



# Enoch Hill Wind Farm

## Environmental Statement Volume 4: Non Technical Summary

September 2015



**Report for**

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**Document revisions**

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1	First draft for client comment	August 2015
2	Final	September 2015



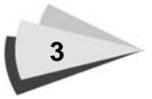
**EIA Quality Mark**

This Environmental Statement, and the Environmental Impact Assessment (EIA) carried out to identify the significant environmental effects of the proposed development, was undertaken in line with the EIA Quality Mark Commitments.

The EIA Quality Mark is a voluntary scheme, operated by the Institute of Environmental Management and Assessment (IEMA), through which EIA activity is independently reviewed, on an annual basis, to ensure it delivers excellence in the following areas:

- EIA Management
- EIA Team Capabilities
- EIA Regulatory Compliance
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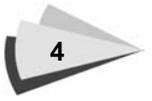
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# 1. Introduction

- 1.1.1 This Non-Technical Summary (NTS) forms part of the Environmental Statement (ES) that has been prepared by Amec Foster Wheeler Environment & Infrastructure UK Ltd (Amec Foster Wheeler) on behalf of E.ON Climate and Renewables UK Developments Ltd (hereinafter referred to as “*the applicant*”). This NTS accompanies an application made to Scottish Ministers for their consent under Section 36 of the Electricity Act 1989 and for a Direction from them that planning permission be deemed granted under section 57(2) of the Town and Country Planning (Scotland) Act 1997 for the proposed Enoch Hill Wind Farm (the “*Proposed Development*”).
- 1.1.2 The Proposed Development would comprise up to 19 wind turbines and ancillary infrastructure, including access tracks, a substation and a control building, and would be built on moorland located between the settlements of New Cumnock and Dalmellington, to the south of the B741 (herein referred to as the “*Development Site*”).
- 1.1.3 Those interested in obtaining more detail about the environmental aspects of the Proposed Development should consult the main ES (Volumes 1 - 3) which presents the findings of the Environmental Impact Assessment (EIA), and which accompanies the application. A hard copy of the ES has been placed on deposit at the following addresses for examination by members of the public during normal opening hours:

East Ayrshire Council, The Johnnie Walker Bond, 15 Strand Street, Kilmarnock, KA1 1HU	East Ayrshire Council Dalmellington Area Centre, 33 Main Street, Ayr, KA6 7QL
Dumfries and Galloway Council Dalry Registration Office, Main Street, St John's Town of Dalry, Castle Douglas, DG7 3UP	Dumfries & Galloway Planning Office, Dumfries & Galloway Council, Kirkbank House, English Street, Dumfries, DG1 2HS.
New Cumnock Community Centre, Castle, New Cumnock, Cumnock, Ayrshire, KA18 4AH	

- 1.1.4 The ES can also be viewed at the Scottish Government Library at Victoria Quay, Edinburgh, EH6 6QQ.
- 1.1.5 Further copies of this NTS may be obtained free of charge from the following website or address:

<https://www.eonenergy.com/About-eon/our-company/generation/planning-for-the-future/wind/onshore/enoch-hill>

**E.ON,  
i2 Office,  
Exchange Place,  
5 Semple Street,  
Edinburgh,  
EH3 8BL**

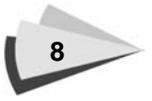
- 1.1.6 The full ES (including figures and appendices) can be obtained at a cost of £350 (+ Postage & Packing) for paper copies and £5 for CD copies from the same location or can be downloaded from our website at <https://www.eonenergy.com/About-eon/our-company/generation/planning-for-the-future/wind/onshore/enoch-hill>

- 1.1.7 Any comments on the Proposed Development or the findings of the EIA should be directed in writing to Theresa McInnes, Senior Case Officer at Local Energy and Consents of the Scottish Government at the address noted below, identifying that the correspondence refers to the proposed Enoch Hill Wind Farm and specifying the grounds for representation.

**Scottish Government,  
Local Energy and Consents,  
4th Floor,  
5 Atlantic Quay,  
150 Broomielaw,  
Glasgow,  
G2 8LU**

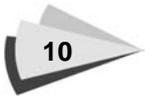
## 2. Background

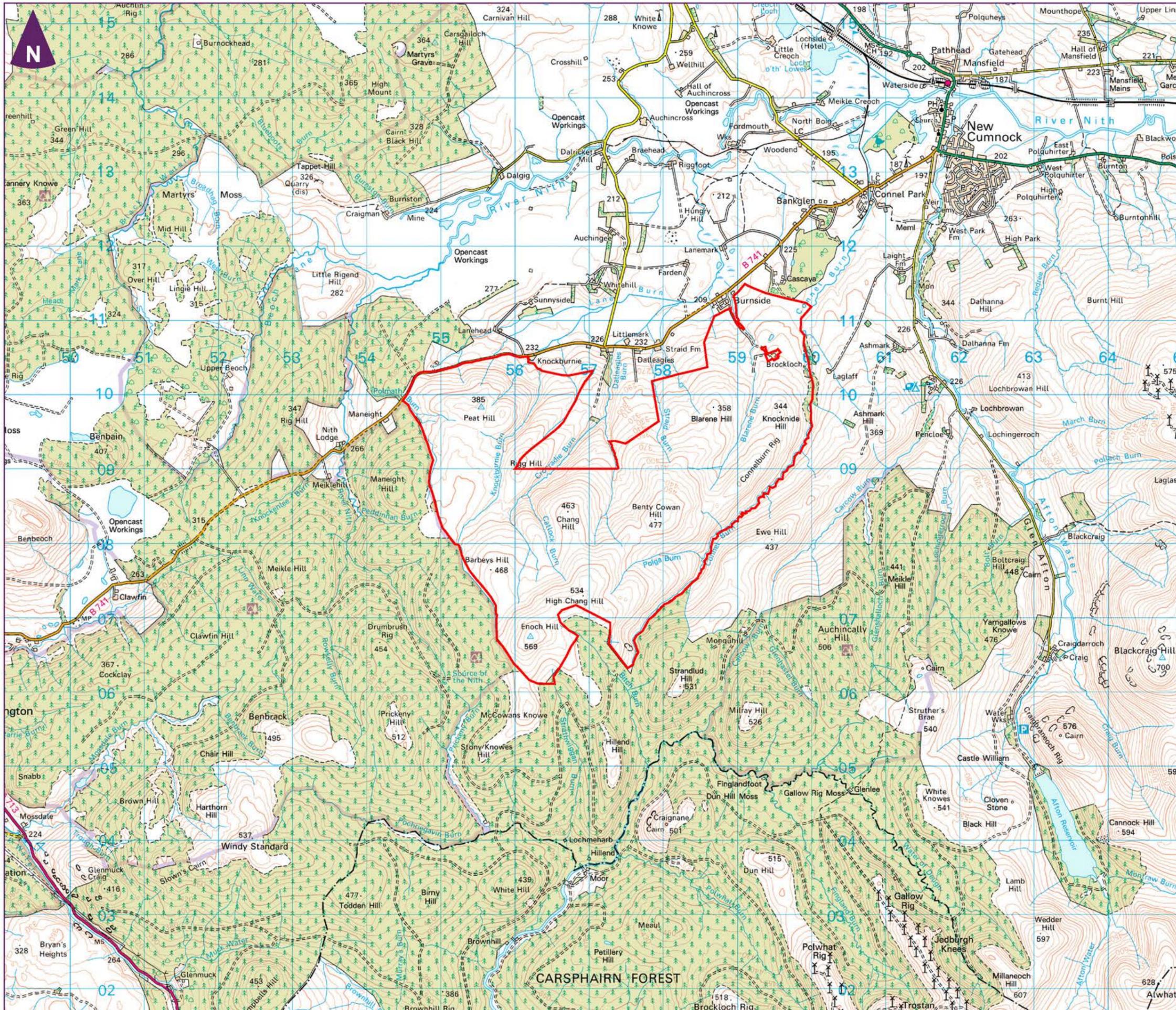
- 2.1.1 Interest in renewable energy production (such as that produced by a wind farm) has arisen in response to growing concern about the rise in atmospheric levels of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases, and the changes in the global climate that this could be causing. Burning of fossil fuels (oil, coal and gas) is a major contributor to greenhouse gas emissions. Reducing their use and increasing the proportion of power generated from renewable energy sources is seen as a vital part of reducing these emissions, notwithstanding that increasing energy efficiency also has a vital role to play in this process.
- 2.1.2 In order to meet international obligations, the UK and Scottish governments are both committed to reducing greenhouse gas emissions in an effort to reduce the level of future climate change. As the UK has one of the windiest climates in Europe, it has great potential to generate electricity from wind power, and, if constructed, the Proposed Development would contribute towards renewable generation capacity. It is expected that a significant proportion of the renewable power generation capacity required to reduce and replace fossil fuel generation will come in the short term from onshore wind generation as it is a proven technology, whereas many alternatives are considered to be insufficiently cost effective, or unable to provide the level of output required in the timescales available.
- 2.1.3 E.ON is one of the world's largest power and gas companies. In the UK, E.ON supplies energy to more than 5 million customers and generates enough electricity for around 8 million homes. E.ON Climate & Renewables (EC&R) was set up in 2007 as a global business responsible for developing, constructing and operating all of E.ON's renewable energy projects.
- 2.1.4 In the UK, E.ON focuses on developing onshore and offshore wind and biomass technologies. The applicant currently owns and operates 16 onshore and five offshore wind farms and two dedicated biomass plants.
- 2.1.5 The EIA has been managed by Amec Foster Wheeler who also coordinated production of the Enoch Hill Wind Farm ES. Amec Foster Wheeler is one of the UK's leading environmental and engineering consultancies and Registered Environmental Impact Assessors under an accreditation scheme run by the Institute of Environmental Management and Assessment (IEMA): the principal professional body for EIA in the UK.



### 3. The Development Site & Proposals

- 3.1.1 The Development Site in a wider geographical context is shown in ES **Figure 1.1**, with the localised view of Development Site boundary shown in ES **Figure 1.2**, and these accompany this NTS. The nearest large settlements to the Development Site are New Cumnock located approximately 5km to the north east, and Dalmellington located approximately 7km to the south west. The Development Site is located in East Ayrshire directly north of the border with Dumfries and Galloway and the former Stewartry District.
- 3.1.2 The B741 is located directly to the north and Carsphairn Forest adjoins the west and south of the Development Site boundary, with open cast mining to the north and open moorland to the east. The Southern Upland Way (SUW) is located approximately 12.5km to the east of the Development Site.
- 3.1.3 The terrain of the Development Site is relatively undulating and comprises a series of hills including Enoch Hill, High Chang Hill, Rigg Hill and Peat Hill, with elevations ranging from ~210m to ~569m above ordnance datum (AOD). The Development Site covers an area of ~1,466ha, though the total operational land take would be ~14ha which represents ~1% of this figure. The majority of the Development Site is rough grazing moorland with a number of small watercourses crossing it.
- 3.1.4 The Proposed Development for which planning permission is sought comprises the following main elements:
- ▶ Up to 19 wind turbines: each would consist of a tubular steel tower supporting three blades, with a hub height of up to 80m and an overall maximum height to blade tip of up to 130m;
  - ▶ Access tracks connecting the turbines and other infrastructure elements described below;
  - ▶ A new vehicular access point from the public highway (the B741);
  - ▶ Hard standing areas e.g. crane pads;
  - ▶ Up to two anemometer mast(s) to monitor weather conditions; and
  - ▶ On-site electrical infrastructure including a control building, Scottish Power Energy Networks (SPEN) 132/33kV substation and underground electrical cabling between these buildings and the turbines.
- 3.1.5 In addition, some temporary development / works would be undertaken e.g. construction compound and the establishment of borrow pit(s) for the provision of construction material. The borrow pits would be reinstated upon completion of construction of the Proposed Development. The location of site infrastructure is shown on ES **Figure 4.1** which accompanies this ES.
- 3.1.6 The planned operational life of the wind farm is up to 25 years and for the purposes of the assessment presented in the ES, it is assumed that the wind farm will be decommissioned after this period.





**Key**

Site boundary

0 km 3 km

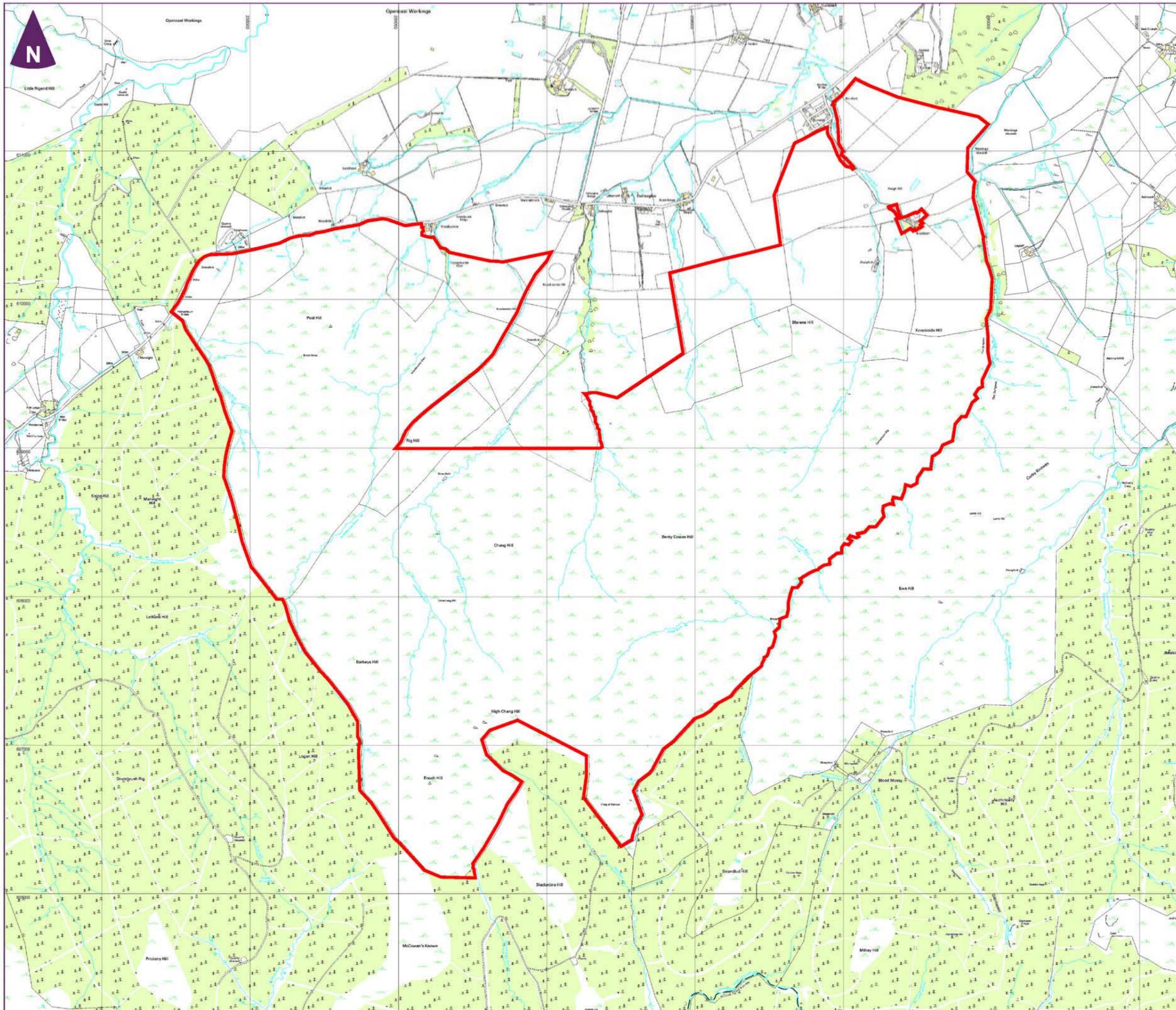
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Client

**Enoch Hill Wind Farm  
Environmental Statement**



**Figure 1.1  
Site location**



Key  
 Site boundary

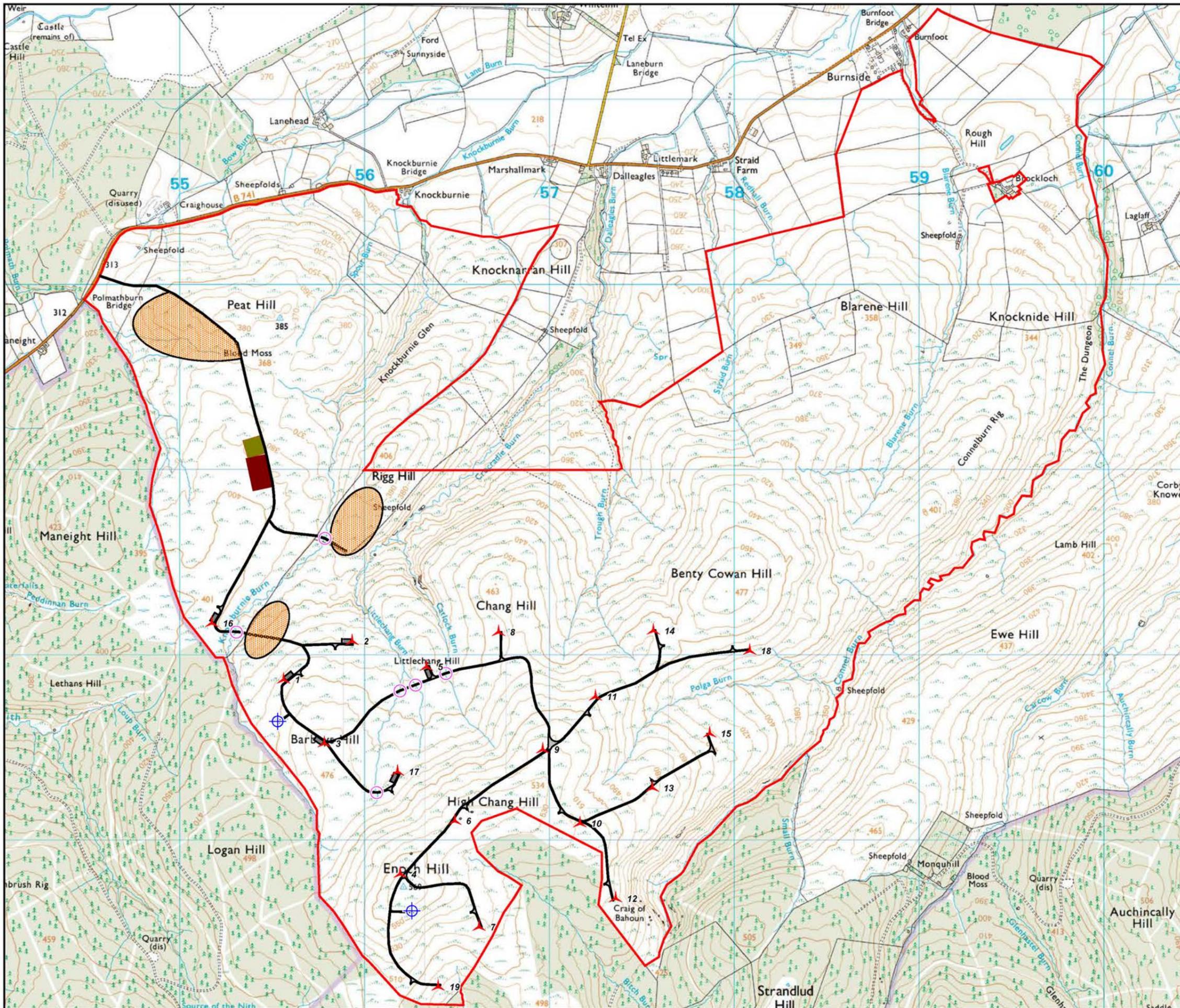
0 km 1.5 km  
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Enoch Hill Wind Farm  
 Environmental Statement



Figure 1.2  
 Site plan



**Key**

- Turbine location
- Proposed on site tracks
- Crane pad
- SPEN and EON Substation compound
- Temporary construction compound
- Watercourse crossing
- Borrow pit search area
- Permanent meteorological mast



**Enoch Hill Wind Farm  
Environmental Statement**

**Figure 4.1  
Site Layout**

Based upon Ordnance Survey Map with the permission of the Controller of Her Majesty's Stationery Office. © Crown Copyright. 10001776



## 4. Environmental Impact Assessment (EIA)

- 4.1.1 Under section 36 of the Electricity Act 1989, consent is required from the Scottish Ministers for the construction and operation of all power generating plant that would have an installed capacity of more than 50 megawatts (MW). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 (the EIA Regulations) apply to section 36 applications and the EIA for the Proposed Development has been carried out under these Regulations.
- 4.1.2 EIA is a process by which information about the likely environmental effects, in particular any likely significant effects, of a proposed development is collected, evaluated and presented to assist consultation and to enable decision makers to take account of these effects when determining whether or not a project should proceed and, if it does, with what particular controls over its construction and operation are needed to avoid or reduce effects on the environment.
- 4.1.3 The EIA has identified the likely effects of the Proposed Development on the environment (including people) and a determination has been made as to whether any of these could be significant. A number of measures to reduce or avoid adverse effects (referred to as 'mitigation measures') have been incorporated into the design of the Proposed Development or are proposed as part of its construction or operational management.
- 4.1.4 The ES, which comprises three volumes: Volume 1 – Main Text, Volume 2 – Illustrative Figures, and Volume 3 – Technical Appendices, and includes this NTS, accompanies the application for consent and reports the findings of the EIA. The assessment of effects is undertaken in an impartial manner and the findings are presented in a systematic way in the ES, which will be used by the Scottish Ministers to help inform their decision about whether or not the development should be allowed to proceed.

### 4.2 Consultation

- 4.2.1 Consultation is a vital aspect of the EIA process, both to agree what work should be carried out (referred to as the 'scope of work' or 'scoping process') and to understand public perception of the Proposed Development in order to help in the design process.
- 4.2.2 Extensive consultation was undertaken throughout the development of the design of the Proposed Development. Consultation with statutory consultees was undertaken both through the formal scoping process and receipt of a scoping opinion from the then Energy Consents and Deployment Unit or ECDU (now Local Energy and Consents), and through direct engagement with statutory consultees; responses were received from the relevant departments of East Ayrshire Council, the Scottish Government, Transport Scotland, the Health and Safety Executive, Defence Infrastructure Organisation, Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH), and Historic Scotland. In addition, the following bodies were also consulted during the EIA process: microwave link operators, Royal Society for the Protection of Birds (RSPB), BEAR Scotland, the Ministry of Defence, National Air Traffic Service (NATS), Civil Aviation Authority (CAA), relevant airports, and a number of operators of existing infrastructure such as Scottish Gas Networks, Scottish Power Energy Networks and National Grid.
- 4.2.3 The applicant also undertook public consultation as part of the Pre-Application Consultation process which included the formation of a community liaison group and two rounds of public exhibitions which were held in November 2012 at New Cumnock Community Education Centre, Dalmellington Community Centre, Hillview Leisure Centre, Kelloholm and Lagwyne Village Hall, Carsphairn. Exhibitions were also held in October 2014 at New Cumnock Community Education Centre and Dalmellington Community Centre. In addition, a Community Liaison Group (CLG) made up of local residents, community councils and local groups was set up and four meetings of the CLG were held in May, July and September 2014 and July 2015.

- 4.2.4 A full statement of community consultation, which describes in more detail the community engagement process described in this section, has been provided in the pre-application consultation (PAC) report which has been submitted with the section 36 application.

## 4.3 Environmental Effects

- 4.3.1 The emphasis of the EIA Regulations is on the 'significant' environmental effects to which a development is likely to give rise. Accordingly, the potential significant effects identified during the scoping exercise were subject to detailed assessment, using methodologies appropriate to the different environmental topics that need to be considered as part of an EIA. These methodologies were based on recognised good practice. The environmental topics considered in the EIA are reported in the ES are:

- ▶ Chapter 6 – Peat;
- ▶ Chapter 7 - Noise;
- ▶ Chapter 8 - Shadow Flicker;
- ▶ Chapter 9 - Landscape and Visual Impact;
- ▶ Chapter 10 - Historic Environment (including archaeology);
- ▶ Chapter 11 - Ecology;
- ▶ Chapter 12 - Ornithology;
- ▶ Chapter 13 - The Water Environment (Geology, Hydrology and Hydrogeology);
- ▶ Chapter 14 - Traffic and Transport;
- ▶ Chapter 15 - Socio-Economics;
- ▶ Chapter 16 - Infrastructure, Telecommunications and Safety; and
- ▶ Chapter 17 - Aviation Safeguarding.

- 4.3.2 The findings of the assessments that are reported in the ES are intended to assist Scottish Ministers, and other stakeholders that they consult, in coming to a view about whether or not the Proposed Development should proceed (and how it should proceed if planning permission is granted). The decision-making is in itself part of the EIA process.

- 4.3.3 The following sections provide a brief summary of the main findings of the EIA as set out in detail within the technical chapters of the ES.

## 4.4 Renewable Energy Policy, Carbon Balance and Peat Management

- 4.4.1 This chapter of the ES outlines the prevailing climate change and renewable energy legislation and policy framework and describes the 'carbon balance' of the Proposed Development, taking account of peat within the Development Site. The 'carbon balance' for the Proposed Development is calculated following Scottish Government guidance and this provides a mechanism by which the carbon cost as a result of a wind farm, primarily as a result of component manufacture and construction activities (including peat excavation), can be weighed against the carbon savings attributable to it during its operational lifetime. This calculation is summarised as the length of time (in years) that it will take the carbon savings to balance the carbon costs and is referred to as the 'payback period'. An assessment of the Proposed Development's impact on the existing peat within the Development Site, and the effects in terms of carbon dioxide emissions are also provided.

- 4.4.2 The design process included careful siting of tracks, turbines and other infrastructure to minimise effects of the Proposed Development upon peat and carbon emissions. A Peat Management Plan (PMP) quantifies the volume of peat that may need to be excavated based upon peat depth

surveys that have been carried out in accordance with approved guidance. The PMP also sets out a range of mitigation measures to further minimise effects on peat and carbon emissions. These include methods to be employed for peat stripping, temporary stockpiling and subsequent reinstatement. The PMP concludes that all excavated peat can be re-used to landscape infrastructure within the Proposed Development. It is predicted that the carbon loss in developing the Proposed Development is expected to be paid back in ~1.5 years (~6% of the operational life of 25 years). The calculation of carbon balance and payback has been based on the expected values where site specific data is available and worst case assumptions where it is not. Even in the worst case scenario, the Proposed Development will have achieved the carbon balance within ~3.6 years (~14% of the 25 year operational life).

- 4.4.3 On the basis of potential annual CO<sub>2</sub> savings of 63,768 tonnes/year, based on the figure of 430g of CO<sub>2</sub> savings per kWh and a capacity factor<sup>1</sup> of 27% (Department of Energy and Climate Change (DECC), June 2015 average capacity figure for Scotland), the Proposed Development could result in a total carbon saving<sup>2</sup> of approximately 1.6M tonnes over its 25 year operational life, and generate electricity to supply the equivalent of 42,651 average homes in East Ayrshire on an annual basis.

## 4.5 Noise

- 4.5.1 An assessment considering noise arising from the construction, operation and decommissioning of the Proposed Development has been undertaken. For each phase of the Proposed Development, the assessment considers compliance with the appropriate noise limit(s).
- 4.5.2 Construction noise effects would be temporary and intermittent during the anticipated 12 month construction programme, and not continuous. Construction noise effects can generally be controlled by following standard industry practices, including set construction working hours, which would be controlled by conditions. The assessment shows that the separation distance between the construction areas and access routes and receptors is sufficient to ensure that any construction noise effects will not cause undue disturbance during the main periods of activity. It is assumed that decommissioning noise will be generally less or, at worst, similar to that experienced during the construction period. Therefore, no significant effects are anticipated with respect to noise from construction and decommissioning activities.
- 4.5.3 Operational noise was assessed in accordance with ETSU-R-97: *The Assessment of Rating of Noise from Windfarms*, as recommended by The Scottish Government. The assessment was based upon an assessment 'envelope' of turbine noise emissions, which considered a number of potential wind turbine models suitable for the Proposed Development and used the highest noise level at each wind speed. Predicted noise levels from the Proposed Development at each of the assessed receptors were found to be at least 6.0 decibels (dB) below the associated daytime noise limits. During the night-time period, margins of at least 9.0 dB were shown. Therefore, the Proposed Development will have no significant noise effects upon nearby residential receptors.
- 4.5.4 The operational noise assessment also considered potential cumulative noise effects resulting from existing, consented and proposed wind farm developments. The cumulative noise assessment demonstrated that even when all residential receptors are downwind of all wind projects operating concurrently, predicted turbine noise emissions would be more than 3.0dB below the relevant noise limit at each assessed sensitive receptor. This is a precautionary approach/conclusion as, in reality, it is not possible for all receptors to be downwind of all wind farms at any one time as a result of their distribution across the landscape. No significant cumulative noise effects were predicted.

<sup>1</sup> The ratio of the actual energy produced by a turbine in a period time compared to the hypothetical maximum output of the turbine.

<sup>2</sup> Every unit of electricity produced by a wind farm development effectively displaces a unit of electricity which could otherwise have been produced by a conventional coal or gas power station. The displacement of electricity produced by a coal or gas power station by a low carbon technology such as wind turbines would represent a 'carbon saving'.

- 4.5.5 In conclusion, it is considered that the Proposed Development will comply with all relevant standards and guidelines designed to protect residential amenity in respect of noise, and will therefore not result in any significant noise effects.

## 4.6 Shadow Flicker

- 4.6.1 Under certain combinations of geographical position, time of day and time of year, the sun may pass behind the rotor of a wind turbine and cast a shadow over neighbouring properties. When the blades rotate, the shadow cast upon the ground also rotates. Where the shadow is cast through a window or an open door, it may appear to flicker on and off due to its rotation and this is known as 'shadow flicker'.
- 4.6.2 As experience from some other wind farm sites has shown that shadow flicker has the potential to cause annoyance to occupants of affected properties under certain circumstances, a study has been undertaken to identify whether shadow flicker is likely to occur at residential properties in the vicinity of the Proposed Development. At UK latitudes, shadow flicker effects are only likely to occur at properties within 10 rotor diameters of a turbine where they are located within 130 degrees either side of north of any turbine.
- 4.6.3 As there are no residential properties located within 1,110m (10 rotor diameters of up to 106m, plus a 50m tolerance for 'micrositing') and 130 degrees either side of north of any proposed turbine, shadow flicker is not predicted to occur at any residential property as a result of the Proposed Development.

## 4.7 Landscape and Visual Impact

- 4.7.1 The assessment conforms to the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA) and has been undertaken by chartered landscape architects at Amec Foster Wheeler Environment and Infrastructure Ltd. The assessment has considered the construction, operation, and decommissioning phases of the Proposed Development and has included design iteration and re-assessment of the residual effects.
- 4.7.2 The Development Site is located approximately 5km southwest of New Cumnock, predominantly within the Southern Uplands and Forestry landscape character type (LCT) within East Ayrshire.
- 4.7.3 Consultation arising from the scoping process on landscape and visual assessment has been undertaken with Scottish Natural Heritage (SNH) and East Ayrshire Council (EAC). The advice from consultees has been used to assist the design and assessment process with additional comments provided on viewpoint selection and the cumulative assessment. Strategic landscape planning advice has been considered from the following sources:
- ▶ The Ayrshire Joint Structure Plan (2007);
  - ▶ The EAC Local Plan (2010) and the EAC Local Development Plan: Proposed Plan (2015); and
  - ▶ The Dumfries and Galloway (DGC) Council Local Development Plan (2014).
- 4.7.4 In addition, further non-statutory guidance has been sought from:
- ▶ SNH's Strategic Guidance for Onshore Wind Farms (March 2009);
  - ▶ The EAC Draft Planning for Wind Energy Supplementary Guidance (2015);
  - ▶ The EAC Landscape Wind Capacity Study (2013) (EALCS); and
  - ▶ The Dumfries and Galloway Wind Farm Landscape Capacity Study (DGLCS).
- 4.7.5 These latter documents provide the following advice on the Development Site:

- 4.7.6 The Proposed Development would be located within 'Zone 2' of SNH's Strategic Guidance for Onshore Wind Farms and in an area where there is often scope to accommodate development of an appropriate scale, siting and design, subject to cumulative development.
- 4.7.7 Both the EAC and DGC landscape capacity studies provide sensitivity analysis of the Southern Uplands and Southern Uplands with Forestry Landscape Character Types (LCTs), which may be considered relevant to the Development Site and collectively they record a high / medium to low, inherent landscape sensitivity to large scale turbine development. The large or extensive scale and simplicity of the landscape character is recognised in both documents as an opportunity for large scale wind farm development, noting that the general lack of settlement and presence of forestry are factors indicating some capacity for large scale wind turbines.
- 4.7.8 The Development Site is located away from residential properties (none within 1.6km) and would be located within the less sensitive interior hills. As part of the design process the proposed turbines have been positioned into the southern part of the Development Site, providing a generous 'set-back' from the B741 road.
- 4.7.9 Cumulatively, the Proposed Development has been designed to appear as part of the 'South Kyle Wind Farm' with sufficient similarity in the design approach and visual appearance such that should South Kyle be consented, the Proposed Development would appear visually compatible. Equally however, if the South Kyle application were not consented, the Proposed Development has been designed to appear as a simple, cohesive cluster, sufficiently separate from other cumulative wind farm development so as to appear 'distinctive' and 'separate' in accordance with the SNH 'Guidance on Siting and Designing Windfarms'.
- 4.7.10 Drawing from the non-statutory advice of the EALCS and DGLCS, consultation, and the design and assessment process, a number of landscape design objectives for the Proposed Development have been set out as follows:
- ▶ Achieve a simple, rational, and cohesive design from most viewpoints avoiding turbine stacking, gaps and outlying turbines so the scheme may be accommodated on a stand-alone basis or cumulatively;
  - ▶ Turbine development should avoid the front faces of hills overlooked by settlements, roads and residential receptors; instead occupying the less visually sensitive interior hills;
  - ▶ While not a hard constraint<sup>3</sup>, a turbine 'avoidance area' at the north of the Development Site was applied in response to feedback obtained as a result of public consultation and Community Liaison Group meetings. This constraint was applied to minimise effects on residential properties located to the north of the Development Site;
  - ▶ Maintain the simple landscape character of the Development Site by siting ground based infrastructure in the least visible locations;
  - ▶ Limit landscape and visual effects on the visual receptors including local residents, roads, recreational routes and visitor / tourist destinations;
  - ▶ Achieve a design proposal that would be broadly compatible or co-existent with other existing and consented wind farm development within the Study Area. In this respect the design should adopt a clustered layout that is broadly similar to neighbouring wind farm developments in terms of perceived turbine height, number, proportion, 3 bladed design, colour and lighting. For example, the maximum turbine height for the Proposed Development of up to 130m to blade tip compares favourably with the consented turbine height at nearby schemes such as Sanquhar (130m), Dersalloch (125m) and Afton (120m and 100m); and
  - ▶ Limit cumulative landscape and visual effects including sequential cumulative effects from roads and the sensitive area of landscape character such as the Glen Afton Valley.

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<sup>3</sup> Hard constraints area considered to be existing infrastructure, residential properties, watercourses, roads, public rights of way, etc.

## Landscape Effects

- 4.7.11 Landscape effects are concerned with how the Proposed Development would affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. The Proposed Development would lead to a significant effect on part of the Southern Uplands and Forestry: Enoch Hill LCA. The geographical extent of the significant effects would be limited to the immediate areas of the proposed turbines, within the Development Site itself (and part of the Southern Uplands and Forestry: Enoch Hill LCA) due to the containment of coniferous forestry and landform. Significant landscape effects would also extend north, approximately 2km (affecting the East Ayrshire Southern Uplands: Benty Cowan Hill LCA) due to the upper parts of the turbines appearing beyond the summits of Chang Hill and Benty Cowan Hill. The nature of all of these effects would be long-term (reversible) direct and negative, due primarily to the height and scale of the turbines.
- 4.7.12 This effect would not be significant in terms of the wider East Ayrshire Southern Uplands / Southern Uplands with Forestry which extends further south to include the Southern Uplands / Southern Uplands with Forests: Carsphairn area, in Dumfries and Galloway. The proposed Development would also lead to a significant, indirect effect on the southern views and the backdrop of the Southern Uplands as viewed from the New Cumnock Upland Basin LCA, to the west and northwest of New Cumnock. Much of this area and the associated southern views are already partly characterised by views of wind farm development at Hare Hill and Windy Standard wind farms and would not appear incongruous. The assessment also notes that part of this area is currently characterised by open cast mining operations, reducing its overall sensitivity to wind farm development. The nature of these effects is further detailed as part of the visual assessment.
- 4.7.13 The Development Site is designated at a local level as part of the Afton Sensitive Landscape Character Area (SLCA). Although there would be a significant effect on part of the landscape character within the Afton SLCA, it is not considered that the special qualities of the SLCA or the reasons for its designation would be significantly affected, and there would be little or no visibility from within the Afton Glen area itself, which forms the focus of the SLCA in this area.
- 4.7.14 Further, there would be no significant effects on any other locally or nationally designated landscapes including the Galloway Hills Regional Scenic Area (RSA).

## Visual Effects

- 4.7.15 Visual effects are concerned with the effects of development and change on the views and visual amenity likely to be experienced by people within the landscape. A total of 22 viewpoint assessment locations have been selected across the study area and within the ZTV as part of the consultation process with SNH and the local planning authorities. Visualisations (photographs of the existing view, wireframes and photomontages) of the Proposed Development from each of these viewpoint locations are presented in the ES in Volume 2 and their analysis indicates that the likely extent of potential, significant visual effects would extend out in a north and northeast direction, primarily affecting views from the Upland Basin including open views from the A76 and the south western edge of New Cumnock within approximately 7km from the nearest turbine locations, as indicated by Viewpoints 1 to 7. The predicted visual effects as indicated by Viewpoints 1 to 7 are indicative of a visual effect from a particular location and should not be assumed to translate into effects on the overall visual experience within 7km as they are not representative or typical. For example, due to the landform, intervening vegetation screening and the wind farm design, those residential properties closest to the Proposed Development within approximately 3km would not be significantly affected. The views in other directions to the east, south and west would not be significantly affected due to the intervening landform and forestry.
- 4.7.16 The Proposed Development would have a significant effect on the views from the small settlement at Burnside and from the south western edge of New Cumnock, along Connel View and at the Cemetery along Afton Road (also promoted as a Scottish Hill Track / Heritage Path). There would also be a significant effect on the views from part of the B741 and two core paths, views from part of Knockshinnock local nature reserve and the hill summits of Blackcraig Hill and Windy Standard.

## Conclusions

- 4.7.17 The Proposed Development has taken account of the non-statutory guidance within the EALCS and the DGLCS and through the preliminary design and assessment process has located the turbines into the southern, least sensitive part of the Development Site in order to mitigate potential effects on views from the New Cumnock Upland Basin area. In doing so, the Proposed Development seeks to exploit landscape characteristics identified within this area as suitable for large scale wind farm development in the EALCS, whilst avoiding those areas which may be considered as of higher sensitivity.
- 4.7.18 The proposed turbines are located remote from residential properties to the north, within a less sensitive part of the Development Site, providing a generous 'set-back' from the adjacent B741 minor road and thus increasing the level of mitigation afforded to landscape and visual receptors in the New Cumnock Upland Basin to the north along the B741 and around the New Cumnock area. In addition, the turbine composition has been visually composed to improve its appearance from the main viewpoints to the north and from within the New Cumnock Upland Basin LCA. In doing so, the Proposed Development has achieved its landscape design objectives in terms of integrating the Proposed Development within its proposed landscape setting and cumulative baseline whilst limiting and mitigating potential landscape and visual effects. In this respect it is notable that the likely significant effects of the Proposed Development would be limited to part of the Southern Uplands / Southern Uplands with Forestry LCT, a typology that is generally considered as more able to accommodate wind energy development when compared to other LCTs. Further, the significant visual effects would be largely contained to within the New Cumnock, Upland Basin LCA to the west and north of New Cumnock. Whilst there would be no significant effects on the views from the closest residential properties within 3km, there would be significant visual effects on the south western views from Burnside, Knockshinnoch Lagoons local nature reserve and the south western edge of New Cumnock and part of the B741 and two local footpaths. All of these receptors are set within the Upland Basin and tend to have a northern or north westerly aspect, viewing across the River Nith to the north and away from the Proposed Development. There would also be significant visual effects on the views from the hill summits of Blackcraig Hill and Windy Standard Hill, experienced in the context of other existing and consented wind farm development located in the intervening fore or middle ground.

## 4.8 Historic Environment

- 4.8.1 Direct effects on heritage assets, as well as indirect effects on the setting of off-site heritage assets and the wider historic landscape, have been considered in the Historic Environment assessment.
- 4.8.2 There are a number of non-designated archaeological features across the Development Site, comprised of previously known assets recorded within the West of Scotland Archaeology Service Historic Environment Record together with potential assets identified through this assessment. Peat deposits which may have value for the study of past environments are also present.
- 4.8.3 While most previously known assets would not be affected by the Proposed Development, an earthwork boundary bank would probably be partially disturbed by the scheme. This asset would be considered of local importance at best and therefore not give rise to a significant effect. Previously unrecorded archaeological features and peat deposits could also be affected by the Proposed Development. However, appropriate mitigation measures, such as photographic recording and/or archaeological watching briefs, within areas of disturbance, would ensure that any adverse residual effects would be not significant.
- 4.8.4 Indirect (visual) effects on the settings of designated heritage assets within the wider area, including listed buildings, scheduled monuments and garden and designed landscapes, were assessed (including Craigengillan and Dumfries House garden and designed landscapes and the Beoch and Fardenreoch prehistoric cairns). Non-designated assets with the potential to be of national importance were also considered in this regard. The assessment concludes that indirect effects on designated heritage assets, and potentially nationally important assets, within the wider area would not be significant.

## 4.9 Ecology

- 4.9.1 The scope of the ecological assessment was determined through a review of existing biological data relating to the Development Site and the surrounding area, together with consultations with relevant nature conservation organisations. Based on the outcome of the desk study and the consultation exercise, various ecological surveys were carried out, the results of which determined the final scope of the assessment.
- 4.9.2 Ecological surveys that were undertaken included detailed vegetation surveys to identify plant communities of higher nature conservation value and/or those that may be sustained by groundwater, along with detailed protected species surveys for badger, otter, water vole and bats. In addition, a fisheries habitat survey, electrofishing surveys, and a targeted survey for freshwater pearl mussels were also undertaken.
- 4.9.3 The Development Site is dominated by dry modified bog, wet modified bog and marshy grassland, all of which are affected by sheep grazing and artificial drainage which have degraded the conservation value of the habitats present. No significant effects are predicted on any plant communities of high nature conservation value.
- 4.9.4 No statutory designated or non-statutory sites are located within the Development Site or within 2km of the survey area. However, several small areas of native woodland (each covering at most a few hectares in area) recorded by the Native Woodland Survey of Scotland (NWSS) are located close to the northern edge of the survey area. However, no significant effects on any statutory designated sites are predicted to occur.
- 4.9.5 Signs of otter activity were recorded during surveys, including spraints, slides and nine potential resting sites, which were found along a number of burns, both within but mainly adjacent to, the Development Site; some (limited) field signs indicating water vole presence were also identified adjacent to the Development Site with limited potential for the Development Site to be used by this species. No evidence of badger presence was found on the Development Site and overall suitability was considered to be low. No amphibians, reptiles or signs of their presence, field signs indicating the presence of red squirrel, or signs of any other notable species were found.
- 4.9.6 Bats from four genera are present within the Development Site: *Pipistrellus*, *Myotis*, *Plecotus* and *Nyctalus*. No bat roosts have been identified within the Development Site and the habitat is considered generally unsuitable for providing roosting habitat. Bat activity recorded during transect surveys was generally low. Bat activity (dominated by pipistrelle bats) was concentrated near the boundaries, along sheltered valleys, along watercourses within the Development Site and within the area of sheltered woodland along Dalleagles Burn to the north of the Development Site. Similarly, the overall activity levels recorded during the static detector surveys at ground level during 2013 within the Development Site were generally considered to be low. In general, very low levels of bat activity were recorded at the met masts during 2014, with bat activity within the control sites (near to ground level) being higher than observed at the met masts on the Development Site. The survey results suggest that low numbers of low risk bat species and a low number of high risk bat species occur at the Development Site.
- 4.9.7 Suitable habitat for freshwater fish was recorded, with salmon, trout, stone loach, minnow and lamprey being recorded (though the latter three species were not present within the Development Site). The results of the habitat surveys at the six proposed water crossings showed that these burns, even under higher water conditions, would be unlikely to hold juvenile salmonids due to the lack of/limited suitable spawning material or in-stream cover from substrate although habitat for juveniles and limited spawning substrate was available at Knockburnie Burn. Freshwater pearl mussels were not recorded during surveying and there was a general lack of suitable habitat for the species.
- 4.9.8 No significant effects are predicted on any animal species of high nature conservation value or any legally protected animal species.
- 4.9.9 No significant cumulative effects on ecological receptors are predicted to occur.

## 4.10 Ornithology

- 4.10.1 A programme of bird surveys was undertaken at the Development Site in accordance with SNH guidance during the 2012 and 2013 breeding seasons and the 2011/12, 2012/13 and 2013/14 non-breeding seasons (i.e. 'winter'). These surveys were comprised of vantage point (VP) surveys from three locations with an average of 36.25 hours of observation per VP during the 2012 breeding season; and 42 hours per VP from five locations during the 2013 breeding season. VP surveys were undertaken from five locations during the 2011-12 winter season with an average of 41.7 hours of observation per VP; and 42 hours per VP from five locations in both the 2012-13 and 2013-14 winter seasons. In addition, the following distribution and abundance surveys were also carried out during each relevant season: breeding waders, breeding raptors and walked transects during winter. Black grouse lek surveys were undertaken in spring 2012 and 2013 and barn owl surveys were undertaken in the 2012 breeding season. Data for 'target species', i.e. those assessed as being of notable nature conservation value, were supplemented with information provided by the RSPB and local Raptor Study Group.
- 4.10.2 The Development Site primarily consists of grass-dominated moorland which is grazed by sheep and is bordered by similar habitats to the east, plantation forestry to the south and west and agricultural land to the north. Recorded target species activity was low throughout the survey periods, with key findings being the presence of a small black grouse population, active barn owl and merlin nests (in 2012 and 2013 respectively), low densities of breeding waders and a small population of overwintering golden plover. Target species flight activity levels remained low throughout the survey periods.
- 4.10.3 Black grouse have been recorded lekking at locations across the north west section of the Development Site (with the core lekking area more than 1km to the north of proposed turbine locations), each time comprising one to three individuals and thus indicating the presence of a small population that is not restricted to fixed/traditional lek locations. A single tree nest of merlin was identified in 2013 approximately 500m from the nearest proposed wind turbine. Three curlew territories were recorded in 2013, all located more than 600m from the proposed wind turbines. Small flocks of golden plover were recorded across the higher elevations of the Development Site during the autumn and spring passage as well as the core winter periods.
- 4.10.4 No residual significant effects on birds are predicted as a result of the Proposed Development, or cumulatively in combination with other developments.

## 4.11 Geology, Hydrology and Hydrogeology

- 4.11.1 The Proposed Development lies within the river catchment areas of the River Nith and the Water of Deugh, and includes the Lane Burn and its tributaries. In terms of geology the region is bisected by the Southern Upland Fault (a fault line which runs from Girvan to Dunbar). Most of the Development Site lies to the south of the Fault, and whose geology comprises greywackes and shales of Ordovician age, overlain by some till and peat. To the north of the Fault lie volcanic basalts as well as Carboniferous coal-bearing strata. Both solid and drift geology comprise low productivity aquifers, i.e. those bearing little available groundwater with the exception of the limestone/Coal Measures lying to the north of the Development Site, which are of moderate productivity.
- 4.11.2 The receptors that were considered in the assessment include watercourses and aquifers below ground, as well as private water supplies, groundwater dependent terrestrial ecosystems (i.e. wetlands dependent on groundwater flows), and peat hydrology. In addition, the designated Nith Bridge Site of Special Scientific Interest (SSSI) was also considered.
- 4.11.3 Data was gathered in order to identify the existing conditions that prevail within the Development Site and further down-gradient. This included the completion of a desk-based study to identify potential receptors, a site walkover, and a review of the findings of ecological data collected. In addition, consultation has taken place with Statutory Authorities and other organisations with water environment interests.

- 4.11.4 Although the design of the Proposed Development has sought to reduce the effects upon the above receptors, the potential for a significant water quality effect during construction has been identified with respect to the high sensitivity River Nith tributaries and the associated Nith Bridge SSSI. As such, there is a requirement for the application of mitigation measures in order to reduce this potential effect to a level that is not significant. These mitigation measures include the following: design of watercourse crossings that would not cause unacceptable changes to water quality or flows; implementation of a Drainage Management Plan; implementation of a Pollution Prevention Plan and Pollution Incidence Response Plan; and adequate pollution control measures throughout the site, together with a drainage inspection strategy.
- 4.11.5 All mitigation would be included within the Construction Environmental Management Plan for the site, and specific Construction Method Statements would be produced for the most sensitive construction operations. All activities would adhere to best practice guidance and follow appropriate requirements and conditions associated with Controlled Activities Regulations (CAR) licensing.
- 4.11.6 With the application of the mitigation measures and best practice that has been identified in the assessment, the overall potential effects upon the water environment that may result from the Proposed Development are reduced to a level that is not significant for all potential receptors and for all proposed activities.

## 4.12 Traffic and Transport

- 4.12.1 This assessment takes account of the traffic levels that would be generated during the construction, operation and decommissioning phases of the Proposed Development, with the construction phase being the main focus as this is when most traffic will be generated. Consideration has been primarily given to Heavy Goods Vehicle (HGV) traffic, although abnormal load movements have also been assessed.
- 4.12.2 Estimates of traffic generation associated with the construction phase of the Proposed Development have been derived from a first principles approach based on calculations of vehicle loads of imported materials. While it is expected that sufficient materials may be won on site from borrow pits, it is assumed for the purposes of a worst case transport assessment that the bulk of the construction materials (stone aggregate and the materials required for the mixing of concrete) will be sourced from one quarry located approximately 18km north-east of the Development Site.
- 4.12.3 The route from this quarry to the Development Site has been defined following a route appraisal exercise, which considered the location of receptors sensitive to changes in traffic flows i.e. schools, community facilities, shops etc. The route with the least number of receptors was then selected and progressed as part of the environmental assessment. The route from the quarry to the Development Site is expected to follow the B743, travelling westbound before joining the B713 in the village of Sorn, and continuing through the village of Catrine before joining the A76. From the A76 the route heads south and travels through New Cumnock, where it then joins the B741 heading south-west towards the Development Site access off this road.
- 4.12.4 All turbine components will be imported into Scotland via the port at Ayr and delivered to the Development Site by road. The route used to deliver turbine components from the port will be expected to leave Ayr via Waggon Road, before turning right onto Allison Street A79, and then onto A719, the A77 northbound towards the roundabout with the A78. The route then heads further north along the A77, joining the A76 at the roundabout at Kilmarnock heading south before joining the B741 at New Cumnock and heading south-west towards the Site entrance off this road. The route has been assessed and consulted on by Collett and Sons (heavy haulage contractor).
- 4.12.5 The change in vehicle numbers on the proposed Quarry access route as a result of construction-related traffic for road stone deliveries, concrete material deliveries and abnormal load deliveries has been calculated in percentage terms, relative to the Automatic Traffic Counts (ATCs) carried out between 30<sup>th</sup> May to 5<sup>th</sup> June 2015.

- 4.12.6 The assessment considers that 100% of all road stone required for the construction of on-site access tracks will be imported, although it is highly likely that a significant proportion can be recovered onsite using borrow pits. As such, the assessment presented is considered to be an absolute worst case. In this worst-case scenario, month 3 in the construction programme generates the highest number of trips with a total of 204 movements per day or 18 per hour across a 12 hour working day (Mon-Fri 0700-1900).
- 4.12.7 The effect on the local highway network has been assessed using The Institute of Environmental Management and Assessment (IEMA) guidelines, which specify general thresholds for traffic flow increases that trigger the need for the assessment of effects. The aforementioned thresholds are expressed in the form of two rules: Rule 1: Include roads where traffic flows are predicted to increase by more than 30% (or where the number of HGVs are predicted to increase by more than 30%); and Rule 2: Include any specifically sensitive areas (schools, shops, community facilities etc.) where traffic flows are predicted to increase by 10% or more.
- 4.12.8 The following environmental effects which are listed in the IEMA guidelines have been considered in this assessment: severance; driver delay; pedestrian delay; pedestrian amenity; accidents and safety; fear and intimidation; and dust and dirt. In respect of these, and with the incorporation of appropriate mitigation measures, no significant effects are predicted.

## 4.13 Socio-economics

- 4.13.1 It is estimated that the capital cost of constructing the Proposed Development could equate to up between £73.4m and £112.8m (including turbine manufacturing) and up to £13.6m could be spent locally. During the construction phase, the Proposed Development could directly support up to 98.6 Full Time Equivalent (FTE) local jobs and up to 294.3 FTE jobs within Scotland for the duration of the construction phase. During its operational phase, operations and maintenance related employment could directly support up to 67.2 FTE jobs, of which up to 27.9 FTE jobs would be likely to be within East Ayrshire and up to 39.3 FTE jobs would be likely to be within Scotland. Other employment is also likely to be supported or generated through induced and indirect economic and employment effects throughout all phases of the Proposed Development. Therefore whilst significant economic and employment effects council or national levels are not anticipated, the Proposed Development is predicted to result in temporary, beneficial significant economic effects at a local council ward level during the construction phase.
- 4.13.2 The construction, operational and decommissioning phases of the Proposed Development, whether individually or cumulatively, are not predicted to result in significant effects on tourism or recreational receptors or specific recreational pursuits identified. During construction and decommissioning, public access within the Development Site will be subject to temporary restriction, however once operational the Proposed Development offer improved access to the Development Site.

## 4.14 Infrastructure, Telecommunications and Safety

- 4.14.1 Consultation has been carried out with organisations which own or operate infrastructure on or close to the Development Site.
- 4.14.2 A number of telecommunications and infrastructure consultees have indicated that they operate telecommunications links or plant in the vicinity of the Development Site. However none of these are directly affected by the proposed turbines or infrastructure. Suitable buffer and separation distances have been incorporated into the layout design (as requested by the operators) to mitigate against any possible effects on telecommunications and infrastructure, therefore no significant effects are expected
- 4.14.3 The Proposed Development will be constructed and operated in accordance with all relevant UK health and safety legislation to ensure the risk to public safety is minimised. The Development Site will be appropriately signed to indicate the presence of construction work.

## 4.15 Aviation

- 4.15.1 The Proposed Development is within the operational range of National Air Traffic Services (NATS) Lowther Hill and Great Dun Fell En Route Primary Surveillance Radar (PSR) systems and Glasgow Prestwick Airport Air Traffic Control (ATC) PSR. At a maximum height of 130m to blade tip, all nineteen proposed turbines are considered likely to be within Line of Sight (LoS) of, and therefore detectable by the Lowther Hill and Glasgow Prestwick Airport (GPA) ATC PSRs.
- 4.15.2 NATS, at the request of the applicant, has completed a Technical and Operational Assessment (TOPA) of the Proposed Development in which an impact on the Lowther Hill PSR is predicted, though no impact was declared to the Great Dun Fell PSR (NATS, 2015 a). Therefore the Great Dun Fell PSR was not considered further in the assessment.
- 4.15.3 The Proposed Development would be situated beneath a portion of the Scottish Terminal Control Area (TMA) and a portion of the GPA Controlled Area (CTA). The Scottish TMA is established for the protection of commercial flights into and out of Edinburgh Airport, Glasgow Airport and GPA. The GPA CTA in the region of the Proposed Development provides protection for aircraft climbing out and descending into GPA. Due to the theoretical detectability of the turbines to the aforementioned PSRs, the Proposed Development may create an operational and / or cumulative effect to NATS utilising the Lowther Hill En-route PSR and to GPA utilising the GPA ATC PSR.
- 4.15.4 It has been identified during LoS analysis that the Proposed Development will be theoretically detectable by the NATS En-route Lowther Hill and the GPA ATC PSRs which will create clutter to be presented on radar displays. For the Lowther Hill PSR, Project Raytheon Modification may be an acceptable mitigation solution for NATS. Resolution Infill Technology, through the use of emerging technologies should, on agreement with GPA, mitigate the effect created to the GPA PSR. It is considered that with the collaboration of NATS and GPA, technically and operationally acceptable solutions could be implemented within 18-24 months of agreement on mitigation strategy, should consent be granted.
- 4.15.5 Initially the Ministry of Defence (MOD) indicated that it had concerns with the Proposed Development with regard to an effect on military Low Flying activities within Tactical Training Area (TTA) 20T. Within TTA 20T, military operational low flying is permitted to as low as 100 feet Minimum Separation Distance from the ground, water or any object. The MOD's objection at that time was based on there being insufficient airspace between the blade tips (at this time the proposed tip height was 150 metres) and the base of the GPA controlled airspace above for military aircraft to transit beneath (without entering controlled airspace).
- 4.15.6 During further consultation with the MOD, the highest potential elevation of the turbines was presented to them. In a subsequent letter from Defence Infrastructure Organisation (DIO) to Osprey, the MOD stated that it will remove its objection to the Proposed Development as sufficient airspace existed above the turbines for military aircraft to transit safely beneath the GPA controlled airspace above; subject to suitable MOD accredited aviation lighting being fitted to the highest practicable point on all turbines. Since the consultation response was received from DIO, the layout of the Proposed Development has changed and the blade tip height of the turbines has decreased from 150 m to 130 m. The new layout provides for sufficient airspace above the turbines and below controlled airspace, as accepted in the removal of the objection on the previous layout. It is anticipated MOD will have no objection to the Proposed Development.

## 4.16 Summary

- 4.16.1 A review of current Scottish renewable energy and electricity generation indicates the contribution of renewables to Scotland's electricity needs stands at approximately 40.3%, against the ambition of generating the equivalent 100% of Scotland's net electricity demand through renewable sources by 2020. Therefore there is a recognised need to continue to dramatically increase renewable electricity generation, with onshore wind identified by the Scottish Government as being of critical importance. A significant increase in wind energy capacity will be required if current climate change mitigation and renewable energy targets are to be met by 2020; and the Proposed Development

would contribute substantially, with up to 62.7MW of renewable energy to assist in achieving these targets.

- 4.16.2 The Proposed Development has resulted from a comprehensive iterative design process. This process has resulted in the elimination or mitigation of all potentially significant environmental effects in respect of all environmental topic areas with the exception only of some landscape and visual effects, as described in more detail in the sections above.
- 4.16.3 While some significant landscape and visual effects are likely, it is notable that there would be no significant effects on the closest residential properties within 2-3km of the Proposed Development. Significant landscape effects are however limited to those on: two landscape character areas; one landscape character type; and one Sensitive Landscape Character Area. Significant visual effects are limited to those on: the views from Burnside and the south western edge of New Cumnock at Connel View; the Cemetery on Afton Road; the views from the B741; Knockshinnoch Lagoons local nature reserve; two footpaths; and the summits of Blackcraig Hill and Windy Standard Hill.
- 4.16.4 The Proposed Development would provide a number of economic benefits which result from investment into the local and national economy, job creation and benefits in respect of national energy security, as well as the environmental benefits which would arise from the provision of low carbon renewable energy.



## 5. Glossary and Abbreviations

<b>AOD</b>	Above Ordnance Datum
<b>AOV</b>	Angle of View
<b>ATC</b>	Air Traffic Control
<b>ATCs</b>	Automatic Traffic Counts
<b>CAA</b>	Civil Aviation Authority
<b>CAR</b>	The Water Environment (Controlled Activities) (Scotland) Amendment Regulations 2011
<b>CLG</b>	Community Liaison Group
<b>CO<sub>2</sub></b>	Carbon Dioxide
<b>CTA</b>	Controlled Area
<b>DECC</b>	Department for Energy and Climate Change
<b>DGLCS</b>	Dumfries and Galloway Windfarm Landscape Capacity Study
<b>DIO</b>	Defence Infrastructure Organisation
<b>EAC</b>	East Ayrshire Council
<b>EALCS</b>	East Ayrshire Landscape Wind Capacity Study
<b>ECDU</b>	Energy Consents and Deployment Unit
<b>EIA</b>	Environmental Impact Assessment
<b>ES</b>	Environmental Statement
<b>ETSU</b>	Energy Technology Support Unit
<b>FTEs</b>	Full Time Equivalent Jobs
<b>GLVIA</b>	Guidelines for Landscape and Visual Impact Assessment, Third Edition, published jointly by the Landscape Institute and Institute of Environmental Management and Assessment, 2013.
<b>GPA</b>	Glasgow Prestwick Airport
<b>HGVs</b>	Heavy Goods Vehicles
<b>IEMA</b>	Institute of Environmental management and Assessment, formerly the Institute of Environmental Assessment (IEA)
<b>LCT</b>	Landscape Character Type
<b>LoS</b>	Line of Sight
<b>MoD</b>	Ministry of Defence
<b>MW</b>	Megawatts
<b>NATS</b>	National Air Traffic Services
<b>NWSS</b>	Native Woodland Survey of Scotland
<b>PAC</b>	Pre-Application Consultation
<b>PMP</b>	Peat Management Plan
<b>PSR</b>	Primary Surveillance Radar
<b>RSA</b>	Regional Scenic Area
<b>RSPB</b>	Royal Society for the Protection of Birds
<b>SEPA</b>	Scottish Environment Protection Agency
<b>SLCA</b>	Sensitive Landscape Character Area

<b>SNH</b>	Scottish Natural Heritage
<b>SPEN</b>	Scottish Power Energy Networks
<b>SSSI</b>	Site of Special Scientific Interest
<b>SUW</b>	Southern Upland Way
<b>TMA</b>	Terminal Control Area
<b>TOPA</b>	Technical and Operational Assessment
<b>TTA</b>	Tactical Training Areas
<b>VP</b>	Vantage point

