



# Non-Technical Summary

## Mossmulloch Wind Farm EIA Report

Wind Power North 3 Limited

Prepared by:

**SLR Consulting Limited**

Suite 223ab, 4 Redheughs Rigg Westpoint, South  
Gyle, Edinburgh EH12 9DQ

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**FORCE 9  
ENERGY**

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## Basis of Report

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## Preface

This Environmental Impact Assessment (EIA) Report has been prepared in support of an application by Wind Power North 3 Ltd ('the Applicant') for planning consent to construct and operate Mossmulloch Wind Farm ('the Proposed Development') in South Lanarkshire Council (SLC) administrative area.

The Proposed Development is located on two adjacent areas of commercial forest, Mossmulloch and Hookhead, located approximately 7km to the south west of Strathaven, South Lanarkshire. The Proposed Development will comprise up to five wind turbines and other associated infrastructure.

The EIA Report comprises the following volumes:

- Volume 1: EIA Report Non-Technical Summary (NTS) (this document);
- Volume 2: EIA Report Written Statement;
- Volume 3a-c: EIA Report Figures; and
- Volume 4: EIA Report Technical Appendices.

In addition to the above, the application is accompanied by a **Planning Statement**, a **Design and Access Statement** and a **Pre-Application Consultation (PAC) Report**.

A hard copy of the EIA Report will be available for public viewing during the application consultation period at:

- The Avondale Community Wing, Overton Road, Strathaven, ML10 6JW.

A copy of the EIA Report Volumes will be made available for download from the project website at: <https://mossmullochwindfarm.co.uk>.

Paper copies of the NTS are available free of charge from:

SLR Consulting Limited  
The Tun  
4 Jackson's Entry  
Edinburgh  
EH8 8PJ  
Tel: +44 3300 886631  
Email: [fscott@slrconsulting.com](mailto:fscott@slrconsulting.com)

Paper copies of the EIA Report may be purchased by arrangement from the above address for £1,200 per copy, or £15 per disk/USB memory stick copy. The charge reflects the cost to produce the document or USB. Alternatively, the EIA Report will be available to download from South Lanarkshire Council's planning portal and from the project website.



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Figure 1: Site Location

Figure 2: Proposed Site Layout



## Acronyms and Abbreviations

AILV	Abnormal Indivisible Load Vehicle
BERP	Biodiversity Enhancement and Restoration Plan
CAA	Civil Aviation Authority
CDM	Construction (Design and Management)
CEMP	Construction Environmental Management Plan
CO <sub>2</sub>	Carbon Dioxide
CTMP	Construction Traffic Management Plan
EIA	Environmental Impact Assessment
ECoW	Environmental Clerk of Works
GVA	Gross Value Added
ha	hectares
HGV	Heavy Goods Vehicle
HES	Historic Environment Scotland
kV	Kilovolt
LNCS	Local Nature Conservation Site
MW	Megawatts
MWh	Mega Watt hours
NGR	National Grid Reference
NTS	Non-Technical Summary
NVC	National Vegetation Classification
PAC	Pre-Application Consultation
SEPA	Scottish Environmental Protection Agency
SLC	South Lanarkshire Council
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
ZTV	Zone of Theoretical Visibility



## 1.0 Introduction

1. This document is a Non-Technical Summary (NTS) of the Environmental Impact Assessment (EIA) Report for the Mossmulloch Wind Farm referred to as the 'Proposed Development'.
2. The NTS summarises the findings of the EIA which has been undertaken to assess the potential impacts from construction, operation and decommissioning of the Mossmulloch Wind Farm.
3. Wind Power North 3 Limited (the Applicant) proposes to install and operate up to five wind turbines with associated infrastructure on land (the site) measuring approximately 260 hectares (ha) situated on two adjacent areas of commercial forest, Mossmulloch and Hookhead, located approximately 7km to the south west of Strathaven, South Lanarkshire (**Figure 1**).
4. The Proposed Development is being developed under the terms of an agreement between Force 9 Energy Limited (Force 9) and Vestas Development A/S. Wind Power North 3 Limited is a wholly owned subsidiary of Vestas Development A/S.
5. The Proposed Development would be located within the South Lanarkshire Council (SLC) area and centred on National Grid Reference (NGR) 263443, 642044.
6. The Proposed Development would have a capacity of up to 36 Megawatts (MW) and would produce an average of approximately 106,400 Mega Watt hours (MWh) of electricity annually (based on a site derived capacity factor of 33.72%). This equates to the power consumed by approximately 32,500<sup>1</sup> average UK households, which would be approximately 10% of the current energy requirements of the 327,460 homes<sup>2</sup> across South Lanarkshire and would provide a meaningful contribution to Scottish Government Targets.
7. As the generating capacity of the Proposed Development would exceed 20MW, but be no greater than 50MW, this application is considered a 'major' development under the Town and Country Planning (Scotland) Act 1997 and Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009.
8. An EIA is carried out where a Proposed Development has the potential to result in significant environmental effects. As it is considered possible that the Proposed Development may result in significant environmental effects, an EIA has been undertaken to accompany the planning application.
9. EIA involves the compilation, evaluation and presentation of any likely significant environmental effects resulting from the Proposed Development, to assist the consent authority, statutory consultees and wider public in considering an application.
10. EIA is an iterative process which involves the identification and assessment of potential environmental effects so that these considerations can inform the design of the Proposed Development. This allows potentially significant adverse effects of the Proposed Development to be identified so that they can be avoided, reduced and if possible, removed. Mitigation measures have also been proposed as a means of reducing potential environmental effects.
11. The EIA Report informs readers of the nature of the Proposed Development, likely significant environmental effects of the Proposed Development on a number of topics. The significance of these effects has been assessed using criteria set out in each EIA Report chapter.

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<sup>1</sup> Based on 36MW installed capacity and calculated using the most recent statistics from DESNZ showing that annual GB average domestic household consumption is 3,239kWh (as of January 2024, updated annually).

<sup>2</sup> Taken from mid-2022 Population Estimates by Council Area in Scotland, source: National Records of Scotland July 2024.



## 2.0 The Proposed Development

### 2.1 Design Evolution

12. A number of considerations informed the site selection and design of the Proposed Development, which are described in full in the **Design and Access Statement** and summarised in **Chapter 2: Site Description and Design Evolution** of the EIA Report.
13. The design of any wind farm is driven by the key objective of positioning turbines so that they capture the maximum energy possible within a suitable area informed by environmental and technical constraints.
14. Any designations within the site and surrounding area were initially identified from documentary sources and mapped. These designations include ecologically important sites, sites of archaeological and/or cultural heritage importance, landscape designations, residential properties, watercourses and slope. This initial research was supported by field-based survey work including peat probing surveys, habitat, protected species and ornithological surveys and a cultural heritage survey of the site and surrounding area.
15. During initial feasibility studies, turbine tip heights up to 230m were considered however it was decided that turbines no greater than 200m blade tip height were most suitable for the site.
16. Key considerations which influenced changes to the location, size and number of turbines included:
  - suitable setback buffers to residential properties which could be affected by noise, and residential visual amenity;
  - proximity to watercourses;
  - the location and depth of peat on site; and
  - the outcome of consultation with Arqiva regarding fixed links running through the site.
17. Potential impacts from the ancillary infrastructure, including the access tracks were minimised by using the existing forestry access tracks where possible.
18. At project inception, the layout for the Proposed Development comprised up to nine turbines, which following the iterative design and consideration of the factors described above, reduced to five turbines up to 200m to tip height.

### 2.2 Proposed Infrastructure

19. The Proposed Development is described in detail in **Chapter 3: Description of the Development** of the EIA Report. The layout of the Proposed Development is shown on **Figure 2**. In summary, the Proposed Development would comprise:
  - five wind turbines (with blade tip heights of up to 200m);
  - turbine foundations (approximately 30m diameter) and associated crane hardstandings (approximately 80m x 35m) plus laydown areas;
  - up to 4.3km of new access tracks, and 1.6km of upgraded access tracks (0.6km of which may need to be upgraded) with a typical 5m running width and associated drainage. 3.2km of new track is anticipated to be floating track where consistent peat depths of 1-1.5m or greater are identified along with shallow topography in the area (below 5%);
  - underground cabling along access tracks to connect the turbine locations, and the onsite electrical substation;



- an onsite substation which would accommodate 33 Kilovolt (kV) switchgear to collect electricity from the wind turbines. The substation compound would have a typical area of 80m x 80m and would include a control and metering building;
  - access junction to the site via the eastern boundary, approximately 60m south of the Ardochrig Road junction for construction and site traffic;
  - four new watercourse crossings and one existing watercourse crossing which may be upgraded;
  - a temporary construction compound (50m x 50m); and
  - clearance of approximately 130ha of conifer forest in two phases to allow for construction and operation of the infrastructure and for habitat restoration and enhancement measures.
20. An **Outline Construction Environmental Management Plan** (CEMP) is contained in the EIA Report as **Technical Appendix 3.2** which describes the measures which would be employed during the construction of the Proposed Development in order to protect the environment.

### **Lifespan of the Proposed Development**

21. Construction of the Proposed Development is anticipated to take up to 18 months. The Proposed Development would have an operational life of up to 30 years, at the end of which it would be decommissioned, or an application may be submitted to repower the site.

### **Access**

22. The site would be accessed via a new access track from the A71. The access track would enter the site via the eastern boundary, approximately 60m south of the Ardochrig Road junction, before extending westwards towards the proposed turbine locations. It is anticipated that the Abnormal Indivisible Load Vehicles (AILVs) (i.e. the turbine components) will travel to the site from King George V dock in Glasgow via the M8, M74 and A71. Full details of the transport route and access to the site are provided in **Chapter 10: Traffic and Transport** of the EIA Report.

### **Grid Connection**

23. A distribution grid connection offer has been made for the project capacity, based on an underground 33kV grid connection. The grid connection point for the Proposed Development is subject to confirmation by the network operator, however, the anticipated connection point to the electrical grid system is East Kilbride South substation, approximately 9km to the north of the site. The grid connection option does not form part of this application and, as is standard, a separate application under Section 37 of the Electricity Act 1989 will be required in relation to the grid connection point and cabling route.



## 3.0 Benefits of the Proposed Development

### 3.1 Contribution Towards Government Targets

24. The Proposed Development would:

- make a meaningful contribution of up to 36MW of installed onshore wind capacity towards meeting the renewable energy generation targets set out by the Scottish Government, such as the goal for Scotland to have a fully decarbonised energy system including transport, heat and industrial systems by 2045;
- make a valuable contribution towards UK generation targets and the reduction in emissions of greenhouse gases, principally carbon dioxide, in becoming carbon neutral in 1.2 years and therefore carbon positive from that point on, as demonstrated by the carbon calculator; and
- make Scotland, and therefore the UK, less reliant on imported and price-volatile fossil fuels by generating the equivalent electricity to supply the approximate domestic needs of approximately 32,500<sup>3</sup> average UK households.

### 3.2 Proposed Community Benefit

25. Should the Proposed Development gain consent, a Community Benefit Fund would be made available to the community offering a contribution of the equivalent of £5,000 per MW installed capacity per annum index linked. This offer is in line with current guidance published by Scottish Government and would result in an annual payment of £180,000 per annum (£5.4 Million over 30 year lifetime) before index adjustment based on the proposed installed capacity of the wind farm.
26. The distribution mechanism for the community benefit funds would be negotiated and agreed with local communities, should the wind farm be consented. It is likely that the community benefit funds would be distributed to a defined local community of interest.
27. Further information on the community benefit fund is set out within the **Economic Impact Report** appended to the **Planning Statement**.

### 3.3 Other Economic Benefits

28. It is estimated that the construction of the Proposed Development would directly support between 15.5 and 19.5 person years of net employment in South Lanarkshire during construction. South Lanarkshire Council area would be expected to be boosted by approximately £1.5-1.8 million (net Gross Value Added (GVA)) during the construction of the Proposed Development.
29. It is anticipated that the Proposed Development would create between 7.5 and 9 jobs in total during its operational period (up to 30 years), of which up to two would be employee jobs and the remainder would be jobs supported in local supply chains.

### 3.4 Outline Biodiversity Enhancement and Restoration Measures

30. An **Outline Biodiversity Enhancement and Restoration Plan (BERP)** is provided as **Technical Appendix 6.6**. It is anticipated that the document would be further developed in a more detailed final BERP, following the grant of consent, in discussion with SLC, Scottish

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<sup>3</sup> Based on 36MW installed capacity and calculated using the most recent statistics from DESNZ showing that annual GB average domestic household consumption is 3,239kWh (as of January 2024, updated annually)



Environmental Protection Agency (SEPA) and NatureScot. The aim of the outline BERP is to set out measures that will compensate for the loss of biodiversity as a result of the Proposed Development and further to this, to provide an outline of restoration and enhancement measures that will support and improve the existing habitats on the site. These measures will enhance existing biodiversity, support the recovery of natural habitats and populations, and contribute to broader nature networks. The goal is to achieve significant biodiversity improvements, leaving the environment in a better condition than it would be without these actions.

31. The outline BERP has the following key aims:
- restoration of poor-quality bog habitats;
  - enhancement of grassland habitat to a floodplain or hay meadow habitat;
  - provision of natural forest edges and long-term woodland; and
  - provision of wildlife boxes.

### **Forest-to-bog Restoration**

32. 119ha of blanket bog will be restored by the removal of forestry on peatland. This will provide compensation for the loss of blanket bog as a result of the Proposed Development and furthermore, will return the area to its original condition before it was forested improving connection between isolated sections of existing blanket bog thereby providing enhancement to this degraded habitat onsite.
33. Blanket bog restoration provides improved Annex 1 habitat (habitats considered to be of exceptional conservation importance), increases carbon storage through the build-up of peat, improves habitat for blanket bog specific plant species, and improves the habitat and connectivity for open moorland bird species.

### **Meadow Creation**

34. A floodplain meadow or hay meadow will be created within the northern area of site bordering the Calder Water. The final choice of meadow will be dependent on the results of soil and water studies. Creation of this meadow will compensate for the loss of grassland as a result of the Proposed Development. Additional biodiversity enhancement will be facilitated as the provision of meadow habitat will increase habitat quality and diversity along watercourses within the connected landscape. Meadows support a wide variety of plants, provide food and nesting area for a variety of invertebrate and bird species and improves the riverbank habitat for otters, fish and aquatic invertebrates.

### **Forest Restructuring and Native Tree Planting**

35. Forest restructuring will involve thinning existing mature conifer stands on the site in order to allow light to enter the stand and a ground vegetation layer to develop. Proposals are also set out to plant native broadleaf trees along the edges of conifer plantations where felling would otherwise leave abrupt, unnatural boundaries. These retained, improved, and newly created woodland habitats will provide crucial spaces and movement corridors for wildlife, including birds, bats, protected mammals, and invertebrates.

### **Wildlife Boxes**

Wildlife boxes, such as barn owl boxes, bird boxes, bat roosts, hibernation shelters, and pine marten boxes will be constructed within the site. These structures will provide important habitats for birds, bats, and protected mammals following tree felling and will help support local wildlife populations while the young planted trees grow and mature.



## 4.0 Environmental Impact Assessment

### 4.1 Landscape and Visual

36. EIA Report **Chapter 5: Landscape and Visual** identifies and records the potential effects that the Proposed Development would have on the landscape and visual resource. This includes effects on physical elements of the landscape; effects on landscape character; effects on areas that have been designated for their scenic or landscape-related qualities; and effects on views from various places such as settlements, routes, tourism features and other sensitive locations. The potential cumulative effects that would arise from the addition of the Proposed Development to other wind farms are also considered, as are the night-time visual effects of visible aviation lighting.

#### Baseline

37. The Study Area for the assessment covers a radius of 45km from the outer turbines in the Proposed Development. A Detailed Study Area of 15km from the turbines was used to identify any potential significant landscape and visual effects, including cumulative effects. 17 viewpoints that represent visibility of the Proposed Development have been identified and each of these is illustrated with visualisations and/or wireline drawings to help inform the assessment of the Proposed Development (see **Volume 3b** and **Volume 3c** of the EIA Report). These viewpoints represent views from various sensitive locations, including settlements, road/walking/cycling routes, and tourist attractions.

#### Design Mitigation

38. A variety of landscape and visual mitigation measures have been incorporated through the iterative design of the Proposed Development in order to prevent, reduce or offset potential landscape and visual effects. These embedded mitigation measures are the result of a design process that focussed on the following objectives:
- To create a simple, cohesive and compact layout, viewed consistently from different positions (whilst also respecting other technical and environmental considerations);
  - To locate wind turbines within the core of Mossmulloch Forest to maximise separation distances from residential properties, and in so doing that minimise effects upon their visual amenity;
  - To use the existing access tracks as much as possible, minimising the need for additional tracks;
  - To site buildings within areas of forestry which affords them a level of screening from the surrounding landscape; and
  - The planting of native woodland around the perimeter of the site to provide a level of screening to infrastructure associated with the Proposed Development and the bases of the wind turbines.
39. The design improvements that have resulted from meeting these objectives have notably reduced the effects of the Proposed Development on landscape, visual and residential receptors in the Study Area.

#### Predicted Effects

40. The assessment shows that the effect on the landscape and visual resource of the great majority of the Study Area, including all National Parks, National Scenic Areas, Wild Land Areas, Local and Special Landscape Areas, cycling routes and railway lines would not be significant. The assessment indicates that there is potential for the Proposed Development to



result in some significant effects within localised areas of the Study Area, close to the Proposed Development upon the following receptors:

- the landscape character of the site and some of its surroundings, including the closest parts of the Plateau Moorland with Windfarms – Glasgow & Clyde Valley, Upland River Valley – Glasgow & Clyde Valley, and Plateau Moorlands – Glasgow & Clyde Valley Landscape Character Types;
  - views experienced by residents from parts of the local settlements of Drumclog and Strathaven;
  - views experienced by residents from a large number of the closest residential properties;
  - views experienced by recreational walkers from the summit of Loudon Hill;
  - views experienced by road users along some of the closest sections of the A71 road; and
  - views experienced by recreational users of sections of 5 Core Paths: EK/1439/1, EK/1444/1, EK/1455/1, IV18, and IV19.
41. The assessment has considered cumulative effects for other wind farm developments at various stages of development including those which are consented, under-construction and operational. There is likely to be significant cumulative visual effects upon the following receptors:
- Views experienced by residents from Viewpoint 1 (Ardochrig Road, South Muirhead Farm) as a result of operational and under-construction wind farm developments;
  - Views experienced by residents from Viewpoints 1 (Ardochrig Road, South Muirhead Farm) and 6 (A71, Strathaven) as a result of operational and under-construction, and consented wind farm developments;
  - Views experienced by road users from Viewpoint 2 (A71/ Ardochrig Road Junction) as a result of operational and under-construction, and consented wind farm developments; and
  - Views experienced by residents from some western parts of the settlement of Strathaven.

## 4.2 Ecology

42. EIA Report **Chapter 6: Ecology** evaluates the potential effects of the construction, operation and decommissioning of the Proposed Development on ecological features of the site. Effects of the extensive proposed restoration and enhancement on habitat and species has also been considered.

### Baseline

43. There are no internationally or nationally designated sites for ecological features within the site boundary. Muirkirk Uplands Site of Special Scientific Interest (SSSI) is the closest internationally designated site at approximately 5.9km south west of the site and is designated for its upland habitats consisting of a mosaic of blanket bog, wet and dry heath and acid grassland.
44. There are no non-statutory designated sites within the site boundary. Glen Water Local Nature Conservation Site (LNCS) is located within 1.9km of the site boundary to the west and is designated for woodland habitat. Loudon Hill and Allanton Plains and Avon Water LNCS are located within 5km of the site boundary designated for woodland and moorland habitat respectively.
45. To identify the ecological baseline the following surveys were undertaken: Phase 1 Habitat surveys, National Vegetation Classification (NVC) surveys, protected terrestrial mammal surveys, fish habitat surveys and bat activity surveys.



## Predicted Effects

46. No significant residual adverse effects have been identified upon statutory designated sites within 10km of the site, or non-statutory designated sites within 5km, due to a lack of potential pathways for significant effects.
47. Overall, there will be enhancement of the biodiversity value of the site due to the forest-bog restoration delivering approximately 119ha of restored peatland, 18.6ha native broadleaf tree planting, 13ha floodplain/hay meadow creation, and increase diversity of conifer plantation structure and function through 5ha coupe edge feathering. This will increase the ecosystem services provided by the site that also contributes to tackling the climate crisis through carbon storage.
48. Significant adverse residual effects have been identified at the regional level upon bats, due to foraging, commuting, and roosting habitat loss (15.2km) during construction and implementation of the BERP. These effects would be partially compensated for through habitat creation and enhancement works (6km created commuting features) and species-specific habitat features, delivered via the BERP, however there remains a significant adverse residual effect due to a net loss of approximately 9km of foraging/commuting habitat.
49. Significant adverse residual effects have been identified at the local level upon pine marten and red squirrel, due to foraging, commuting, and denning habitat loss during construction and implementation of the BERP. Artificial pine marten dens will be installed in the retained woodland as part of the BERP, although this would not compensate fully for the loss of habitat. However, the regional importance of the restored peatland is considered to outweigh this adverse effect on pine marten and red squirrel.
50. Residual beneficial effects are anticipated for:
  - The habitat and biodiversity value of the site through the habitat restoration and enhancement, to be delivered via the BERP;
  - The water quality on the site, due to the proposed forestry felling to facilitate the forest-to-bog restoration, to be delivered via the BERP;
  - The reptile and amphibian population on site, through an increase in suitable habitat due to the proposed forest-to-bog restoration, to be delivered via the BERP;
  - The fish population on site, through increased water quality due to the proposed forest-to-bog restoration, to be delivered via the BERP;
  - The otter population on site, through increased foraging suitability on site due to the proposed forest-to-bog restoration, increasing water quality and the suitability for fish species, to be delivered via the BERP; and
  - The bat population on site, through the installation of bat boxes providing roost spaces, to be delivered via the BERP.
51. Once embedded and best practice mitigation has been applied, including the provision of species-specific habitat features via the BERP, no significant residual adverse effects have been identified upon invertebrates, amphibians, reptiles, fish, otter, water vole, badger, brown hare and hedgehog.
52. With the implementation of good practice measures, additional mitigation, and the implementation of the final BERP, no significant negative effects are predicted during the operational phase.
53. No significant cumulative effects were identified.



## 4.3 Ornithology

54. **Chapter 7: Ornithology** of the EIA Report evaluates the effects of the Proposed Development on ornithology (birds). It details the methods used to establish the bird species and populations present, together with the process used to determine their Nature Conservation Importance. The ways in which birds might be affected (directly or indirectly) by the construction and operation of the Proposed Development are explained and an assessment is made with regards to the significance of these effects.

### Baseline

55. The site is not covered by any statutory nature conservation designations for ornithological interests nor is it within the vicinity of any statutory nature conservation designations. The nearest European and nationally designated sites of ornithological importance are the Muirkirk & North Lowther Uplands Special Protection Area and the Muirkirk Uplands SSSI at distances of greater than 5km from the Proposed Development
56. Baseline ornithological surveys were initiated in September 2022 and continued until the end of August 2023 within an Ornithological Survey Area, which included the site plus a buffer distance of up to 2km from the site (with the size of the buffer dependent on the sensitivity of the species under study to effects associated with the Proposed Development). The surveys gathered data on breeding, migrating and wintering birds within and around the Ornithological Survey Area and quantified flight activity during the breeding and non-breeding periods.
57. Due to low levels of ornithological activity of all bird species of moderate or high Nature Conservation Importance, it was not considered that the potential existed for significant effects on these species and as a result, they were scoped out of detailed assessment.

### Predicted Effects

58. No significant effects (including cumulatively) are predicted for ornithology during the construction, operation or decommissioning phases of the Proposed Development.
59. Best practice mitigation measures will be followed during construction and decommissioning of the Proposed Development to include:
- good practice construction measures, pollution prevention controls and monitoring as set out in the outline CEMP.
  - works to cease in the area of any discovered active wild bird nests with works proceeding subject to exclusion buffers following advice from the Environmental Clerk of Works (ECoW).
60. The biodiversity restoration and enhancement measures set out in the Outline BERP will have additional benefits for many bird species. The change from a coniferous plantation woodland to a more natural peatland bog system will enhance the area for notable scarce bird species such as hen harrier and moorland wading birds, such as golden plover. Native tree and scrub planting will provide foraging, nesting and sheltering opportunities for a variety of species of conservation interest such as linnet, redpoll and tree pipit and provide an additional winter food resource for wintering thrushes. The Outline BERP objectives will effectively create new opportunities for a wider range of avian species of conservation interest.

## 4.4 Cultural Heritage and Archaeology

61. EIA Report **Chapter 8: Cultural Heritage and Archaeology** considers the archaeological and cultural heritage value of the site and assesses the potential for significant effects on archaeological features and heritage assets resulting from the construction, operation and decommissioning of the Proposed Development.



## Baseline

62. There are no recorded archaeological or cultural heritage assets within the site boundary. Within 10km of the site there are four Scheduled Monuments, one Category A Listed Building, two Inventoried Battlefields and one Inventoried Garden and Designed Landscape.
63. A desk based review of designated and non-designated heritage assets as recorded by Historic Environment Scotland (HES) and the National Records of the Historic Environment (NHRE) was undertaken. This also included a review of historic mapping and aerial photography. A walkover survey of the site was also undertaken and coupled with the results of the desk-based review it concluded that there is the potential for unknown archaeological remains to survive on the site.
64. An assessment of the settings of designated heritage assets within 10km of the Proposed Development was informed by consultation with HES, review of a Zone of Theoretical Visibility figure, site visits and visualisations. A total of four designated heritage assets were identified to be taken forward for assessment of their settings.

## Predicted Effects

65. The assessment of direct and indirect impacts upon archaeological remains concluded there is no potential for significant effects as a result of the Proposed Development.
66. The assets that were taken forward for an assessment of the effects of the Proposed Development on their setting include: Battle of Drumclog (BTL21); Battle of Loudoun Hill (BTL36); Lanfine Garden and Designed Landscape (GDL00252); and Dungavel Hill Cairn (SM2848). The assessment for setting impacts identified a very minor effect (which is considered to be not significant in EIA terms) upon the Battle of Drumclog (BTL21) due to the presence of turbines causing a distraction within the periphery of key views within the battlefield.
67. Overall, no significant effects have been identified on the setting of any cultural heritage assets as a result of the Proposed Development.
68. As the assessment on archaeology and cultural heritage receptors has identified no impacts greater than very minor, there are no cumulative effects.

## 4.5 Noise

69. **Chapter 9: Noise** of the EIA Report assesses the effects of noise during the construction, operation and decommissioning of the Proposed Development. Noise would be emitted by equipment and vehicles used during construction and decommissioning of the wind farm and by the turbines during operation. The level of noise emitted by the sources and the distance from those sources to the receiver locations are the main factors determining levels of noise at receptor locations (generally people in surrounding houses).

### Baseline

70. 26 noise sensitive receptors were identified for the Proposed Development and noise measurements were recorded at three locations representative of the nearest residential receptors to the Proposed Development (West Hookhead, Blackthorn, East Browncastle and North Brownhill).

### Predicted Effects

71. Construction noise impacts have been assessed against the relevant guidance criteria set out in British Standard, S 5228-1:2009+A1:2014, *Code of practice for noise and vibration control*



*on construction and open sites – Noise*, which sets example criteria for construction activities that continue for more than one month.

72. The assessment concluded that noise from construction would meet the relevant noise limits, and that noise will be controlled during the construction phase via the CEMP which will set out measures to minimise noise impacts. The construction noise impact assessment concluded that noise during the construction phase of the development is considered to be not significant in EIA terms, although there will be aspects of construction that will be audible at noise sensitive properties.
73. During operation, turbines emit noise from the blades as they pass through the air. The amount of noise emitted varies depending on the wind speed. When there is little wind the turbine rotors will turn slowly and produce lower noise levels than during high wind speeds, however, background noise levels at nearby properties will also increase at high wind speeds.
74. Noise during operation has been assessed by comparing predicted operational noise levels for the Proposed Development against calculated noise limits derived from the baseline noise measurements (in line with ETSU-R-97, *The Assessment and Rating of Noise from Wind Farms*). Noise limits have been calculated to take into account the potential contribution from other wind farm developments in the vicinity of the site as well as the Proposed Development.
75. Separate cumulative assessments have been presented that consider the cumulative operational effects of consented (operational and not yet built) wind farms and additionally considering wind farms that are also at application stage and yet to be decided.
76. To determine appropriate noise limits for the Proposed Development, ‘remaining noise budget’ limits have been calculated that take into account the cumulative noise limits and the predicted contribution from other wind farms in the vicinity.
77. Operational noise levels above the ‘remaining noise budget’ limits are predicted at a number of noise sensitive receptors over a range of wind speeds. Through modelling, it is demonstrated that with the implementation of suitable mitigation strategies, the Proposed Development can meet the required noise levels at the nearest noise sensitive receptors. It is concluded therefore that operational noise levels from the wind farm would be within levels deemed, by national guidance, to be acceptable for wind energy schemes.
78. Noise during the decommissioning phase of the development is assessed against the same criteria as the construction phase. It is anticipated that noise levels during the decommissioning phase will be lower than those arising during the construction phase, and as the relevant construction noise limits are predicted to be met and the impact is not significant, decommissioning noise levels will also be not significant. Nevertheless, noise during the decommissioning phase of the development will be assessed and addressed in line with the relevant requirements that prevail at the time.

## 4.6 Traffic and Transport

79. **Chapter 10: Traffic and Transport** of the EIA Report considers the likely significant effects of the Proposed Development on traffic and transport as a result of the construction, operation and decommissioning of the Proposed Development.

### Baseline

80. It is assumed that the turbines would be delivered to the site via the M74, leaving the motorway at Junction 8 to access the site off the A71 from the east, via a new section of access track. The exact port at which the turbine components would arrive in the UK and the exact route the vehicles delivering turbine components would use to the site would be confirmed at the time of any deliveries should consent be granted for the Proposed Development.



81. The study area includes local roads that are likely to experience increased traffic flows from the Proposed Development comprising the section of the A71 between Darvel to the west and Junction 8 of the M74 to the east. Beyond those points, the increase in traffic arising from the Proposed Development would be diluted and unlikely to be noticeable.
82. The site would be accessed from a priority-controlled junction on the A71. General construction traffic (including HGVs) would use the A71 to access the site from both the Strathaven and Darvel directions.
83. Data on the type and number of vehicles using the A71 along the proposed construction route was obtained by surveys conducted on three locations of the A71 in June 2024.

### **Predicted Effects**

84. The number of vehicle movements that would be generated by the construction of the Proposed Development has been estimated, based on calculations of the amount of materials needed for construction of the Proposed Development and estimated car and light van movements related to staff during construction.
85. The maximum traffic effect associated with construction of the Proposed Development is predicted to occur in Months 14 and 15 of the construction programme when an average of around 265 vehicle movements (including 160 HGVs) per working day could be expected. The peak months for HGV movements would be expected to be months 5 and 6 when 203 HGV movements could be expected per working day. The additional vehicle movements arising from the Proposed Development during Months 14 and 15 (as this is predicted to be the peak of construction traffic) were compared to the expected traffic volumes on each section of road within the study area in 2026 without the Proposed Development. This identified no capacity issues on any of the roads due to the additional traffic associated with the Proposed Development.
86. The traffic associated with the delivery of large wind turbine components (known as Abnormal Indivisible Load Vehicles (AILVs)) would require small scale and temporary remedial works at a number of locations along the identified delivery route. The AILVs will travel as part of a convoy accompanied by Police Scotland.
87. A Construction Traffic Management Plan (CTMP) would be prepared for the Proposed Development which would include measures to manage the vehicles travelling to and from the site and would be updated through the construction of the Proposed Development to the agreement of SLC.
88. The assessment of cumulative effects resulting from the simultaneous construction of the Proposed Development and other identified adjacent wind farm developments has demonstrated that, with the implementation of appropriate mitigation measures, there would be a negligible residual effect on traffic and transport and therefore traffic effects are not significant.

## **4.7 Geology, Hydrology, Hydrogeology and Peat**

89. EIA Report **Chapter 11: Geology, Hydrology, Hydrogeology and Peat** presents an assessment of likely impacts of the Proposed Development on the hydrological, hydrogeological and geological environment within a defined study area (comprising land within 500m of the application boundary). The assessment has considered site preparation, construction, operation and decommissioning of the Proposed Development.

### **Baseline**

90. A comprehensive desk-based assessment was undertaken to characterise the site geology, hydrology and hydrogeology, the findings of which were then verified by a programme of site



inspection and investigation. The desk study and field investigation and reference to relevant guidance documents were used to identify potential receptors which were then taken forward and assessed in the EIA.

91. The site lies within the surface water catchment of the Calder Water to the north and Avon Water to the south. The Avon Water catchment has been designated as a Drinking Water Protected Area.
92. A comprehensive programme of peat depth probing was completed across the site showing a maximum peat depth of 8.2m with an average thickness of peat as 3.6m. The deepest areas of peat have been avoided where possible. A peatland condition assessment has also been undertaken by carrying out a programme of augering in consultation with the project ecologists.

### **Predicted Effects**

93. Following the identification and assessment of the key receptors, taking into account the potential effects, a comprehensive suite of embedded mitigation and good practice measures has been incorporated into the design, including avoidance of areas of deep peat and inclusion of extensive water buffer areas.
94. Subject to adoption of best practice construction techniques and a final CEMP, no significant adverse effects on geology (including soils and peat) and the water environment have been identified. The final CEMP will include provision for drainage management plans which will be agreed with statutory consultees, including SEPA and South Lanarkshire Council to safeguard water resources and manage flood risk. A commitment to deploy Sustainable Drainage Systems (SuDS) in these plans has been made. The CEMP will also include provision of a Pollution Prevention Plan which would also be agreed with statutory consultees including SEPA prior to any construction works being undertaken. The final CEMP will be agreed with statutory consultees prior to construction.
95. Notwithstanding these safeguards, a programme of baseline and construction phase water quality monitoring is proposed which would be used to confirm that the Proposed Development does not have a significant effect on geology and the water environment. Monitoring of watercourses that drain from the site will be included in the monitoring plan. Monitoring would commence prior to construction and continue throughout the construction phase and immediately post-construction. It is anticipated that the monitoring programme would be secured by a pre-development planning condition to be agreed with statutory consultees.
96. A site-specific peat management plan has been prepared to show how peat and carbon rich resources on site can be safeguarded and beneficially reused in restoration works.

## **4.8 Other Considerations**

97. **Chapter 12: Other Considerations** of the EIA Report evaluates the effects of the Proposed Development on other issues, including: climate and carbon balance; shadow flicker; aviation and radar; telecommunications; tourism and recreation; public safety; major accidents and disasters; and population and human health.

### **Climate and Carbon Balance**

98. Onshore wind farms by their very nature tackle the issue of climate change. It is estimated that the Proposed Development would displace approximately 56,962 tonnes of carbon dioxide (CO<sub>2</sub>) in its lifetime when compared to the amount of CO<sub>2</sub> fossil fuels would have produced to generate the same amount of electricity.
99. The Proposed Development is expected to take approximately 14 months (1.2 years) to offset the carbon released to the atmosphere (the CO<sub>2</sub> debt) from the construction of the wind farm.



Following this, the Proposed Development would in effect be in a net gain for the remaining 28.8 years of its operational life, contributing to national CO<sub>2</sub> reduction targets.

## Shadow Flicker

100. Shadow flicker may occur when the sun passes behind the blades of a wind turbine and casts a shadow over neighbouring properties. As the blades rotate, the shadow of the blades flicks on and off, an effect known as shadow flicker. The effect can only occur inside buildings, where the flicker appears through a window opening.
101. An assessment has been carried out to identify whether shadow flicker would be likely to occur at properties neighbouring the Proposed Development, and if so to predict times of day and year, and duration of these potential effects.
102. The shadow flicker study area is defined as 10 times rotor diameter plus 50m micro-siting, which equates to 1,670m, and 130 degrees either side of north of any turbine (properties outwith this will not experience shadow flicker due to the orientation of the sun relative to the property). 28 properties lie within the shadow flicker study area and were assessed for shadow flicker effects.
103. Based on professional judgement, and in line with relevant guidance, the shadow flicker assessment has adopted a criterion of 30 hours or more of shadow flicker in one year as a significant effect. Where less than 30 hours of shadow flicker is predicted to occur in one year at a particular property, this is considered to be not significant.
104. When assuming 365 days of sunshine and continuous and sufficient wind to rotate the blades, the shadow flicker assessment determined that 13 of the 28 properties could potentially experience over 30 hours of shadow flicker per year. However, when the meteorological data was added to the model to add the 'realistic' sunshine hours, the annual hours of shadow flicker anticipated at all properties are under the 30 hours threshold and therefore no significant impacts are predicted.
105. When considering the existing wind farms in the surrounding area along with the Proposed Development, there are three properties that could experience higher levels of shadow flicker. This is due to the combined effects of the operational wind farms and the Proposed Development. When 'realistic' sunshine hours are applied, two of these properties would experience significant levels of shadow flicker in the absence of mitigation.
106. When considering the Proposed Development along with the recently consented Low Drumclog Wind Farm and proposed South Brownhill Wind Farm, assuming 'realistic' sunshine hours, nine properties would experience significant levels of shadow flicker in the absence of mitigation.
107. Due to the nature of shadow flicker assessment, these figures are likely to be an overestimate of the actual effects. This is due to factors such as the wind not always blowing, the sun not always shining, the screening effect of vegetation etc. Despite this, the Applicant is committed to promptly investigating any complaints of shadow flicker and taking appropriate action as required. This would comprise an investigation which considers the weather conditions at the time of the alleged shadow flicker, to determine which turbines were creating the effect and the extent of the shadow flicker created. If a loss of amenity is confirmed, then the shadow flicker control module would be activated. The module controls the turbine causing the shadow flicker which would be programmed to shut down on specific dates at specific times when the sun is bright enough, there is sufficient wind to rotate the blades, and the wind direction is such that nuisance shadow flicker could occur. Following implementation of this mitigation, no significant effects would result for shadow flicker.



## Aviation and Radar

108. The site lies approximately 30km to the south east of Glasgow Airport, 30km to the north east of Prestwick Airport, 32km to the south of NATS Cumbernauld Radar, and 40km to the north west of NATS Lowther Hill radar.
109. Potential impacts on NATS En Route Lowther Hill and Cumbernauld radars were identified in the assessment. Technical mitigation, which will be secured through a commercial agreement, will be required to address the effects of the Proposed Development on these radars.
110. As turbines in excess of 150m to blade tip are proposed, all five turbines will be lit with aviation lighting in line with current guidance from the Civil Aviation Authority (CAA). The Applicant will implement measures to minimise the extent and intensity of the visual impact of lighting on non-aviation receptors while maintaining aviation safety.
111. A desk study review of available research on downwind turbulence from turbines and the impact on aircraft has been carried out as this is understood to be a concern of Strathaven Airfield (located approximately 4km north east of the site). The review concluded that the Proposed Development would not pose a downwind hazard to aircraft operating to or from Strathaven Airfield.
112. The Proposed Development is not assessed as having any significant effects on low flying military aircraft.

## Telecommunications

113. Effects on television and radio signal have been scoped out of assessment as digital television is unlikely to be affected by wind turbines compared to analogue television, and interference to the radio signal is unlikely, and any interference is unlikely to noticeably affect the audio signal.
114. Two fixed links, operated by Arqiva, were identified running in a north east to south west direction through the site. An appropriate buffer to these links was agreed with Arqiva by the Applicant and has been incorporated into the positioning of the turbines. The layout of the Proposed Development has been designed in such a way that it does not directly affect microwave fixed links and the potential effect on such fixed links is not significant.

## Tourism and Recreation

115. The South Lanarkshire Tourism Strategy shows that in 2019, Lanarkshire attracted 614,820 visitors, who generated an economic impact of £204.5M for South Lanarkshire, whilst the sector supported 3,013 full-time equivalent jobs.
116. The assessment of impacts related to this receptor included those related to tourist and recreational attractions, walking and running routes within 5km of the Proposed Development.
117. The construction period for the Proposed Development would be expected to benefit the local economy through expenditure on purchases of accommodation, food, drink, fuel, etc. that are needed to sustain the construction workforce. These beneficial effects would be experienced mainly by businesses within the tourism sector, or those that are partly dependent on tourism for their income e.g. the retail sector.
118. During the construction period of the Proposed Development, whilst access under the right to roam on site would be temporarily affected, it is noted that there are no core paths or rights of way identified within the site.
119. No significant effects are identified on tourism or recreational assets as a result of the Proposed Development.



120. Cumulative effects could occur if proposed wind farm developments in close proximity to the Proposed Development (Low Drumclog and South Brownhill) were under construction in close proximity to one another at the same time, impacting tourism amenity or restricting recreational access. It would be necessary for developers to co-ordinate with each other prior to and during construction (should construction work on these projects overlap) to ensure impacts on the local road and path network (amongst other elements) are suitably and safely managed.

### **Public Safety**

121. Site security and access during the construction period would be governed under Health and Safety at Work Act 1974 and associated legislation.
122. The construction works for the Proposed Development would be undertaken in accordance with primary health and safety legislation, including the Health and Safety at Work Act 1974 and the Construction (Design and Management) (CDM) Regulations 2015.
123. Appropriate warning signs would be installed concerning restricted areas of the site such as the substation compound, switchgear and metering systems. All on-site electrical cables would be buried underground with relevant signage.

### **Extreme Weather**

124. As far as the risk of turbine failure during high winds is concerned, the turbines would cut-out and automatically stop as a safety precaution in wind speeds over 25m/s.
125. Monitoring systems and protocols are in place to monitor weather conditions at the site of wind turbines and to monitor the condition of the turbines themselves, for example, re-starting turbine blades in a controlled manner following an icy period to prevent ice-throw.
126. Wind turbines can be susceptible to lightning strike due to their height and appropriate measures are taken into account in the design of turbines to conduct lightning strikes down to earth and minimise the risk of damage to turbines.

### **Major Accidents and Disasters**

127. 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.
128. In addition, the nature of the proposals and location of the site means there would be negligible risks on population and human health, biodiversity, land, soil, water, air and climate; and material assets, cultural heritage and the landscape.

### **Population and Human Health**

129. Assessments relating to the health and wellbeing of the local population are included within the following EIA Report Chapters: **Chapter 5: Landscape and Visual, Chapter 9: Noise, Chapter 10: Traffic and Transport, and Chapter 11: Geology, Hydrology, Hydrogeology and Soils.** These chapters assess the effects of the Proposed Development, both positive and negative, provide an analysis of the significance of these effects and put forward measures to mitigate against negative effects on people and their health.
130. Further to the topics covered in **Chapters 5 to 12**, it is not expected that there will be any other effects from the Proposed Development which would have significant effects on population and human health.



## 4.9 Summary of Significant Effects

131. The EIA for the Proposed Development has been carried out in accordance with regulatory requirements and guidance on good practice. The findings of the surveys undertaken, in addition to consultation, have informed the design process and assessment. Design modifications and pre-construction, construction and operational mitigation have been implemented to remove and reduce significant adverse effects.
  132. Significant adverse effects remain on the landscape and visual amenity as these effects cannot be mitigated further given the inherent nature of the wind farm, however they have been reduced to localised effects only through the iterative design process.
  133. Significant adverse effects are predicted for the loss of Annex 1 blanket bog, degraded blanket bog, and neutral grassland. However, the extensive Biodiversity and Enhancement and Restoration Plan (BERP) will support and improve the existing habitats on the site. The measures proposed will enhance existing biodiversity, support the recovery of natural habitats and populations, and contribute to broader nature networks. Significant beneficial biodiversity improvements would result, leaving the environment in a better condition than it would be without these actions.
- 6.1. Significant adverse effects are also identified on foraging and commuting bats, pine marten and red squirrel due to loss of woodland habitat. However, the regional importance of the restored peatland is considered to outweigh this adverse effect.
134. Other significant beneficial effects resulting from the implementation of the BERP include: improved water quality, increased population of reptiles, amphibians, fish, otters and bats within the site.



## 5.0 Next Steps

135. SLC will consider the planning application and the findings of the EIA. Before making a decision on the application, SLC will consult a number of consultees including NatureScot and SEPA and will consider all representations received from other parties including members of the public.
136. Any public representations to the application may be submitted via the SLC planning website.



## 6.0 References

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# Figures

## **Non-Technical Summary**

**Mossmulloch Wind Farm EIA Report**

**Wind Power North 3 Limited**

SLR Project No.: 405.06572.00001

6 December 2024

250000

260000

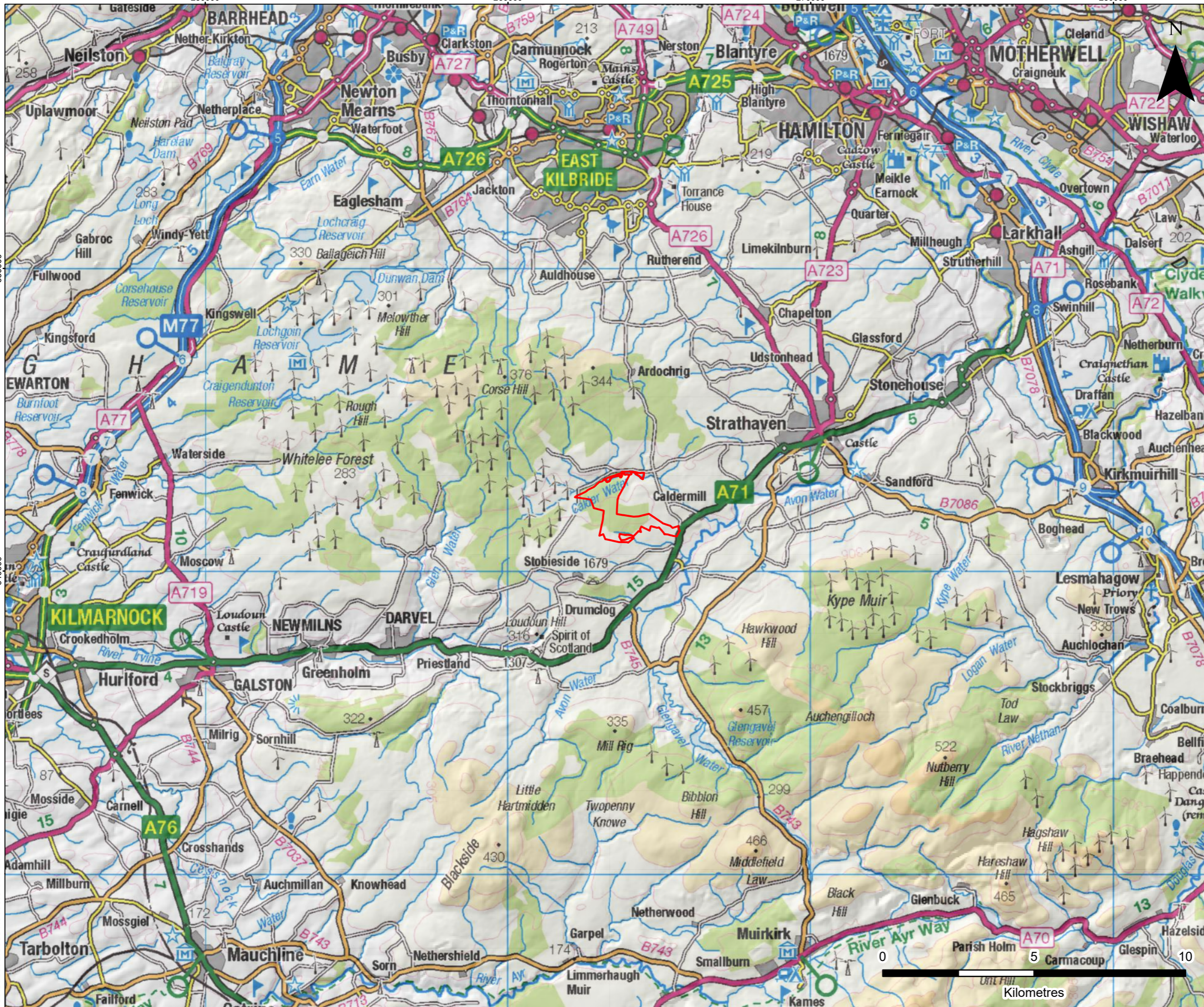
270000

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405.065072.00001.0156.0 Site Location



LEGEND

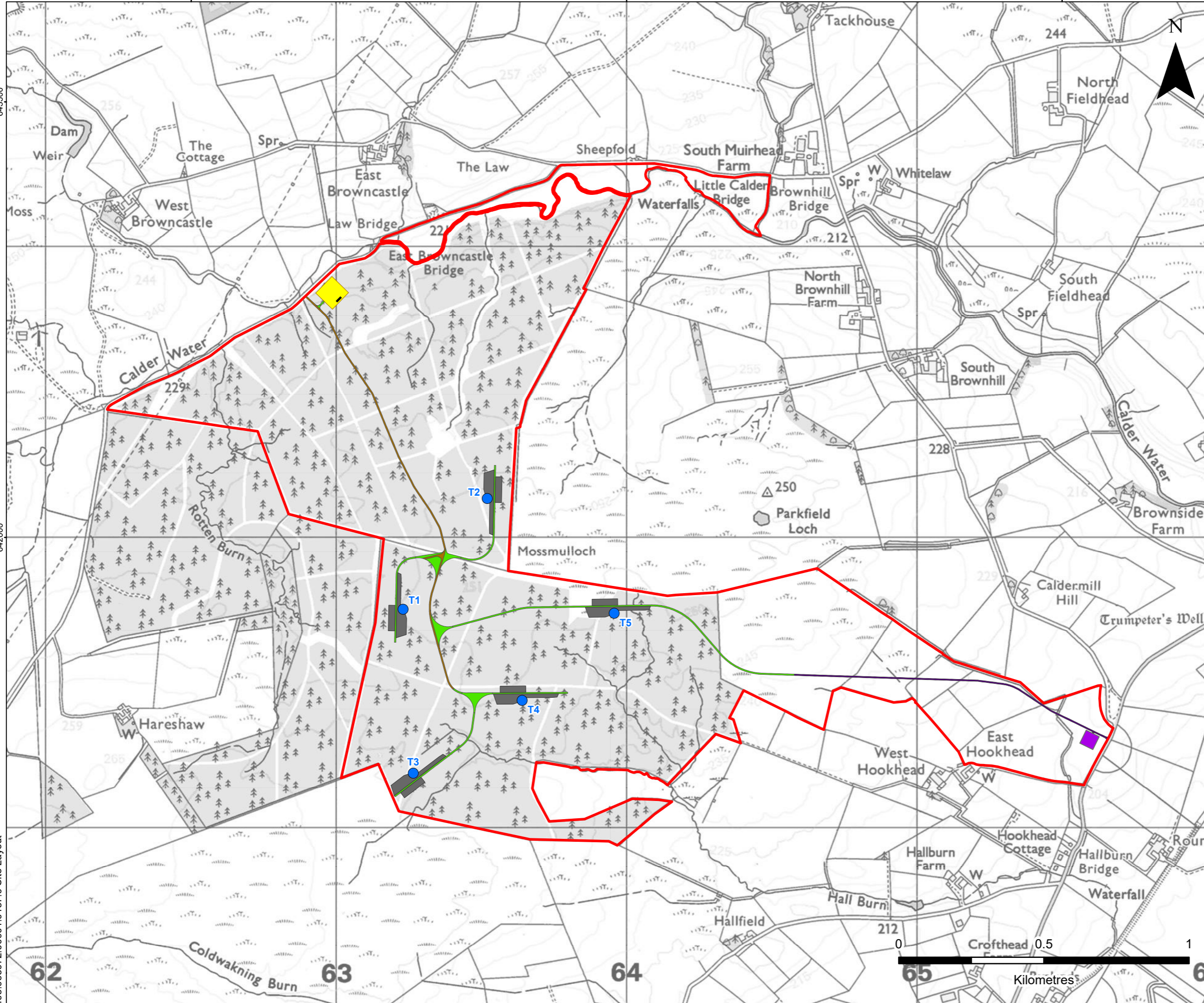
Site Boundary



MOSSMULLOCH WIND FARM EIAR  
 NON-TECHNICAL SUMMARY  
 SITE CONTEXT AND LOCATION PLAN

FIGURE 1

Scale 1:120,000 @ A3 Date NOVEMBER 2024



**LEGEND**

- Site Boundary
- Proposed Turbine Location
- Proposed Hardstanding and Laydown Area
- Proposed Substation Compound
- Proposed Substation Control Building
- Proposed Temporary Construction Compound
- Proposed Cut Access Track
- Proposed Floating Access Track
- Existing Access Track



MOSSMULLOCH WIND FARM EIAR  
 NON-TECHNICAL SUMMARY  
 PROPOSED SITE LAYOUT

**FIGURE 2**

Scale 1:12,500 @ A3 Date NOVEMBER 2024

