaner energy, a low carbon economy and provide for energy security.
- Efficient use of existing land and infrastructure such as tracks, borrow pits, compounds and laydown areas.
- The offering of a package of community benefits to local communities that could include the opportunity for community benefit and to invest in the operational windfarm, providing a long-term, flexible revenue which could be used to support community projects within South Ayrshire and Dumfries & Galloway.
- Enhancement of recreation within the Site during operation by the creation of new forest tracks that could be used for recreational purposes.
- Bringing forward and increased broadleaf woodland by 30.6 hectares.
- Potential savings in CO₂ emissions due to the replacement of other electricity sources over the lifetime of the windfarm which are approximately:
 - 193,913 tonnes of CO₂ per year over coal-fired electricity (4.85 million tonnes assuming a 40 year lifetime for the purposes of the carbon calculator);
 - 59,111 tonnes of CO₂ per year over grid-mix of electricity (1.48 million tonnes assuming a 40 year lifetime for the purposes of the carbon calculator); or
 - 96,807 tonnes of CO₂ per year over a fossil fuel mix of electricity (2.42 million tonnes assuming a 40 year lifetime for the purposes of the carbon calculator).
- Displacement of carbon-emitting generation after 2.2 years.

Construction employment and economic benefits:

- Opportunities for suppliers of a wide range of goods and services within South Ayrshire, Dumfries & Galloway and Scotland as a whole.
- Benefits to some businesses, such as accommodation businesses and shops, that supply goods and services to construction workers.
- Total direct construction spend estimated at £97m, with £2 million in South Ayrshire and Dumfries & Galloway £18m being spent in Scotland as a whole, and almost £15m Scottish GVA.
- Peak construction employment of around 120 jobs on site, with around 141 FTE jobs created during the wider construction phase.
- Support, in net terms, for 13 person-years of employment benefiting local residents.
- Support for approximately 212 person-years of employment nationally for Scotland as a whole.

³ Calculated using the most recent statistics from the Department of Business, Energy and Industrial Strategy (BEIS) showing that annual UK average domestic household consumption is 3,781kWh (RenewableUK, 2018).

Operational employment and economic benefits:

- £116m GVA during the operational phase in Scotland through direct, indirect and multiplier effects, with around £42m GVA in South Ayrshire and Dumfries and Galloway.
- Around 10 – 14 net additional FTE jobs over its operational life in South Ayrshire and Dumfries and Galloway and another 10-14 FTE elsewhere in Scotland.
- Expectation for between 3 and 5 new full time employees (engineers and technicians) to be employed locally during operation and for a further 2 to 3 posts to be created in Scotland as a whole.



11 References

BVG Associates (2017). *Economic Benefits from Onshore Wind*.

Dumfries and Galloway Council (2014). *Local Development Plan*.

Scottish Government (2009). *Climate Change Delivery Plan: Meeting Scotland's Statutory Climate Change Targets*.

South Ayrshire Council (2014). *South Ayrshire Local Development Plan*.

Scottish Government (2019). *Scottish Government's Control of Woodland Removal Policy*.

Scottish Government (2017). *Scottish Energy Strategy: The Future of Energy in Scotland*.

Scottish Government (2015). *2020 Routemap for Renewable Energy in Scotland*, Update, September 2015.

Scottish Government (2014). *Scottish Planning Policy*.

Scottish Government (2011). *2020 Routemap for Renewable Energy in Scotland*.

South Ayrshire Council (2015). *South Ayrshire Local Development Plan Supplementary Guidance: Wind Energy*.

Scottish Executive (2005). *Transport Assessment and Implementation: A Guide*.

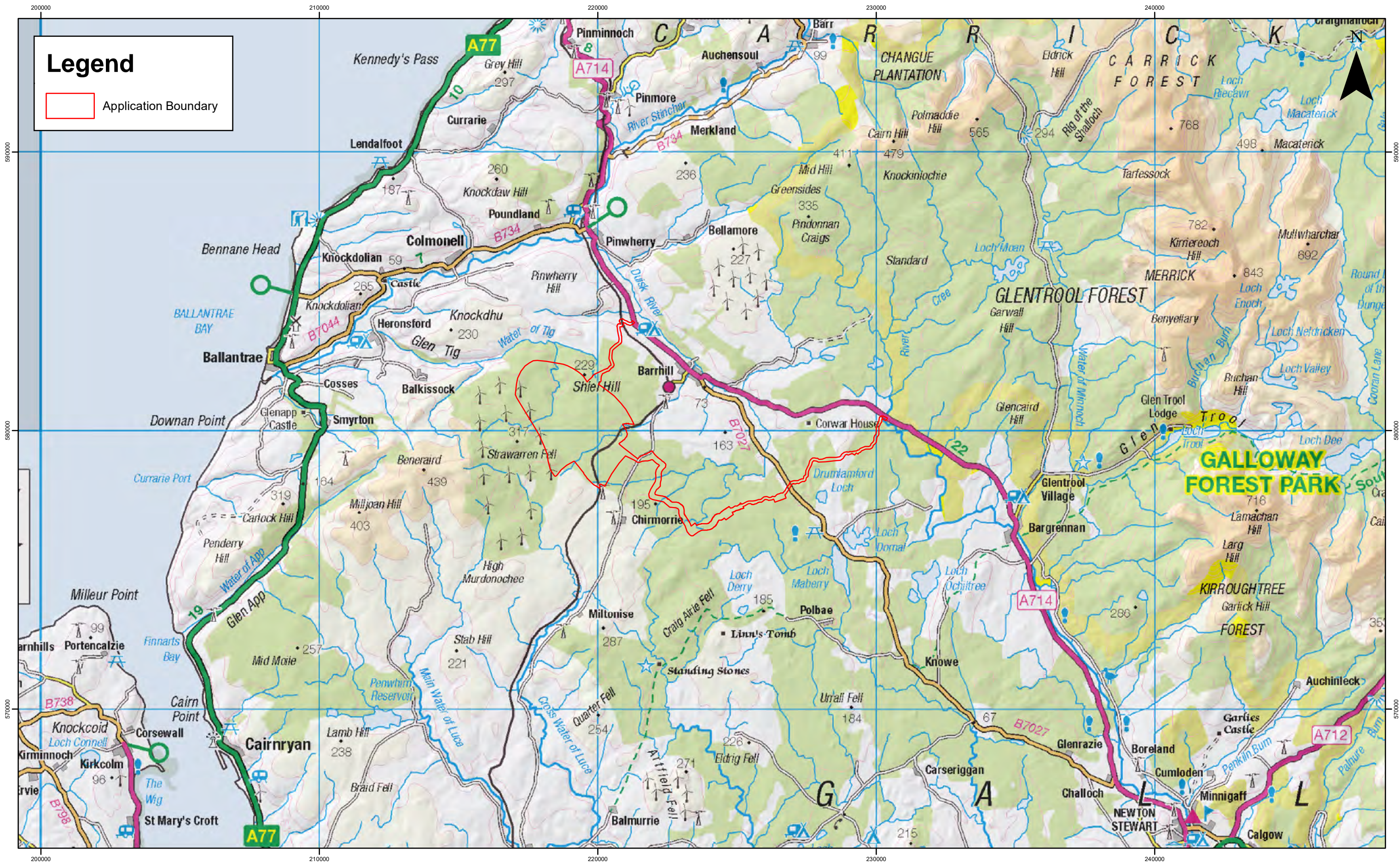
The Climate Change (Scotland) Act 2009.

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

The Electricity Act 1989.

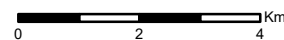
Legend

Application Boundary



Rev	Date	By	Comment
A	13/05/19	LM	First Issue.

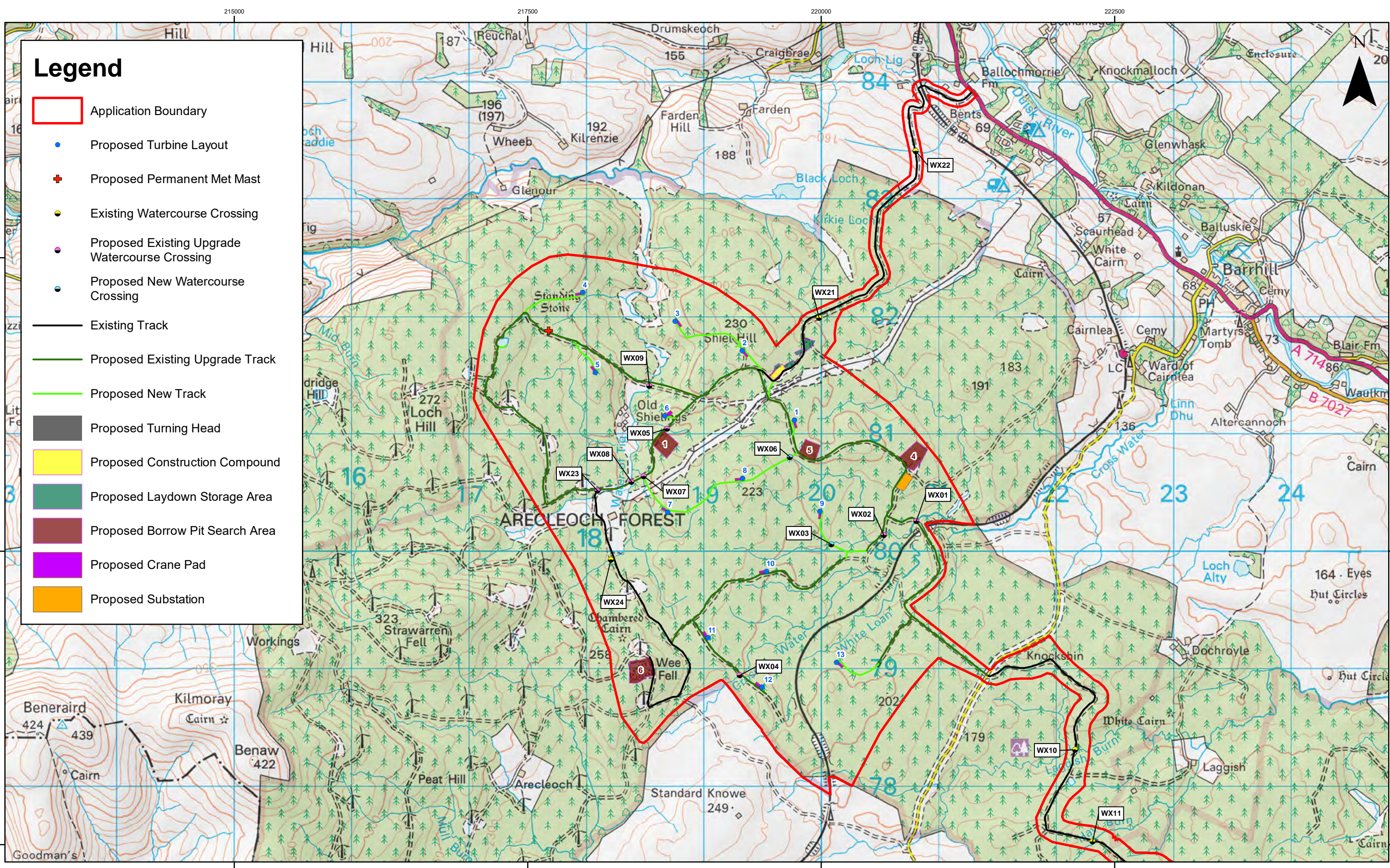
1:125,000
Scale @ A3



© Crown Copyright 2019. All rights reserved.
Ordnance Survey Licence 0100031673.

Arecleoch Windfarm Extension - EIAR Non Technical Summary Site Location

Drg No	00481.00049.1.0 NTS	
Rev	A	Datum: OSGB36
Date	13/05/19	Projection: TM
Figure	1	



Legend

- Application Boundary
- Proposed Turbine Layout
- + Proposed Permanent Met Mast
- Existing Watercourse Crossing
- Proposed Existing Upgrade Watercourse Crossing
- Proposed New Watercourse Crossing
- Existing Track
- Proposed Existing Upgrade Track
- Proposed New Track
- Proposed Turning Head
- Proposed Construction Compound
- Proposed Laydown Storage Area
- Proposed Borrow Pit Search Area
- Proposed Crane Pad
- Proposed Substation



Rev	Date	By	Comment
A	13/05/19	LM	First Issue.

1:30,000
Scale @ A3

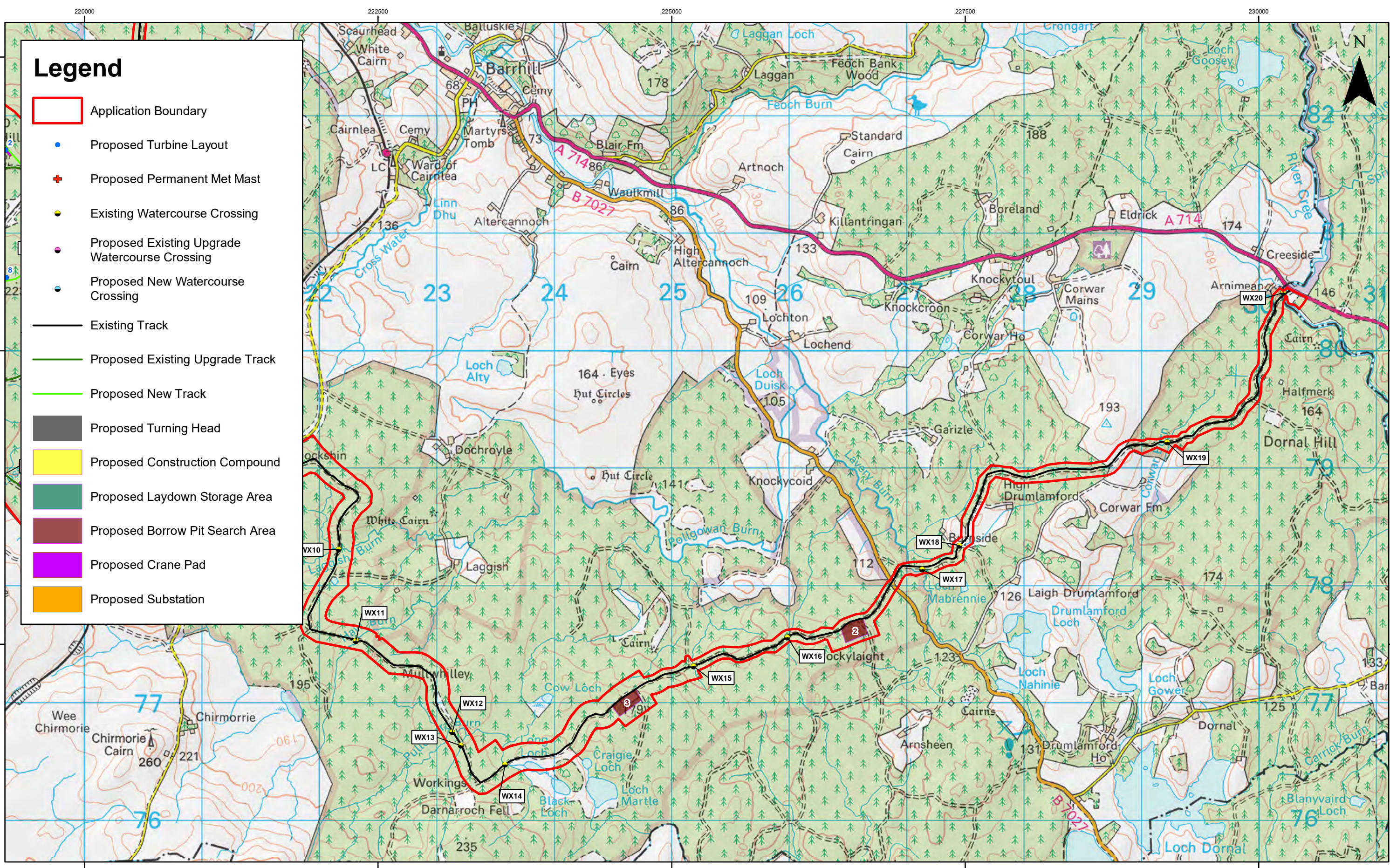
© Crown Copyright 2019. All rights reserved.
Ordnance Survey Licence 0100031673.

Arecleoch Windfarm Extension - EIAR

Non Technical Summary

Proposed Site Layout

Drg No	00481.00049.2.0 NTS	
Rev	A	Datum: OSGB36
Date	13/05/19	Projection: TM
Figure	2	



Legend

- Application Boundary
- Proposed Turbine Layout
- + Proposed Permanent Met Mast
- Existing Watercourse Crossing
- Proposed Existing Upgrade Watercourse Crossing
- Proposed New Watercourse Crossing
- Existing Track
- Proposed Existing Upgrade Track
- Proposed New Track
- Proposed Turning Head
- Proposed Construction Compound
- Proposed Laydown Storage Area
- Proposed Borrow Pit Search Area
- Proposed Crane Pad
- Proposed Substation



Rev	Date	By	Comment
A	13/05/19	LM	First Issue.

1:30,000
Scale @ A3

© Crown Copyright 2019. All rights reserved.
Ordnance Survey Licence 0100031673.

Arecleoch Windfarm Extension - EIAR

Non Technical Summary

Proposed Site Layout

Drg No	00481.00049.2.0 NTS	
Rev	A	Datum: OSGB36
Date	13/05/19	Projection: TM
Figure	2	

ScottishPower Renewables

320 St Vincent Street
Glasgow
G2 5AD

T 0141 614 0451

arecleochwindfarmext@scottishpower.com

