Euchanhead Renewable Energy Development

EIA Report Non-Technical Summary

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Euchanhead Renewable Energy Development

Preface

1. This document is the Non-Technical Summary of the Environmental Impact Assessment Report (EIA Report) and has been prepared to accompany the Section 36 consent application submitted by ScottishPower Renewables (SPR) for the proposed Euchanhead Renewable Energy Development (the proposed Development). The proposed Development is located approximately 9.8 km south west of Sanquhar, as measured to the nearest turbine location, in Dumfries and Galloway.

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. Printed copies of the NTS and EIA Report (including figures and appendices) may be obtained from:

ScottishPower Renewables
9th Floor Scottish Power House
320 St Vincent Street
Glasgow
G2 5AD

Email: euchanheadrenewables@scottishpower.com

4. The Non-Technical Summary is available free of charge in electronic format, and a limited number of hard copies of the EIA Report are available for £1,000 per copy. The price of the hard copy reflects the costs of producing the Landscape and Visual visualisations.

5. Alternatively, a DVD or USB memory stick containing PDF files of the EIA Report is available for £15 each. These PDF files can also be downloaded for free from the Euchanhead project website page at:

www.scottishpower.com/EuchanheadRED

6. SPR has a duty to undertake statutory publication of the EIA Report in accordance with Part 5 of the 2017 EIA Regulations and the Electricity (Applications for Consent) Regulations 1990. Due to the ongoing Covid-19 situation and the provisions of the Coronavirus Act 2020, Government advice is that hard copies of the application and EIA Report should not be placed on public display. The application documents are being made available online via the Energy Consents Unit website as normal, and hard copies are being made available to specific statutory consultees,

7. A notice will be published as follows:

- on the SPR project website;
- in the Scotsman;
- in the Edinburgh Gazette;
- in the Galloway Gazette; and

- in the Dumfries Courier.

8. In addition to the formal notifications of the application SPR has:

- made available a Non-Technical Summary of the EIA Report and USB of the entire application submission to the local community councils on request;
- made available free of charge further copies of the Non-Technical Summary of the EIA Report;
- made available hard copies of the application documents on request (at a cost to cover printing);
- maintained a dedicated email address (euchanheadrenewables@scottishpower.com) to receive comments relating to the proposed Development; and
- maintained ongoing contact, through email and telephone conversations, with local residents and Community Councils.

9. 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

10. This Non-Technical Summary (NTS) summarises the Environmental Impact Assessment (EIA) Report for the proposed Euchanhead Renewable Energy Development. The EIA Report accompanies an application for permission under Section 36 of the 1989 Electricity Act.

11. Euchanhead Renewable Energy Development is referred to in this NTS and in the EIA Report as 'the proposed Development'. The proposed Development is a Renewable Energy Development that intends to make use of available renewable energy technologies to maximise and optimise the renewable energy potential of the Site. The application boundary (the Site) is shown on **Figure 1**.

12. The proposed Development comprises 21 three-bladed horizontal axis wind turbines, up to 230 m tip height, with a combined rated output of around 126 megawatts (MW). Around 31.5 MW of battery storage would also be installed to store energy and so provide flexible balance of energy and the delivery of the full potential of renewable energy to meet the demands of the national grid.

13. The proposed Development would produce approximately 386[1] GWh of electricity annually. This equates to the annual power consumed by approximately 101,689[2] average UK households. The proposed Development is described in further detail in **Chapter 3** of the EIAR. The selected Site is part of the National Forest Estate and is located at the western end of the Southern Uplands, to the west / south west of the villages of Sanquhar and Kirkconnel / Kelloholm in Upper Nithsdale. It is mostly within the Dumfries and Galloway Council (DGC) administrative area, but part of the proposed Access Route A falls within the East Ayrshire Council (EAC) administrative area. The Site itself is centred on NGR 269180, 601990. The majority of the Site is a commercial forestry plantation, managed by Forestry and Land Scotland (FLS), with a small area of open moorland in the central part of the Site.

14. Environmental effects of the proposed Development have been considered as part of an iterative design process and assessed by means of 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, the baseline environmental conditions, likely significant environmental effects and measures proposed to protect the environment, during site preparation, construction, and operation of the proposed Development.

15. 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.

16. The applicant for Section 36 consent is ScottishPower Renewables (SPR). SPR is part of the ScottishPower group of companies operating in the UK under the Iberdrola Group, one of the world's largest integrated utility companies and a world leader in wind energy. 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[3] 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.

17. SPR 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.

[1] For example using a 35% capacity factor, figures are derived as follows: 126 MW × 8,760 hours/year × 0.35 (capacity factor) = 386,316MWh. The actual capacity factor on the site is likely to be higher than 35%.
[2] This is calculated using the most recent statistics from BEIS showing that annual UK average domestic household consumption is 3,799kWh. The figure is calculated as follows: Annual energy generation / (UK average domestic electricity consumption/1000).
[3] Between 2018 and 2022

18. With over 40 operational windfarms, SPR manages all its sites through its world leading Control Centre at Whitelee Windfarm, in East Ayrshire. SPR has long been involved in the region and currently owns and operates the Hare Hill Windfarm and Extension to the north west of the Site, and the Wether Hill Windfarm to the south of the Site, as well as 6 other windfarms in Dumfries and Galloway / East Ayrshire region.

2 Renewable energy policy

19. The UK Government and the Scottish Government have both declared a '*climate emergency*' and are committed to ensuring that an increased proportion of electricity is generated from renewable energy sources in order to meet carbon emission targets set in 2019.

20. The Climate Change (Scotland) Act 2009 initially established long term statutory targets for Scotland of reducing greenhouse gas emissions by at least 80% by 2050, with an interim target of reducing emissions by at least 42% by 2020. The Act also placed climate change duties on Scottish public bodies and included provisions on climate change including adaption, forestry, energy efficiency and waste reduction.

21. The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 received Royal Assent on 31 October 2019 and came into force in March 2020. The Act responds to the Paris Agreement and the declaration of a 'climate emergency' in Scotland. It amends the Climate Change (Scotland) Act 2009 and commits Scotland to a new target of **net zero emissions of all greenhouse gases by 2045**, with interim targets for reductions of at least 56 % by 2020, 75 % by 2030 and 90 % by 2040. These new greenhouse emissions targets represent a substantial increase over the targets previously set in the 2009 Act. As amended, the 2009 Act requires Scottish Ministers to prepare a Climate Change Plan requiring the relevant industry sectors, including energy supply, to contribute to emissions reduction targets. The most recent annual monitoring report published by Scottish Government shows a shortfall in achieving the statutory emissions reduction targets.

22. In December 2017, the Scottish Government published the Scottish Energy Strategy. The Scottish Energy Strategy 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 Strategy advises that onshore wind development is essential to Scotland's transformation to a fully decarbonised energy system by 2050 and brings opportunities which underpin the vision to grow a low carbon economy and build a fairer society.

3 Environmental Impact Assessment

23. 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.

24. 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.

25. 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

26. The site selection process adopted by SPR is designed to identify potential renewable energy 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.

27. SPR is committed to avoiding the development of renewable energy projects in areas where there would be an unacceptable effect on environmentally designated sites and where mitigation measures are unlikely to be successful. 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.

28. 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.

29. Forestry and Land Scotland (FLS), who manage the National Forest Estate, assessed their forest estate and identified potential sites for renewable energy development. In 2011, SPR was awarded the south west Scotland forest estate to further explore the potential for renewable energy to be generated on the FLS estate.

30. The 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 partly located within an area which the Local Development Plan has identified as having potential for wind energy development. Further information on this is provided in **Chapter 4 of the EIA Report: Climate Change, 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 suitable for wind energy development;
- potential connection options to the electrical grid system which have available capacity to accept new generation;
- 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 area of the Site where turbines are proposed is more than six kilometres from the nearest town or village, with very few residential properties in closer proximity.

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 (Local Authority) "*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 Dumfries and Galloway Council has undertaken a landscape capacity study to identify those landscapes which, in principle, have the capacity to accommodate wind turbines. The Dumfries and Galloway Wind Energy Development: Development Management Considerations Supplementary Guidance (adopted 2020), and its associated Appendix C Dumfries & Galloway Landscape Capacity Study (DGWFLCS), forms part of the DGC Local Development Plan 2 (adopted October 2019).

33. Policy IN2 of the Local Development Plan provides further detail with regards to the development management considerations identified within the policy. It provides some guidance with respect to siting and design of wind energy proposals and the assessment of landscape, visual, cumulative and residential visual amenity effects.

34. Maps within Appendix B to the Council's Wind Energy Supplementary Guidance identify the sensitivity of the landscape to various wind turbine typologies and are informed by the Landscape Capacity Study (Appendix C)..

35. The Landscape Capacity Study provides an assessment of landscape 'sensitivity' for each landscape character type (LCT) identified within Dumfries and Galloway. The proposed Development is largely situated within the LCT 19a (i) Ken landscape unit of Southern Uplands with Forest which is identified as being of high-medium 'sensitivity' to very large (150 m+) typology turbines but of medium/low landscape value.

4.2 Design approach and alternatives

36. The purpose of a renewable energy development is to harvest energy from a range of possible renewable sources such as wind, and convert this to electricity. The process of designing a development to combine wind and other renewable technologies starts with wind turbine siting. Wind turbine siting seeks to minimise potential for adverse landscape and environmental effects whilst maximising the potential energy output. Landscape and visual impacts, peat and topological considerations are the main principles influencing design aspects for the proposed Development, but other factors such as ornithology, noise and ecological effects can also influence the layout and position of turbines. The siting of energy storage facilities follows many of these considerations, but as the energy storage compound is located within the substation compound the main design considerations are avoidance of peat, consideration of any watercourses and avoiding any sensitive vegetation and ecological areas.

37. Based on analysis and field work observations, a design concept for the proposed Development was generated identifying the preferred areas for wind turbines within the Site. The main design objectives were as follows:

- limit proximity with respect to the closest residential receptors;
- limit impacts on priority peatland and areas with carbon soils;
- respect other environmental constraints;
- consideration of the form of the underlying landscape and its scale and providing a balance alongside neighbouring wind energy developments;
- consideration of the existing forest design (felling and restocking plans);
- create a scheme which maximises the potential of the Site to generate and store renewable energy; and
- uses existing infrastructure (forestry tracks and existing quarry locations on the Site) as far as practicably possible.

38. The main landscape and visual design factors that were identified comprised the following:

- a reasonably consistent and balanced relationship with the large scale and simple landform of the Site when seen from the surrounding area;
- design compatibility with the operational Sanquhar and Whiteside Hill windfarms near the Site, as well as the consented Lorg and Sanquhar Six, as the proposed Development has been designed to be read in the context of the operational and consented windfarms. It has also been designed in combination with the adjacent proposed Sanquhar II;
- turbines are set back from the closest residential properties and nearest receptors within the valleys, which are generally screened from most of the turbines; and
- minimise the visual amenity effects for nearby settlements including Sanquhar, Kirkconnel / Kelloholm, New Cumnock, Moniaive and Thornhill, as well as the dispersed properties in proximity to the Site.

39. This combination of environmental, design and technical parameters has resulted in the final layout. It is considered that the proposed Development represents an optimum fit within the technical and environmental parameters of the project. A range of alternative layout options were refined through an iterative process of design and environmental assessment. Alternative numbers and heights of wind turbines were also considered with the final design being based on turbines at 230 m to vertical wind blade tip height as this height created the best balance with tall turbines and design in the landscape, whilst optimising energy yield.

5 Proposed Development

5.1 Description of the proposed Development

40. The layout of the proposed Development is shown on **Figure 2**. It would comprise 21 three-bladed horizontal axis wind turbines, up to 230 m tip height, with a combined rated output of around 126 megawatts (MW). Around 31.5 MW of energy storage would also be installed to store energy and so provide flexible balance of energy and the delivery of the full potential of renewable energy to meet the demands of the national grid.

41. The layout of the proposed Development includes:

- 21 wind turbines, up to 230 m in height, including foundations and aviation lighting;
- energy storage facility, likely to be containerised battery units;
- crane hardstandings for wind turbine installation;
- transformer/switchgear housings located adjacent to turbines;
- new and upgraded access tracks including watercourse crossings where necessary, passing places and turning heads;
- access to site from the A76 either with a new access track constructed linking the Site to the existing SPR Hare Hill Windfarm, or access from Blackaddie Road in Sanquhar;
- underground electrical cabling;
- compound containing substation, control building and energy storage facility;
- one main site construction and maintenance compound, two temporary secondary construction compounds, one laydown area and a security compound;
- a permanent lattice construction wind measurement mast, up to 149.9 m high;
- health & safety and other directional site signage;
- search areas for up to seven borrow pits to extract construction aggregates from within the Site;;
- improved access paths for the section of the Southern Upland Way crossing the Site;
- signage and access to archaeological features within the site such as Allan's Cairn; and
- habitat improvements, as outlined in the proposed Habitat Management Plan, found in **Appendix 8.8 of the EIA Report.**.

42. The proposed Development would also require some forest restructuring works to enable construction and operation of the windfarm. An area of approximately 217.8 ha of forestry would require to be felled during the construction phase to accommodate the proposed turbines and associated infrastructure. While the majority of this area would be replanted, there would be an approximate 67.7 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.

43. SPR is committed to providing appropriate compensatory planting in accordance with the criteria of the Scottish Government's Control of Woodland Removal Policy. The extent, location and composition of such planting is to be agreed with Scottish Forestry, taking into account any revision to the felling and restocking plans prior to the commencement of operation of the proposed Development.

44. 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. 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 extended period of time.

45. The grid connection point for the proposed Development is subject to confirmation by the network operator/owner, but initial discussions indicate that the likely connection point would be the Black Hill substation, some 4 km to the west of the proposed Development near Afton Windfarm. 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.

46. The grid connection may require consent under Section 37 of the Electricity Act 1989 which is the subject of a separate consenting process to this application. The grid connection application would be made by Scottish Power Energy Networks

Ltd who are the network owner in the area of the proposed Development and who would own connection assets beyond the Site substation.

Construction activities and site access

47. Stone aggregate would be required for construction of the proposed Development. It is anticipated that stone aggregate would be sourced from up to seven 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 the EIA Report, a scenario where 100% of the required aggregate would be imported to the Site from existing local commercial quarries in the local area has also been considered.

48. During site construction, once exploratory excavations are undertaken, it may be necessary to microsite elements of the proposed Development in order to avoid unfavourable or unsuitable ground conditions (i.e. revise the location of infrastructure slightly to optimise construction or minimise environmental impact). It is proposed that a 50 m “micrositing tolerance” from turbines and 100 m micrositing tolerance from other infrastructure would be applied to the proposed Development. Within this distance any micrositing would be agreed in advance with relevant stakeholders, with some further limitation due to Site boundary or mitigation.

49. Technical studies have been undertaken to identify potential access routes to the Site. 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 transport vehicles as well as Heavy Goods Vehicles (HGVs) and other vehicles.

50. It is proposed that the wind turbine components would be delivered to either King George V Docks in Glasgow, or Port of Ayr. The turbine components would be moved under escort from either port via the A76 to the Site. These ports and associated delivery routes have previously been used during the construction of other local windfarms.

51. Two potential access routes to the Site from the public highway have been identified as being suitable for the delivery of wind turbine blades and other components, as well as general construction traffic. These are referred to as Access Route A and Access Route B. Both routes connect with the A76 and are described below.

Access Route A

52. This route makes use of SPR’s existing Hare Hill Windfarm access junction from the A76 and existing site roads as far as practicable, before approximately 8.2 km of new access track would be constructed running from the existing Hare Hill Windfarm south past Laglass Hill and Blackcraig Hill, before turning east at Greenlorg Hill and entering the Site near Graystone Hill. Some upgrading of the existing Hare Hill Windfarm track would be required to allow for larger components to access the Site.

Access Route B

53. This route accesses the Site via a combination of Blackaddie Road, which runs from the A76 along the north western edge of Sanquhar, and the bypass road purpose-built for the construction of Whiteside Hill Windfarm. It enters the Site close to Glenglass cottage.

54. The existing access route to Site (Blackaddie Road – from the A76 to the Site) is in good condition, having been widened for other windfarms and forestry operations and is generally suitable for very large turbine component deliveries. It is not expected to have to carry out any significant engineering works to the public highway along this route; however, there may be a couple of sections which require minor upgrades or limited repair works within the existing road corridor.

55. For other materials and technologies that will be installed on Site, it is likely that they will be delivered using standard heavy goods vehicles utilising the local road network, including the A76 from the north and south.

Proposed access and recreation enhancement

56. SPR is keen to promote and enhance the recreation value of the proposed Development. Therefore, the proposed Development includes a range of measures that improves access and recreation features, and these include the following:

- improved access tracks for users of the Southern Upland Way with improved signage of features and an alternative route where the path passes through the Site which avoids walkers having to follow the operational forestry roads; and

- improved access, signage and information boards for Allan's Cairn and the Striding Arch on Colt Hill.

6 Legal and policy framework

6.1 Legislative context

57. The proposed Development exceeds 50 MW of electricity generating capacity. This means that an application under Section 36 of the Electricity Act to operate the proposed Development is required to be made to the Scottish Governments Energy Consents Unit. This is commonly known as a "Section 36" application. Furthermore, SPR is also seeking that a direction under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 should be granted to provide deemed planning permission.

58. Schedule 9 of the Electricity Act imposes duties on licensed generators when formulating generation proposals in excess of 10 MW. The applicant, ScottishPower Renewables, is a licensed generator and therefore the duties imposed by Schedule 9 apply. This requires the applicant to have regard to a range of factors in developing the proposals. These are 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 applicant is also under a duty to do what he reasonably can to mitigate any effects which the proposal would have on these assets. The Scottish Ministers are obliged to have regard to these matters and also consider the extent to which the applicant has fulfilled their duty in respect of providing mitigation.

59. SPR has undertaken an EIA and the outcome of the process has been reported through an EIA Report which accompanies the application. This is consistent with the requirements contained within the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations).

6.2 Development Plan

60. In the case of Section 36 applications, the role of the Development Plan is not the same as in the case of a typical planning application made under the Town and Country Planning (Scotland) Act 1997. Town and Country Planning applications must accord with the terms of the Development Plan, this is not the case for a Section 36 application. The Development Plan is nonetheless material to the determination of Section 36 applications.

61. The majority of the Site, including all the proposed wind turbines, is located entirely within the Dumfries and Galloway Council administrative area. Parts of Access Route A run through part of the East Ayrshire Council administrative area. The Development Plans for the Site are therefore the Dumfries and Galloway Local Development Plan 2, adopted in 2019, and the East Ayrshire Local Development Plan which was adopted in 2017.

Dumfries and Galloway Local Development Plan 2

62. The Council adopted the Local Development Plan 2 (DGLDP2) in October 2019 and it is accompanied by Supplementary Guidance adopted in February 2020, of which Wind Energy Development: Development Management Considerations is relevant to the proposed Development.

63. The key policy for the proposed Development is Policy IN1: Renewable Energy, which states that "*The Council will support development proposals for all renewable energy generation and/or storage which are located, sited and designed appropriately".* It further states that "*acceptability will be determined through an assessment of the details of the proposal including its benefits and the extent to which its environmental and cumulative impacts can be satisfactorily addressed*.".

64. Policy IN2: Wind Energy contains development management considerations specific to wind energy. The policy states that the council will support wind energy proposals that are located, sited and designed appropriately. It states that the acceptability of any proposed wind energy development will be assessed against the following considerations:

- Renewable energy benefits.
- Socio-economic benefits
- Landscape and visual impacts
- Cumulative impact
- Impact on local communities and residential interests
- Impact on infrastructure

- Impact on aviation and defence interests
- Other impacts and considerations

65. In the determination of proposals, Policy IN2 states that "*Acceptability will be determined through an assessment of the details of the proposal including its benefits and the extent to which environmental and cumulative impacts can be addressed satisfactorily*." It is considered that this balanced approach represents a realistic reflection of the assessment process as it applies to wind energy developments given that such developments will inevitably result in some significant impacts in EIA terms.

66. Policy IN2 also refers to the Council's Spatial Framework for wind energy developments. The Spatial Framework is in accordance with the criteria set out in the overarching Scottish Planning Policy and a Spatial Framework Map is provided as Map 8 of the Local Development Plan. The Spatial Framework Map categorises suitability for wind energy development as;

- Group 1 – Areas where wind energy development will not be acceptable
- Group 2 – Areas of Significant Protection, where consideration is required to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation, and;
- Group 3 - Areas with potential for wind farm development, where wind energy developments are likely to be acceptable, subject to detailed consideration against identified policy criteria.

67. The proposed Development is located primarily in a Group 3 Area (with potential for wind energy development), with the remainder of the Site considered to be in a Group 2 Area (areas for significant protection). It is understood that the Site falls partly within Group 2 Areas due to mapped areas of Class 1 carbon rich soil, deep peat and priority peatland. In the determination of applications, Policy IN2 makes it clear that the Spatial Framework Map provides strategic guidance only.

East Ayrshire Local Development Plan

68. The Development Plan for East Ayrshire comprises the East Ayrshire Local Development Plan (EALDP), which was adopted in April 2017, and the East Ayrshire Minerals LDP, which was adopted in January 2020. In addition, EAC has approved a number of statutory Supplementary Guidance and non-statutory Planning Guidance documents. The statutory Supplementary Guidance also forms part of the Local Development Plan. Relevant Supplementary Guidance includes the Planning for Wind Energy Supplementary Guidance (WESG), which was adopted in December 2017.

69. Policy RE3: Wind Energy Proposals Over 50 metres in Height is the primary EALDP policy for the assessment of wind energy proposals. It states that wind energy proposals will be assessed using the Spatial Framework for wind energy development and all relevant renewable energy and LDP policies.

70. It is important to note that the only element of the proposed Development that will be located within East Ayrshire is one of the proposed access tracks to the Site, part of which forms the existing access track to Hare Hill Windfarm. The Spatial Framework, which is provided as Map 12 of the EALDP, identifies that the majority of this proposed access track falls within a Group 3 area. However, parts of the proposed access track also lie within Group 2 Areas due to mapped areas of Class 1 carbon rich soil, deep peat and priority peatland.

71. Assessment criteria set out in Schedule 1 that are considered relevant to determining the acceptability of the proposed access track include landscape and visual impact; impacts on carbon rich soils, deep peat and peatland habitats; effects on natural heritage; impacts on the historic environment; effects on hydrology and the water environment; and impacts on road traffic and adjacent trunk roads.

7 Scoping and consultation

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

- ensure that statutory consultees and other stakeholders with a particular interest in the environment and the Site are informed of the proposed Development 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

73. SPR previously submitted a scoping opinion request to Scottish Ministers for a windfarm development on a similar site to the proposed Development in 2013. This request was made under regulation 7 of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000. The Scottish Ministers scoping opinion was issued in October 2013.

74. The 2013 scoping opinion specifically related to a proposed 31 turbine windfarm of 145 m maximum height, with a generating capacity of up to 93 MW. Scottish Government advice provides that if the proposal changes substantially prior to application submission, the applicant may wish to consider the need to request a new scoping opinion.

75. Despite the wealth of scoping and EIA baseline information available from the 2013 scoping opinion and recent scoping exercises undertaken for neighbouring developments, SPR deemed it prudent to request new scoping opinion advice on the proposed Development in February 2020. However, acknowledging the amount of baseline information already known about the Site this request was made directly to consultees rather than to Scottish Ministers. The Energy Consents Unit, who will administer this application for consent on behalf of Scottish Ministers, were consulted and confirmed the acceptability of this direct scoping approach.

76. A summary report containing all the consultation responses was submitted to the Energy Consents Unit in June 2020.

7.2 Consultation

77. 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 and assessment.

78. A comprehensive understanding of the requirements/views of consultees has been sought throughout the EIA process. This has informed the design of the proposed Development. Consultation comprised public consultation, undertaken in February and July/August 2020, and consultation with a range of statutory bodies, non-statutory bodies, community councils and landowners.

79. Public consultation is seen as a key element of the EIA process. Further information on this is contained in the **Pre-Application Consultation (PAC) Report** that is provided alongside the application for consent.

8 EIA Assessments

8.1 Summary of Environmental Effects

80. Section 9 of this Non-Technical Summary outlines the predicted environmental effects of the proposed Development. The EIA assessments show that through the design of the proposed Development, the use of good industry practice applied during construction and through site specific mitigation and compensation there would be no significant environmental effects, with the exception of some localised significant effects in relation to Landscape.

81. The following sections provide a summary of the effects for each of the EIA assessments, starting with landscape and visual assessment where some significant effects have been predicted.

8.2 Landscape and visual

82. The proposed Development follows the natural rhythm of the undulating landscape with a similar design relationship to other windfarms in the Southern Uplands. The design guidance for the Ken unit LCT 19a Southern Uplands with Forestry within Dumfries and Galloway Wind Farm Landscape Capacity study has been influential in the development of the project and the scheme largely follows the guidance. The steepness of landform, which is characteristic of the Southern Uplands, leads to a pattern of intervisibility where either panoramic views are possible on open high ground but from lower ground views become very constrained.

83. The extent of operational effects upon landscape character would be limited by the steep topography of the Southern Uplands. Intervisibility and influence on landscape character would tend to occur mainly within the open elevated upland areas within the study area, which are already influenced by wind energy development. Significant impacts would be confined to LCTs within an approximate 6 km radius of the proposed turbines including the Southern Uplands LCTs (with and without forestry) and Narrow Wooded River Valley LCT (Water of Ken valley). Beyond this there would be no significant effects on landscape character in the wider parts of these or any other landscape character types. The increased size of the proposed turbines compared to the operational and under construction windfarms would only tend to be noticeable from within the Southern Uplands LCTs itself, or other upland locations within the study area. Here the scale of the turbines would appear a similar scale to the receiving landscape itself.

84. With regard to the overall strategic pattern of wind energy development with the operational and under construction baseline, the proposed Development would likely become part of the Hare Hill group (with Sanquhar and Whiteside Hill) extending this group south, but the proposed Development would be ‘behind’ these developments when perceived from settlement within upper Nithsdale. It would be clearly perceived with the core of the Southern Uplands LCTs. The enlarged Hare Hill group would not coalesce with any other windfarms or groups of windfarms.

85. There would be significant visual effects for hillwalkers on the Southern Upland Way, Core Paths, and Striding Arches through/near the site and hillwalkers above Glen Afton. There would also be significant effects for a few individual properties within the upper Shinnel Glen and the upper Water of Ken valley. Whilst there would be views from Glen Afton, the Euchan Water valley and from the summit of Cairnsmore of Carsphairn, these views would occur in the context of other closer windfarms and significant effects are not predicted. Views from Sanquhar, Kirkconnel and the A76 would be much more limited and not significant.

86. A residential visual amenity assessment that extended to a 5 km radius of the proposed turbines was completed to conform with the latest Dumfries and Galloway Supplementary Guidance and considered the effects for private residents at 24 properties. The assessment found that there would only be significant impacts at six of the properties and in no case would they be overbearing.

87. Significant construction landscape effects would be limited to the two host areas Ken unit Southern Uplands with Forest D&G and Southern Uplands Ayrshire for access route A where moderate effects would be experienced. The significant construction visual effects would be limited to users of the Southern Upland Way.

88. There would be no significant effects on any landscape designations.

89. The cumulative assessment assumes that all the windfarms within each of the Scenarios (2 and 3) would be constructed as proposed and part of the assessment baseline. The cumulative assessment considers the additional changes which would result from the introduction of Euchanhead.

90. With regard to the fully consented baseline (Scenario 2), the addition of the proposed Development would create an enlarged renewable energy group from Hare Hill to Lorg, which is similar to the effect already noted within the LVIA but is extended north and south to include the two consented sites. Whilst there would be a notable increase in height of the Euchanhead turbines, compared with the others within this Hare Hill/Lorg group, this difference would be less apparent due to the Euchanhead turbines being in the centre of the group. It should be noted that this group already contains a variety of turbine sizes and generally, the larger the group the easier it tends to be to integrate different turbines sizes effectively. There would be notable visual cumulative interactions within Euchan Water valley, Polskeoch Burn and Water of Ken valley as well as from recreational hillwalkers on the SUW, upland Striding Arches sculptures, Core Paths within the Site, above Glen Afton (Blackcraig), and on Cairnsmore of Carsphairn. In all cases the addition of Euchanhead would further reinforce the increased influence from renewable energy but would result in the same level of effect reported for Scenario 1 (operational and under construction).

91. With regard to the other cumulative proposals, these are considered in turn, in combination with the fully consented baseline. The most notable cumulative effects would occur with Sanquhar II which is adjacent to Euchanhead. In the case where both developments are substantively present, the proposed Development would generally be enveloped by the larger Sanquhar II development, appearing within or adjacent to Sanquhar II, increasing the density of turbines visible or as an extension. The exception to this would be in the Lorg Glen/ Water of Ken valley where it is mainly the Euchanhead turbines which are present or at the upland Striding Arches sculptures where the proposed Development has the greater influence. Assuming the prior presence of this development in the landscape, the levels of effect resulting from the addition of the proposed Development would tend to be similar or reduced in level, due to the prior presence of Sanquhar II (along with the fully consented baseline) within the local landscape.

92. The proposed Development would require visible aviation lighting on the nacelles and towers. A range of proven mitigation options have been considered in relation to night-time impacts, as set out within the Aviation Lighting Landscape and Visual Impact Mitigation Plan in **Technical Appendix 15.3**. Embedded mitigation within the proposed Development would include a reduced intensity light (from 2000cd to 200cd) in good visibility on the nacelle. Additional mitigation would include an aircraft detection lighting system to limit illumination of aviation lighting only to times when low flying aircraft are crossing the Site.

93. The night-time assessment concluded that with just the embedded mitigation included in the proposed Development there would be significant night-time impacts on the nearest Southern Uplands and Narrow Wooded River Valley landscapes and few isolated residents within Shinnel Glen and Water of Ken valley. Impacts on the distant Merrick Wild Land or visitors to the Galloway Dark Sky Park would not be significantly affected. However, with the additional mitigation of an aircraft detection lighting system, all of these effects would reduce to minor or minor/negligible and not significant, due to the short duration the lights would be lit.

94. In summary, the changes arising from a project may engender positive or negative responses depending on individual perceptions regarding the merits of renewable energy. However, the assessment has taken a precautionary approach in considering that all effects on the landscape and on views, which would result from the construction and operation of the proposed Development, would be adverse; however, many people would not consider the effects to be adverse.

95. Overall, the scale and topography of the receiving landscape is considered appropriate to accommodate the proposed Development. Whilst there would be some significant effects identified on both landscape and visual receptors within the study area, it is evident from this assessment that the proposed Development has avoided impacts on sensitive landscapes and the number of people affected would be very limited.

8.3 Ecology

96. The potential effects of the proposed Development on habitats and non-avian animal species during the construction and operation have been assessed.

97. Information relating to protected and notable species and habitats in the vicinity of the Site, and designated nature conservation sites is provided. A radius of 10 km was applied for records of bats and for Statutory Designated Sites, and 2 km for non-statutory sites and for recent records of legally protected or otherwise notable species.

98. Most baseline surveys were conducted during the period October 2019 and May/June and October 2020. Surveys undertaken included surveys for a range of terrestrial mammal species and freshwater pearl mussel, vegetation surveys and fish habitat assessment surveys. Bat surveys were undertaken during 2018 and 2019.

99. There are ten Statutory Designated Sites within a 10 km radius of the Site, two Special Areas of Conservation (SAC), one Special Protection Area (SPA) and seven Sites of Special Scientific Interest (SSSI). However, there is no potential for significant ecological effects upon any of these sites due to distance (the closest of these sites (designated for ecological reasons) is located 4.93 km from the Site boundary) and lack of hydrological connections or other pathways for effects.

100. There are two Local Wildlife Sites (LWS) within 2 km of the proposed Development. Glenmaddie Wood LWS was scoped out due to distance and lack of hydrological pathways; however, Afton Uplands Provisional LWS was assessed as it overlaps the proposed Access Route A and will be affected by habitat loss in this area. The closest area of Ancient Woodland is located 132 m from the Site and was scoped out of assessment due to lack of pathways to impact.

101. The Site is predominantly characterised by commercial forestry, with open areas dominated by acid grassland, dry and wet heath, marshy grassland, blanket bog and modified bog. Smaller areas of flush and spring habitats including basic flushes, calcareous grassland, broad leaved woodland, neutral grassland and improved grassland were present. Some habitats including those that may be partially lost due to construction were identified as being potentially groundwater dependent. A detailed assessment, presented in **Chapter 10 Hydrology, hydrogeology, geology and soils - Technical Appendix 10.3**, confirmed that these most of these habitats were sustained by incidental rainfall and surface water rather than groundwater, with the exception of a number of groundwater springs recorded near proposed Borrow Pit BP07 which are Groundwater Dependent Terrestrial Ecosystems (GWDTE).

102. The proposed Development has been designed to minimise the loss of more sensitive natural habitats where possible including blanket bog and flush/ spring habitats. The proposals would result in the direct loss, and indirect/temporary loss, of up to 9.79 ha of locally-regionally important blanket bog (typically degraded, see **Technical Appendix 8.2**), and up to 3.24 ha of locally important modified bog habitat. The loss will be compensated for through measures aimed at restoring up to 23 ha of peatland habitat via tree clearance and subsequent mechanical bog restoration, which would be delivered via a Habitat Management Plan (see **Technical Appendix 8.8**).

103. No plant species listed on Schedule 8 of the Wildlife and Countryside Act were identified within the Site. Scottish Biodiversity List species mossy saxifrage was recorded at multiple locations along the proposed Access Route A between Hare Hill and Euchanhead, typically in association with habitat classification M32; mitigation to protect GWDTE should prevent impacts to this species. A stand of the Schedule 9 invasive non-native species Himalayan Balsam was identified near Shinnelhead; however, following a reduction of the site boundary this is now outwith the proposed Development area and will not be affected.

104. There is potential for the non-native American Signal Crayfish to be present onsite and pre-construction surveys for this species will be carried out to inform mitigation. Mitigation to prevent spread from the Dee / Ken catchment into the Nith catchment will be particularly important where watercourses from both these catchments are in close proximity in the Polskeoch area.

105. The Polvaddoch Burn, Scaur Water, Rashy Grain and Shinnel/ Fingland provide good habitat for fish and are considered to be of Regional value. All other watercourses within the study area of good or above habitat quality for fish were considered of Local value. Except for watercourse crossings, suitable buffer distances have been maintained between all infrastructure and watercourses. Following the implementation of good practice pollution prevention measures (see **Chapter 3, Appendix 3.1 Draft Construction Environmental Management Plan** and **Chapter 10 Hydrology**), the likelihood of a pollution event within downstream watercourses is considered low, and therefore no significant effects upon salmonids are considered likely. However, as a precaution, pre, during and post construction fish monitoring would be carried out. In addition, all new and upgraded culverts will be designed to allow fish passage and subject to agreement with the landowner, SPR would also provide support to Nith District Salmon Fisheries Board and Galloway Fisheries Trust to improve the suitability of other existing watercourse crossings within the Site for fish passage, even where not directly affected by the proposed Development.

106. There would be a small loss of habitat which could be used by otters and water vole due to the creation and upgrading of watercourse crossings for the proposed Development. This is not considered to lead to significant effects. Following the implementation of good practice measures, no significant effects upon otter or water vole are likely.

107. Evidence of pine marten and red squirrel presence was recorded, and one potential pine marten den was identified. There would be some loss of habitat that is suitable for these species although similar habitat is found in the surrounding area. Following the implementation of good practice measures, no significant effects upon pine marten or red squirrel are likely.

108. Bat surveys, undertaken during 2018 and 2019, identified at least six bat species within the Site. Two structures used by *Pipistrellus* bats for roosting were identified, one of which, the Polskeoch Bothy, supported a soprano pipistrelle maternity roost. Neither structure will be directly affected by the proposed Development, although the maternity roost lies close to an existing access track which may be upgraded. The existing access track is a main forestry haul road so the bats must be habituated to regular movements by heavy goods vehicles and are therefore unlikely to be affected by the usage of the track during construction. In addition, as a precaution if the roost is occupied, any works to upgrade the track within 100 m of the Bothy would not take place during the maternity period (June to August inclusive), when the risk of disturbance affecting bats is greatest. Disturbance to the roost will be avoided and no significant effects on bats during construction are therefore likely.

109. The assessment of impacts on bats during operation was carried out in accordance with current guidance and found that the proposed Development poses a medium risk to *Nyctalus* and *Pipistrellus* bat species and fatality rates have the potential to be high for both species groups. Embedded mitigation would take the form of creating a stand-off of 50 m or more between linear features (such as tree line at the forest edge) and turbine blade tips, however due to the predicted risk level additional mitigation is also proposed. The additional mitigation will comprise curtailment of the operation of all wind turbines when wind speeds are below 5.5 m/s and temperatures are above 11ºC at nacelle height during the bat active season (April to October inclusive). Monitoring of bat activity and regular searching around turbine bases is also proposed, so that the mitigation efficacy and need can be reviewed during the operational phase. Following the implementation of mitigation, no significant effects are predicted for bat species during operation.

110. No significant effects are predicted for any other protected or notable animal species, and no potential significant cumulative impacts were identified.

8.4 Ornithology

111. Desk-based studies and field surveys were carried out in and around the proposed Development over respective ‘study areas’ to establish baseline conditions and the bird species and populations present.

112. It was possible to ‘scope out’ the effects on a number of species of high Nature Conservation Importance by virtue of their ecology, absence, distance from the proposed Development, small numbers, low levels of activity and the nature and location of this activity.

113. Three bird species were included in the assessment, goshawk, peregrine and golden plover. All these species were considered of high Nature Conservation Importance due to peregrine and goshawk being listed in Schedule 1 (Wildlife and Countryside Act 1981, as amended by the Nature Conservation (Scotland) Act 2004) and peregrine and golden plover as Annex I (Birds Directive).

114. Habitat loss arising from the construction of tracks, borrow pits and turbine bases is unlikely to result in adverse impacts upon any bird species. Any impacts would be negligible and not significant. Population reductions due to habitat loss, displacement and/or collision mortality are also likely to be minimal. Any impacts would be negligible and not significant for all bird species. Due to a relatively small proportion of available habitat in the area being removed no mitigation is required.

115. 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 existing and planned windfarm developments in the region are judged as being unlikely to have a significant effect on existing bird populations. Overall, it is concluded that construction and operation of the proposed Development would not have a significant effect on birds under the terms of the EIA Regulations.

8.5 Hydrology, hydrogeology, geology and soils

116. The proposed Development has been assessed in relation to the potential impact on hydrology, hydrogeology, geology and soils during the construction and operational phases.

117. Information on the study area was compiled using baseline information from a desk study and verified by an extensive programme of field work. The assessment was undertaken considering the sensitivity of receptors identified during the baseline study and considering any mitigation measures incorporated as part of the Site design.

118. A detailed programme of peat depth probing has been completed and the results have been used to inform the Site design. A Peat Landslide and Hazard Risk Assessment and Peat Management Plan has been prepared which show that areas of deep peat can be avoided, and peat resources safeguarded.

119. The Site lies outside of any floodplains and no drinking water protected areas have been identified within 1 km of the Site. No designated sites that are dependent on water have been recorded within 1 km of or in hydraulic continuity with the Site. Site investigation has been undertaken to confirm the location of private water supply sources within 1 km of the Site and an assessment of the potential for the proposed Development to impair these has been completed. An assessment of the potential effects on Groundwater Dependent Terrestrial Ecosystems has also been completed. A schedule of proposed watercourse crossings is given.

120. Mitigation measures have been identified, either through the Site design or in accordance with good practice guidance.

121. Sustainable Drainage Systems (SuDS) have been proposed to ensure that the rate of runoff from the Site during construction and 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. Further, the proposed habitat management proposals set out measures that include disruption to drainage pathways which would reduce both the rate and volume of peak water flows, providing a flood risk benefit when compared to existing conditions.

122. It has been shown, as a consequence of the Site design and embedded mitigation, that the proposed Development would not result in any significant impacts on hydrology, hydrogeology, geology and soils, including private water supplies and GWDTE habitat. To confirm this, a programme of baseline and construction water monitoring has been proposed.

8.6 Archaeology and cultural heritage

123. A baseline and targeted walkover survey was undertaken in order to assess direct impacts on all heritage assets within the Site. Indirect impacts upon a heritage asset have been assessed for assets of regional or national importance within 10 km of the nearest proposed turbine; selected heritage assets of national importance over 10 km from the proposed turbines where a change to that part of the landscape which is visible in long-distance views from the asset has the potential to impact upon the asset's setting. A visit to heritage assets outside the Site was made where is it was beneficial to assessing indirect impacts upon their setting.

124. The Site is predominantly covered by commercial forestry. The baseline concluded that much of the archaeological resource found within the Site is associated with a post-medieval agricultural landscape, in correspondence with historical sources. The proposed Development would have a direct impact on two post medieval trackways (**SLR31** and **SLR32**). The proposed Development is likely to improve access to Allan's Cairn, a covenanters grave marker situated on the Southern Upland Way through improved access and signage. The assessment found indirect impacts from the operation of the proposed Development, which would include very slight adverse significance of effect, a very slight beneficial effect, with an overall neutral effect on Allan's Cairn. All other assessments were concluded to have nil effect.

8.7 Access, traffic and transport

125. Access to the Site is via the Hare Hill Windfarm access (Access Route A) off the A76 or an access off the U432n to the south of Sanquhar (Access Route B), which is accessed via the C128n Blackaddie Road in Sanquhar. The use of Access Route A may include the use of Access Route B for some deliveries and personnel movements.

126. For the delivery of construction materials, two different delivery scenarios have been assessed. First, a scenario whereby all construction materials (e.g. concrete for foundations and aggregate for access tracks) are imported to the Site, which is the worst case scenario and highly unlikely given borrow pit investigations. The second scenario, and the one preferred by SPR and therefore termed the 'likely scenario', is for 100% of access track aggregate to be sourced from the onsite borrow pits, thereby reducing the total number of heavy goods vehicle movements considerably. Both scenarios would result in increases in heavy goods vehicle movements on the A76, but the likely scenario at a much lower rate (8.5% maximum increase) compared to the worst case (highly unlikely) scenario (48.3% maximum increase).

127. The use of Access Route B would result in large heavy goods vehicle increases on the C128n Blackaddie Road and U432n Euchan Water; however, the base flows on these roads are very low and therefore the increased traffic flows are within the calculated capacity of the roads. In the likely scenarios that include Access Route B, the number of heavy goods vehicles on the C128n Blackaddie Road and U432n Euchan Water is forecast to be between one and four per hour in each direction in the peak months, which is considered negligible, particularly with the implementation of the Construction Traffic Management Plan and since the peak months would be for a small proportion of the overall construction programme.

128. The delivery of the wind turbine components would be from either the Port of Ayr or King George V Dock, Glasgow. The vehicles would be regarded as abnormal loads and be around 5 m in width. Blade lift technology would be utilised to transport the blades between a location to the north of new Cumnock and the Site, to avoid pinch points along the routes. Some upgrades may be needed to the highway network to enable the safe delivery of the wind turbine components in agreement with relevant authorities.

129. With the absolute worst case (and highly unlikely scenario of all construction materials coming by road) the maximum cumulative vehicular traffic associated with the construction of the proposed Development and four other proposed windfarm projects (Sanquhar II, Pencloe, Sandy Knowe and Glenmuckloch) occurring simultaneously, would result in a 30% increase on baseline traffic flows on the A76.

130. The assessment found that no significant effects are predicted from the forecast increases in traffic with respect to driver delay and community severance. However, the increase could be significant without mitigation for pedestrian amenity, road safety and with the delivery of the wind turbine components. These potential impacts would be controlled by best practice measures which would be outlined in a Construction Traffic Management Plan and Abnormal Load Management Plan. Consequently, no significant effects are predicted to occur as a result of the access, traffic and transport impacts.

8.8 Noise

131. Noise would be emitted by equipment and vehicles used during construction and operation of the proposed Development The level of noise emitted by the proposed Development and the distance from noise sources are the main factors determining levels of noise at nearby properties.

132. 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 properties 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. 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 generated through construction activities would have a minor effect.

133. The noise generated by the energy storage facility and the substation at the nearest residential locations was considered negligible and not significant given the separation distances involved.

134. Operational wind turbines emit noise from the rotating blades as they pass through the air. The amount of noise emitted tends to vary depending on the wind speed. When there is little wind, the turbine rotors 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 will also change with wind speed, increasing in level as wind speeds rise due to wind in trees and around buildings, etc.

135. Noise levels from operation of the proposed Development have been predicted for those locations around the Site most likely to be affected by noise. Existing surveys data for adjacent windfarms have been referenced to establish existing baseline noise levels at these properties. Noise limits / criteria have been derived from data about the existing noise environment following the method stipulated in national planning guidance.

136. Predicted noise levels take full account of the potential combined effect of the noise from the proposed Development along with the operational Afton Windfarm, the operational Hare Hill and Hare Hill Extension Windfarms, the operational Whiteside Hill Windfarm, the consented but not yet built Lorg Windfarm, the operational Sanquhar Windfarm, the consented but not built Sanquhar ‘Six’ Windfarm, the proposed Sanquhar II Windfarm, and Windy Rig Windfarm, which is currently under construction.

137. Other more distant windfarms were not considered, as they do not make an acoustically relevant contribution to cumulative noise levels. Predicted operational noise levels have been compared to the limit / criteria values to demonstrate that turbines of the type and size which would be installed can operate within the limits / criteria 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 developments of this nature, on an individual and cumulative basis.

8.9 Socio-economics, recreation and tourism

138. Based on the installed capacity the assessment of the proposed Development's economic impact found that:

- The development expenditure during the construction phase is estimated to be approximately £183 million, approximately £14.5 million of which would be spent in the local (Dumfries & Galloway and East Ayrshire) economy and approximately £31.2 million in Scotland as a whole;
- During the 22 months' construction phase, the proposed Development is expected to support, in net terms, approximately 98 person-years of employment benefiting local residents. Nationally (for Scotland as a whole), the proposed Development would be expected to support approximately 368 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 further posts would be created elsewhere in Scotland. Additional benefits would accrue to the local supply chain as a result of services supplied to the operation of the proposed Development;
- The local economy would be expected to be boosted by a total of £6.9 million of net Gross Value Added[4] (GVA) during the construction period. The Scottish economy would benefit by some £26.2 million net GVA.
- During the operational phase (assessed over a nominal 40 year life) the proposed Development would contribute lifetime GVA of just under £75 million to the local economy through direct, indirect and multiplier effects, and over £170 million to the economy of Scotland as a whole.

NOTE: estimates of expenditure within Scotland assume that turbine towers are not purchased in Scotland. If this option is available, there would be a substantially increased benefit to Scottish jobs and the wider Scottish economy.

139. Information from other renewable energy 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 and plant hire, fencing, and security. 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'. It is considered likely that the proposed Development would operate in combination with other renewable energy projects in the area to encourage the development of relevant skills and longer term business opportunities as southern Scotland continues to capitalise on its natural energy resources,and in turn contributing to economic recovery and response to climate change. SPR is committed to engaging with strategic bodes such as South Of Scotland Enterprise to enable local benefits to be maximised.

140. In terms of the tourism and visitor economy, a number of published studies have been reviewed which indicate a general consensus showing 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 Dumfries & Galloway and East Ayrshire are considered to be beneficial.

141. SPR is working with local communities throughout Scotland and is committed to offering a package of community measures to local communities that would include the opportunity for community benefit payments to be made and for communities to invest in the proposed Development. To date, SPR has voluntarily awarded more than £15.5 million in community benefit funding arising directly from renewable energy projects to communities in Dumfries & Galloway and East Ayrshire, supporting initiatives such as community facilities, environmental projects, heritage projects and skills and employment support. Such direct project-specific benefits are in addition to wider financial support distributed through the Scottish Power Foundation that benefit projects such as the Prince's Foundation programmes based at Dumfries House in East Ayrshire, which focus on training and education. As with other projects including Arecleoch Extension, Clauchrie, Carrick and Harestanes South, SPR is also offering a shared ownership opportunity to local communities. It is expected that any proposed income streams from

[4] Gross value added (GVA) measures the contribution to an economy of an individual producer, industry, sector or region

community benefit payments and profit from investment in the project would provide a long term, flexible revenue which could be used to support community projects within the local area.

142. Benefits accruing from the scale and nature of the proposed income streams could, as on previous projects, have a long lasting positive effect on access to resources, improvement to local amenities and quality of life of local residents as well as economic benefits. The long-term nature of the income would allow the local communities 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.

143. With regard to local recreational and tourism assets, no significant effects are expected during construction of the proposed Development subject to appropriate good practice management of construction traffic along the access roads to the Site and within the Site. 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.

144. A creative and considered package of enhancement measures is proposed to support recreational and tourism uses within the Site during the operational phase based on consultation with stakeholders. In particular, measures would focus on users of and connections to the Southern Upland Way, with a new circular route being developed, and the path to the Colt Hill Striding Arch upgraded. Taking account of the proposed mitigation measures, no significant adverse effects have been identified during the operational phase. Whilst the primary land use would remain commercial forestry, the potential to enhance the existing recreational and tourism uses of the Site is considered to be beneficial.

145. Overall the proposed Development is expected to have a positive economic effect albeit not significant in EIA terms, and no significant adverse effect on 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 as part of a wider cumulative benefit to the economy through the development of renewables and green jobs.

8.10 Other Issues

146. A number of other issues associated with the proposed Development are considered in the EIA Report (**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 and the carbon net balance of CO_2 emissions

147. 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.

148. 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. No properties lie within the study area for shadow flicker, and therefore no shadow flicker effects are predicted.

149. Climate and Carbon emissions: The calculations of total carbon dioxide emission savings and payback time for the proposed Development indicate the overall payback period of a development with 21 turbines with an average (expected) installed capacity of around 6 MW each would be approximately 1.5 years, when compared to the fossil fuel mix of electricity generation.

150. The proposed Development would offset 173,842 tonnes of CO_2 per year, when compared to fossil fuel grid mix electricity generation.

151. This means that the proposed Development is expected to take around 18 months (1.5 years) to repay the carbon exchange to the atmosphere (the CO_2 debt) through construction of the wind turbines; the Site would in effect be in a net gain situation following this time period and would to contribute to national objectives.

152. Air Quality: As the nearest property is within 50 m of the proposed Development boundary and along one of the proposed access routes, effects associated with dust or vehicle emissions are possible, but these potential effects would be managed through good practice construction measures which would form part of the Construction Environmental Management Plan .

153. Aviation: Following further consultation and modelling, it was concluded that the proposed Development would not have an effect on aviation as a physical obstruction. Radar modelling shows that all 21 turbines are in Radar Line of

Sight of NATS En-Route PLC (NERL)'s Lowther Hill and Great Dun Fell. Should the proposed Development be deemed to have a negative impact on the air traffic service in the vicinity of the Site provided by NERL, SPR will engage with NERL to agree mitigation (based on the use of a Cumbernauld PSR infill) where necessary. In addition, 14 of the turbines are predicted to be in line of sight of GPA's Primary Surveillance Radars. Notwithstanding this, SPR does not consider that this will have any impact on GPA's air traffic service, due to the inherent processing capabilities of GPA's Terma Scanter Primary Surveillance Radar.

154. Population and human health: Further to the consideration of human health impacts throughout the Environmental Impact Assessment Report, it is not expected that there would be any impacts from the proposed Development which would have significant effects on population and human health.

155. Risks of accidents and other disasters: 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 due to its geographical location and the fact that its purpose is to ameliorate some of these issues. In addition, the nature of the proposal and remoteness of the Site means there would be negligible risks on the surrounding environment.

156. With respect to potential effects on road safety, the proposed Development would create an increase to HGV traffic levels within the study area, but these levels would remain well within the design capacity of much of the local road network, including all the Class A (trunk) roads. The accident records for the study area overall are low to average, with only 75 accidents occurring over the two year study period. Therefore, the level of effect is considered to be minor adverse and not significant.

157. The traffic flows would increase significantly more than 10% on the C128n Blackaddie Road and U432 Euchan Water in worst and likely case scenarios if Access Route B is used (see **Chapter 12: Traffic and Transport for** details). There has only been one accident recorded on the C128n Blackaddie Road and U432n Euchan Water in the last five years and given HGVs will be subject to the 30 mph speed limit along the C128n, and 40 mph along the U432n the magnitude of effect is considered minor. However, as these roads are classed as having high sensitivity, this equates to a moderate adverse effect and is therefore significant, and mitigation is therefore required.

158. An outline Construction Traffic Management Plan, found in **Technical Appendix 12.2,** provides preliminary details of proposed traffic management measures and associated interventions that would be implemented during the construction phase of the proposed Development in order to minimise disruption and ensure safety along Blackaddie Road and the U432n Euchan Water.

159. Subject to implementation of the identified mitigation measures, there are not predicted to be any significant effect on safety of road users.

160. Waste and environmental management: The outline Construction Environmental Management Plan (**Technical Appendix 3.1**) provides a general overview on how waste and other environmental issues would be managed during the construction phase. The Peat Management Plan (**Technical Appendix 10.2**) also details how excavated peat is controlled, stored, re-used and disposed of during the construction phase of the proposed Development.

161. It is expected that a site specific waste management plan for the control and disposal of waste generated onsite would be required by condition, should the proposed Development receive consent.

9 Environmental management

162. Environmental constraints and considerations have been taken into account in the Site layout and the design of the proposed Development to avoid and minimise the potential for significant effects. Further measures to prevent or reduce any remaining significant environmental effects are described within each environmental discipline Chapter of the EIA Report. These measures and 'commitments' made in the EIA Report are set out in **Chapter 16: Schedule of Commitments.** Furthermore, the environmental mitigation and commitments would be formalised within a Construction Environmental Management Plan. An outline Construction Environmental Management Plan can be found in **Technical Appendix 3.1: Outline Construction Environmental Management Plan**.

163. 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 independent Ecological Clerk of Works appointed to ensure that mitigation measures are implemented effectively.

10 Benefits of the proposed Development

164. The proposed Development would deliver the following key benefits:

Renewable energy generation and carbon dioxide emissions

- production of around 385 GWh of electricity annually which equates to the annual power consumed by approximately 100,055 average UK households[5] (depending on the actual turbines installed);
- energy storage facility to store renewable energy from the development or excess electricity from the national grid, providing stability to the electricity supply network, meeting energy demands and providing improved energy security; and
- savings in CO_2 emissions due to the replacement of other electricity sources over the lifetime of the proposed Development and displacement of carbon-emitting generation after 1.5 years of operation.

Community and Environmental benefits

- the offering of a package of community benefits to local communities that could include the opportunity for community benefit payments;
- the opportunity for communities to invest in the operational development, providing a long-term, flexible revenue which could be used to support community projects;
- enhancement of recreation within the Site by the creation of improved access from the Southern Upland Way to the Colt Hill Striding Arch;
- enhancement of archaeological features including information boards;
- new circular walking routes on site which provide an alternative to following forestry road for the Southern Upland Way; and
- Habitat Management Plan which would restore 23 hectares of modified and drained blanket peat bog using methods successfully used by SPR on windfarm developments resulting in a likely net gain in biodiversity;

Construction employment and economic benefits:

- opportunities for suppliers of a wide range of goods and services within Dumfries and Galloway and Scotland as a whole;
- benefits to local businesses, such as accommodation businesses and shops, that supply goods and services to construction workers; approximately £14.5 million of the construction spend would be spent in the local (Dumfries & Galloway and East Ayrshire) economy;
- total direct estimated construction spend of £183 m which would result in an approximately £31.2 m contribution to the Scottish economy;
- the Scottish economy would be boosted by some £26.2 million net Gross Value Added (GVA);
- peak construction employment of around 98 jobs on site; and
- support for approximately 368 person-years of employment for Scotland as a whole.

Operational employment and economic benefits:

- the Scottish economy would benefit by some £170 million net GVA during the operational phase through direct, indirect and multiplier effects, with around £75 m contribution to the economy of Dumfries and Galloway and East Ayrshire;
- expectation for between three and five new full time employees (engineers and technicians) to be employed locally and further posts would be created elsewhere in Scotland; and
- additional benefits would accrue to the local supply chain as a result of services supplied to the operation of the proposed Development.

[5] 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 3,799kWh

11 References

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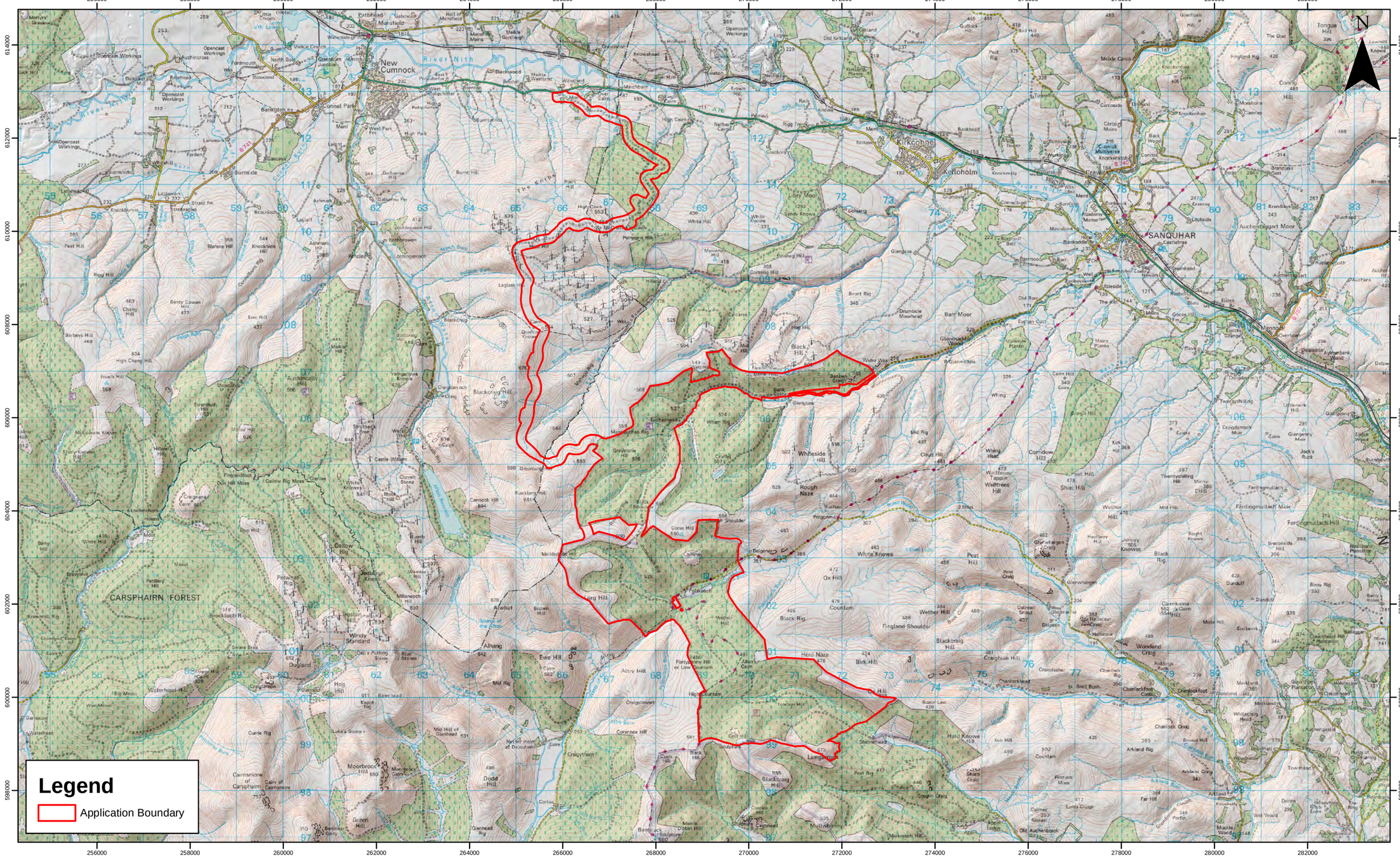

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Rev	**Date**	**By**	**Comment**				

Drg No	00481.00052.0329.0	
Rev	A	Datum: OSGB36 Projection: TM
Date	13/10/20	
Figure	1	

Legend

- Application Boundary
- Proposed Turbine Location

Proposed Access Tracks

- New Access Track
- Upgraded Access Track
- Planned Forestry and Land Scotland Access Track

Southern Upland Way Mitigation

- Proposed Temporary Diversion During Construction

Watercrossing Location

- New Watercrossing Location
- Upgraded Watercrossing Location
- Proposed Met Mast
- Proposed Borrow Pit Search Area
- Proposed Laydown Area

Access Route A

Access Route B

WX43 WX42 WX41 WX40 WX39 WX38 WX37 WX36 WX35 WX34 WX33 WX32 WX31 WX30 WX28 WX27 WX26 WX25 WX11

BP7 BP6

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15 T16 T17 T18 T19 T20 T21

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Euchanhead Renewable Energy Development EIAR

Non-Technical Summary

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Date	13/10/20
Figure	2.1

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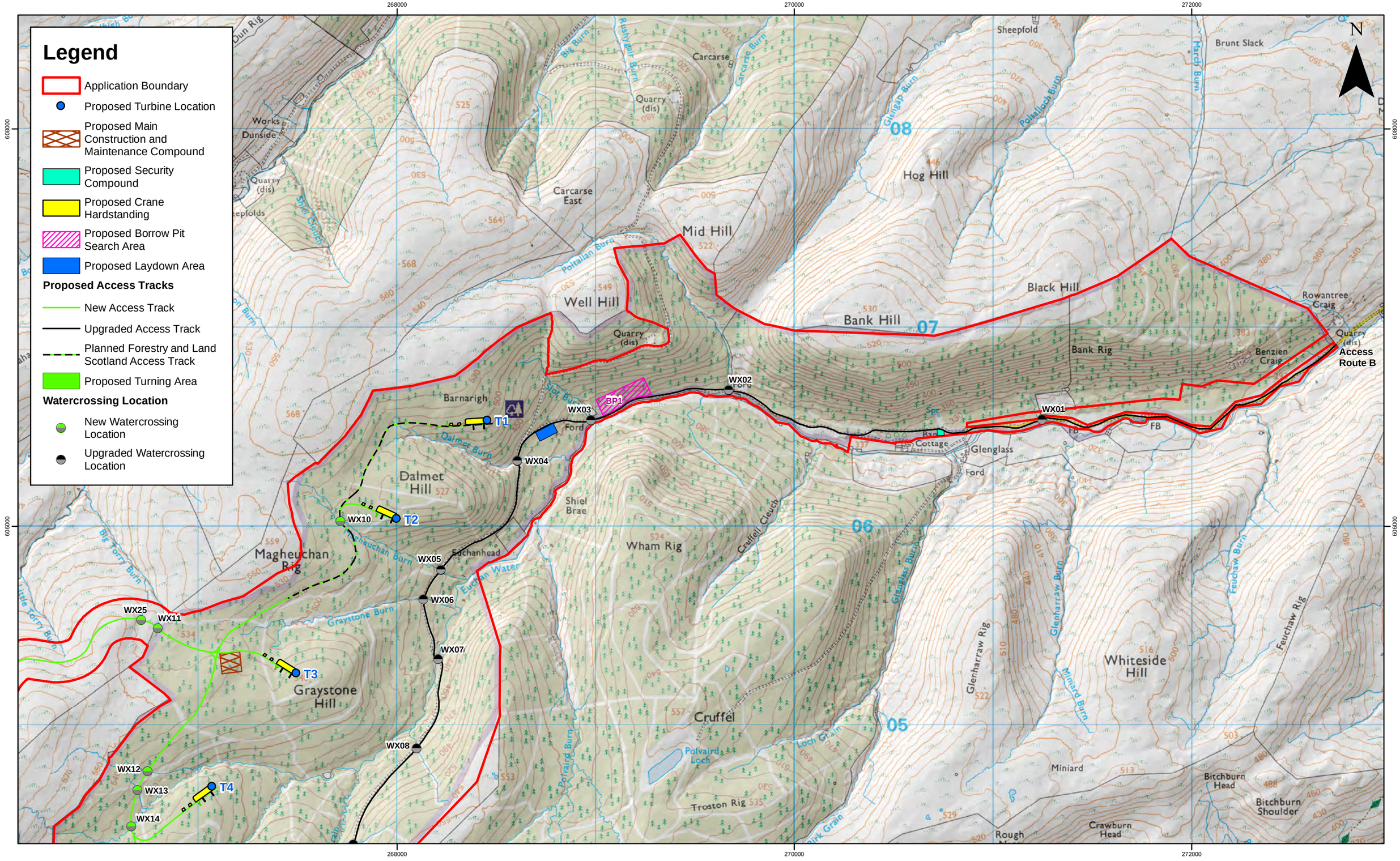
Projection: TM



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					Non-Technical Summary	**Rev** A
					Site Layout	**Date** 13/10/20
					Page 2 of 4	**Figure** 2.2
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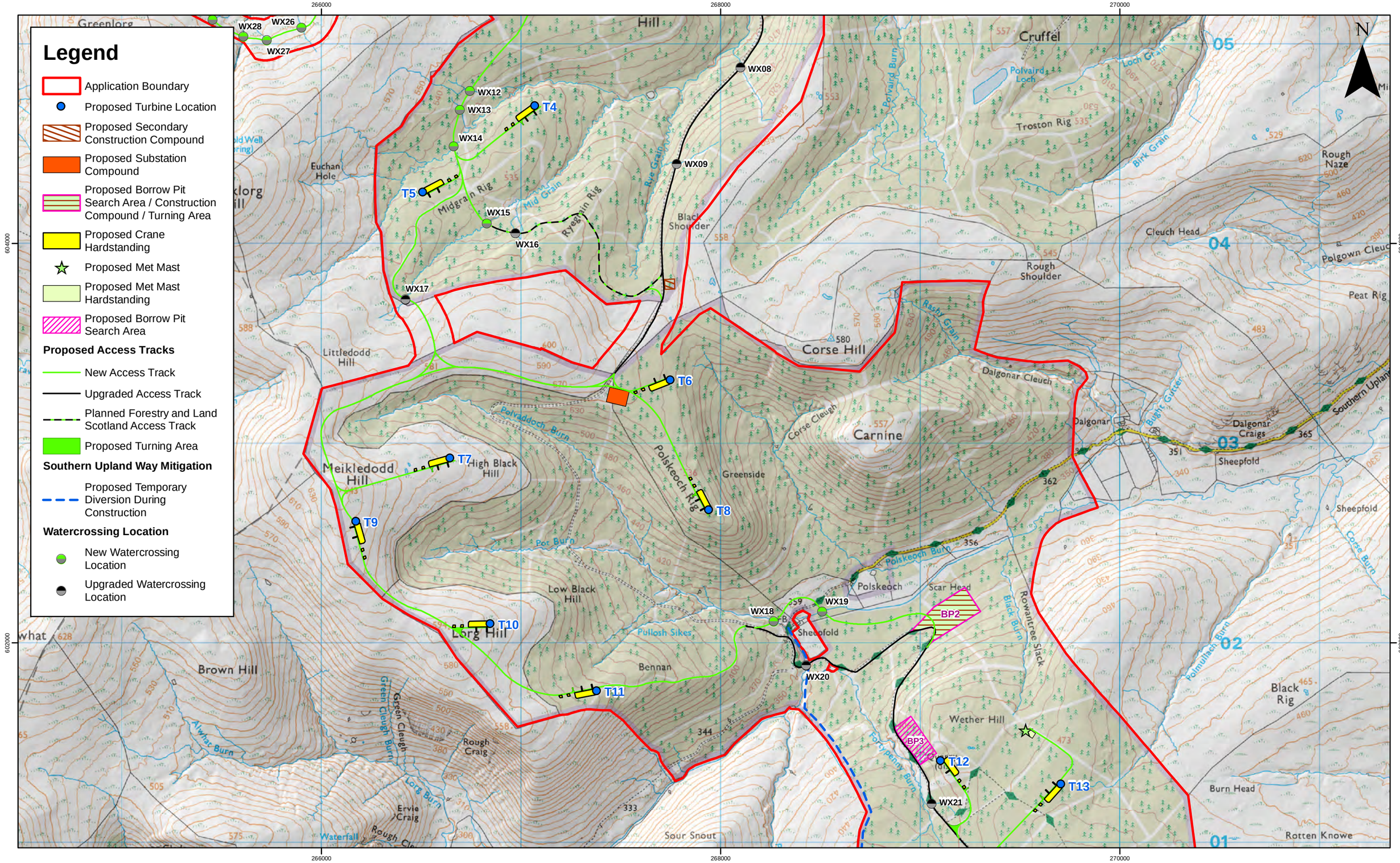

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	Rev	**Date**	**By**	**Comment**			Page 3 of 4

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Figure	2.3		

Legend

- Application Boundary
- Proposed Turbine Location
- Proposed Secondary Construction Compound
- Proposed Borrow Pit Search Area / Construction Compound / Turning Area
- Proposed Crane Hardstanding
- Proposed Borrow Pit Search Area

Proposed Access Tracks

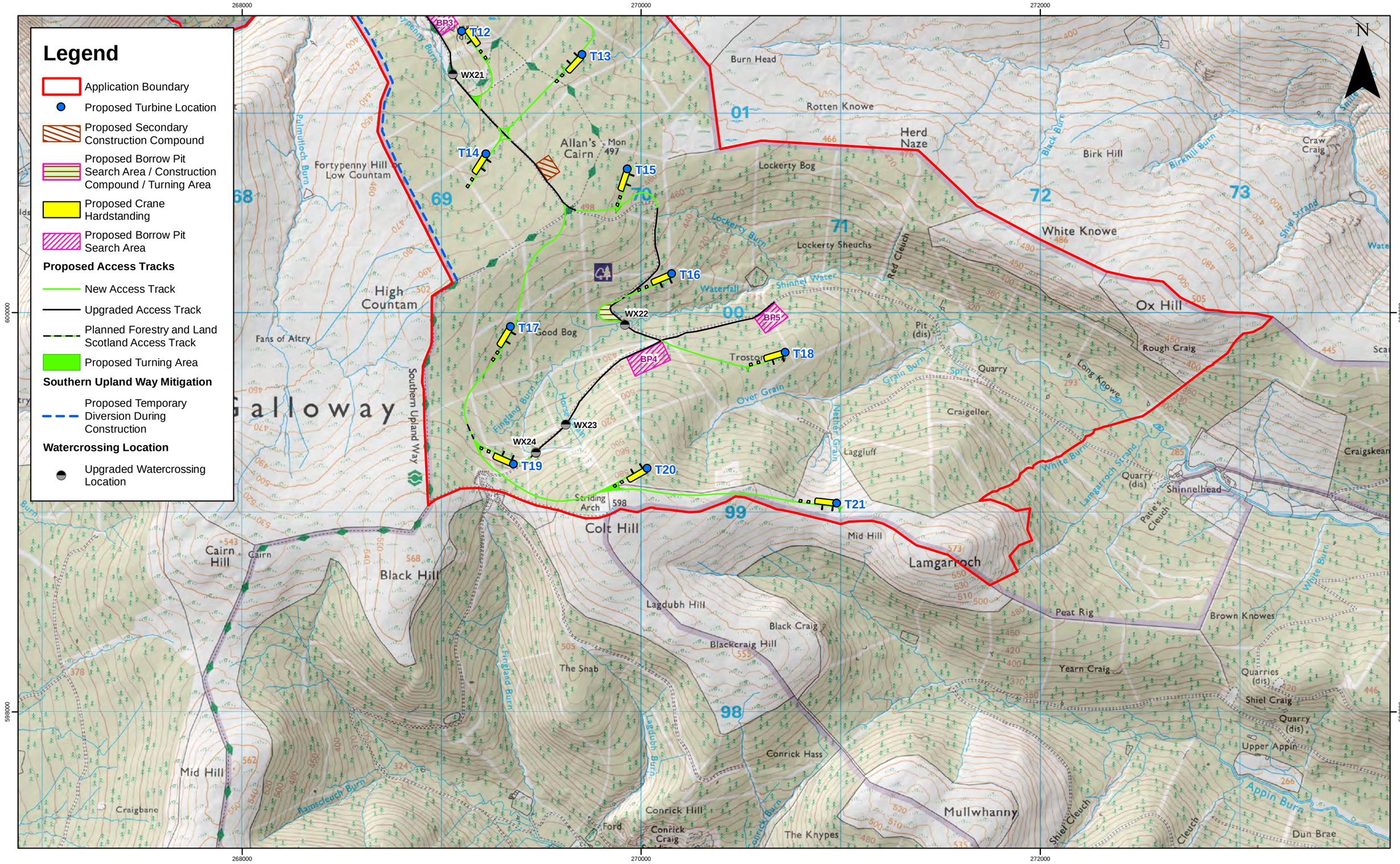
- New Access Track
- Upgraded Access Track
- Planned Forestry and Land Scotland Access Track
- Proposed Turning Area

Southern Upland Way Mitigation

- Proposed Temporary Diversion During Construction

Watercrossing Location

- Upgraded Watercrossing Location



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Euchanhead Renewable Energy Development EIAR

Non-Technical Summary

Site Layout

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Figure	2.4

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Projection: TM

Appendix A
Glossary of Terms

AGLV	Area of Great Landscape Value
BCT	Bat Conservation Trust
BAP	Biodiversity Action Plan
Birds Directive	Council Directive 2009/147/EC on the Conservation of Wild Birds
BoCC	Birds of Conservation Concern
BGS	British Geological Survey
BPP	Bird Protection Plan
CAR	The Water Environment (Controlled Activities) (Scotland) Regulations 2011
CLVIA	Cumulative Landscape and Visual Assessment
CEMP	Construction and Environmental Management Plan
CoPA	Control of Pollution Act
CMS	Construction Method Statement
CRM	Collision Risk Model
D&GC	Dumfries and Galloway Council
DEFRA	Department for Environment, Food and Rural Affairs
DIO	Defence Infrastructure Organisation
DMRB	Design Manual for Roads and Bridges
DfT	Department of Transport
DTM	Digital Terrain Model
EAC	East Ayrshire Council
EC	European Commission
EcIA	Ecological Impact Assessment
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EPA	Environmental Protection Act 1990
ER	Environmental Report
ETSU Guidance	The Assessment and Rating of Noise from Wind Farms ETSU 1997
EU	European Union
FEH	Flood Estimation Handbook
GDL	Gardens and Designed Landscapes
GPS	Geographical Positioning System
GVP	Generic Vantage Points
GWDTE	Ground Water Dependant Terrestrial Ecosystems

GWh	Gigawatt Hour
Habitats Directive	Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna
Habitats Regulations	The Conservation (Natural Habitats &c.) Regulations 1994 as amended
Ha	Hectares
HMP	Habitat Management Plan
HES	Historic Environment Scotland
IEMA	Institute of Environmental Management and Assessment
IEEM	Institute of Ecology and Environmental Management
IOA GPG	Institute of Acoustics Good Practice Guidance
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
LBAP	Local Biodiversity Action Plan
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LVIA	Landscape and Visual Impact Assessment
MOD	Ministry of Defence
MtC	Metric Tonnes of Carbon
MW	Megawatt
MWh	Megawatt Hour
NATS	National Air Traffic Services
NCA	The Nature Conservation (Scotland) Act 2004
NCR	National Cycle Routes
NERL	National Air Traffic Services (en route) Limited
NHZ	National Heritage Zone
NMRS	National Monuments Record of Scotland
NNR	National Nature Reserve
NPF2	National Planning Framework for Scotland 2
NSA	National Scenic Area
NTS	Non-Technical Summary
NVC	National Vegetation Classification
OS	Ordnance Survey
PPV	Peak Particle Velocity
PFM	Predictable Flight Method
PPG	Pollution Prevention Guidelines
RoW	Right of Way
RSA	Regional Scenic Areas

RSH	Rotor Swept Height
RSPB	Royal Society for the Protection of Birds
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland
SAC	Special Areas of Conservation
SAM	Scheduled Ancient Monument
SEPA	Scottish Environmental Protection Agency
SHEP	Scottish Historic Environment Policy
SLA	Special Landscape Areas
SMR	Sites and Monuments Record
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Urban Drainage Systems
SW	Scottish Water
SWT	Scottish Wildlife Trust
The EIA Regs	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017
TOC	Total Organic Carbon
UFM	Unpredictable Flight Method
UK BAP	UK Biodiversity Action Plan
VER	Valued Ecological Receptors
VOR	Valued Ornithological Receptors
VP	Vantage Point
Water Framework Directive	Council Directive 2000 /60/EC of the European Parliament and of the Council; establishing a framework for the Community action in the field of water policy
WCA	The Wildlife and Countryside Act 1981 (as amended)
WHO	World Health Organisation
ZTV	Zone of Theoretical Visibility

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