Cumberhead West Wind Farm

Part of a Coordinated Strategy for the Future of the Hagshaw Wind Cluster

NON-TECHNICAL SUMMARY

NOVEMBER 2020

ITPENERGISED

A joint venture between:

3R Energy
CHP • Wind • Biomass

SCOTTISHPOWER RENEWABLES

Contents

Full size versions of all figures are available in the accompanying EIA Report

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Background

1. This document is a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) which accompanies an application made by Cumberhead West Wind Farm Ltd (the Applicant). Cumberhead West Wind Farm Ltd is a joint venture between 3R Energy Solutions Ltd and ScottishPower Renewables UK Limited.

2. The Applicant is applying for a Section 36 (S.36) consent and deemed planning consent, under the terms of the Electricity Act 1989, to construct and operate Cumberhead West Wind Farm (hereafter referred to as the "Proposed Development"), located 4.3 km west of the village of Coalburn, in rural South Lanarkshire.

3. Renewable energy is a key factor in helping Scotland reach its target of Net Zero by 2045. The Proposed Development would make a meaningful contribution to those national targets for the generation of renewable energy and reduction in greenhouse gas emissions and contribute towards sustainable economic growth in South Lanarkshire and Scotland as a whole.

Purpose of the Proposed Development EIAR

4. ITPEnergised was appointed by the Applicant to assess the environmental impacts of the Proposed Development in accordance with The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

5. The EIA process is reported in an Environmental Impact Assessment Report (EIAR), which describes the methods used to assess the beneficial and adverse environmental impacts predicted to result from the construction and operation of the Proposed Development. Where appropriate, it also sets out mitigation measures designed to prevent, reduce and, if possible, offset any significant adverse environmental impacts. An assessment of residual effects, those expected to remain following implementation of mitigation measures, is also presented. This document is intended to present a summary of the findings of the EIAR in non-technical language.

Availability of the Proposed Development EIAR

6. Hard copies of the Proposed Development EIAR are available from:

3R Energy
Lanark Auction Market
Hyndford Road
Lanark
ML11 9AX

Tel: (01555) 660244 Email: info@3renergy.co.uk

7. The Non-Technical Summary is available free of charge from the Applicant, a hard copy of the EIAR Volumes 1 to 4 are available for £750.00. In addition, all documents are available (as a PDF for screen viewing only) on a USB for £15.00.

8. Due to COVID-19 pandemic and in-line with The Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 (Scottish Government, 2020) no physical copies of the EIAR are available for public viewing at the point of submission.

9. Electronic copies of the EIAR can be accessed at http://www.energyconsents.scot/ or at https://www.3renergy.co.uk/cumberhead-west as required by The Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 (Scottish Government, 2020).

Representations to the Application

10. Any representations on the S.36 application should be made directly to the Scottish Government Energy Consents Unit as follows:

Energy Consents Unit
Scottish Government
4th Floor
5 Atlantic Quay
150 Broomielaw
Glasgow
G2 8LU Email: representations@gov.scot Web: www.energyconsents.scot/Register.aspx

Site Location and Description

11. The Proposed Development site adjoins an established cluster of wind farms around Hagshaw Hill in South Lanarkshire, known as the 'Hagshaw Cluster'. The site comprises a main development area of the existing Cumberhead Forest and adjoining land, consisting primarily of commercial coniferous plantation and existing forestry tracks plus a small parcel of farmland. Further detail on the site location and the Hagshaw Cluster can be found in Chapter 1 of the EIAR.

12. The village of Coalburn is approximately 4.3 km to the east of the nearest turbine and Lesmahagow approximately 5.6 km to the north-east. The site boundary incorporates the approximately 16 km access route to the proposed turbine locations from Junction 11 of the M74 motorway and the existing timber haulage route from Station Road, Douglas West. The overall site area, including the access roads, extends to approximately 1,049 ha. The location and wider environment of the site is shown on **Figure 1** below.

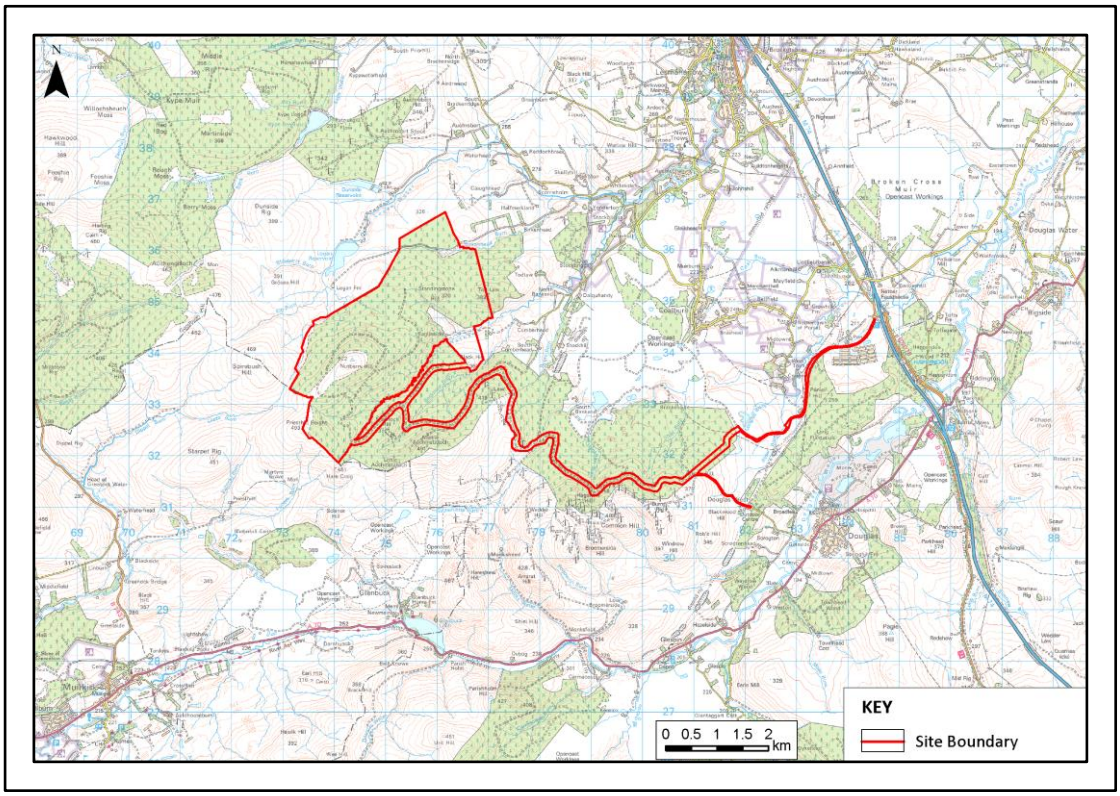


Figure 1 Site Location Plan

Site Selection and Design

Site Selection

13. 3R Energy and ScottishPower Renewables have an established presence within the Hagshaw Cluster and have extended their partnership to develop the Cumberhead West Wind Farm (the Proposed Development) which would complete the wind energy picture within the western part of the forest. The Proposed Development site sits within a landscape of operational or consented wind farm developments (as shown in **Figure 2** below), part of the Hagshaw Cluster. The Cluster benefits from a strong wind resource, direct access to the M74 motorway, and close proximity to the electricity network (Coalburn Substation). The Proposed Development site is therefore considered to be a suitable location for wind energy development that makes use of existing site infrastructure to deliver additional renewable energy generation and community benefits, remote from surrounding communities.

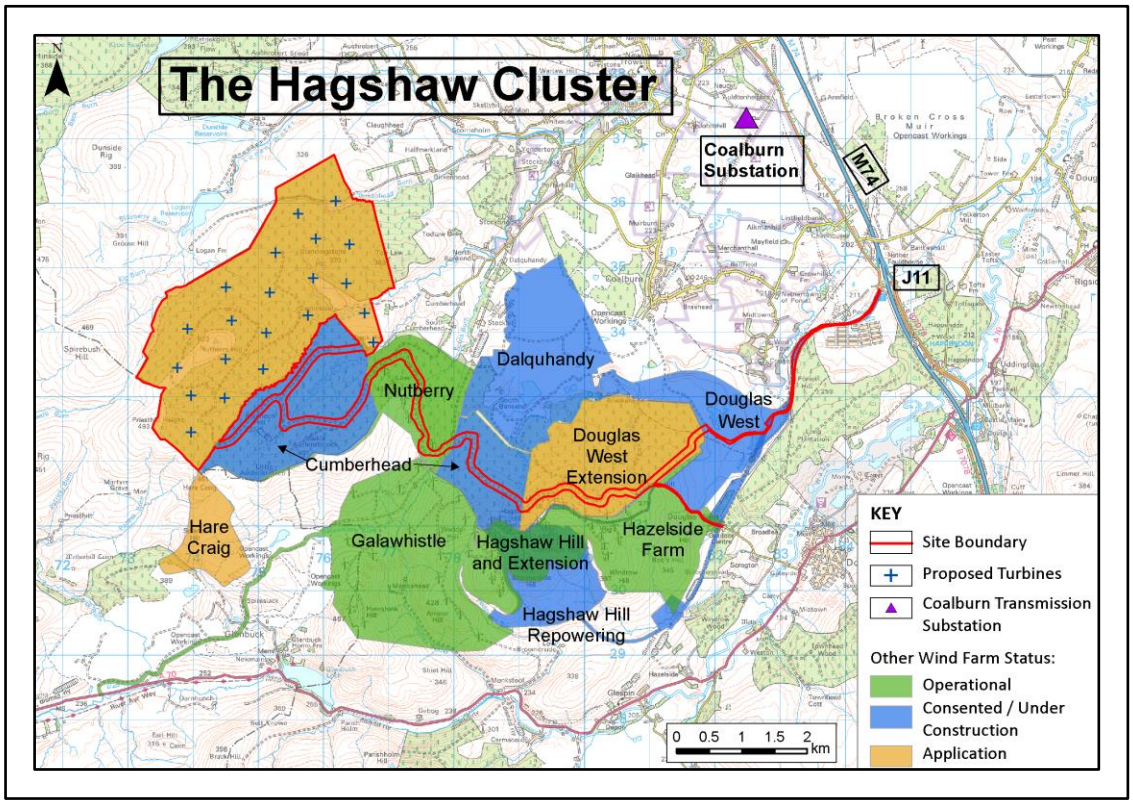


Figure 2 The 'Hagshaw Cluster' – context of the Proposed Development within the local landscape

Design Process

14. As part of the Environmental Impact Assessment (EIA) process design iterations were prepared and considered for the turbine locations and on-site infrastructure, including access tracks and the construction compound and substation/energy storage locations. The following principles were adopted during the design iterations made by the Applicant to ensure that the final design of the Proposed Development was the most suitable for the site:

- the Proposed Development should avoid inconsistent turbine spacing, such as relatively large gaps, outliers or excessive overlapping turbines to minimise visual confusion and ensure a balanced / compact array from key views;
- took account of the positioning of existing and consented wind energy developments in the local area from key views;

- consistency in turbine scale with consented and proposed developments in the immediate vicinity;
- minimise impacts on the existing forestry resource and operations within the site;
- retain a separation of at least 1 km from the closest uninvolved residential dwellings in the surrounding area; and
- other environmental constraints and associated buffers are to be respected.

Alternatives

Turbine Layout and Scale

15. The Applicant has considered a number of alternative layouts for the Proposed Development (refer to Chapter 2 of the EIAR). The preliminary layouts took account of identified technical and environmental constraints based on desk-based study and walkover survey work, as well as preliminary wind yield analysis.

16. Preliminary visualisations were generated for a range of layout options, to assess the suitability of design with respect to views from key viewpoints in the local landscape. The Applicant considered the most appropriate design to maximise renewable energy generation from the site while not resulting in unacceptable landscape and visual effects. Regard was taken in this process to the other operational and consented schemes in the landscape near to the site and the manner in which they would already serve to create a wind farm landscape in which the Proposed Development would be sited.

17. Another important factor taken into the design and positioning of the final turbine layout has been the relationship between the site and the scattered properties to the north-east. The design was amended during the design iteration process to increase the distance between the turbines and properties to the north and north-east, thereby reducing the potential visual effect on this area.

18. Cognisance has also been had to the existing forestry resource across the site. Where possible turbines were micro-sited to minimise the number of forestry blocks that required clear felling as part of the Proposed Development, with the proposed turbines being 'keyholed' within the replanted forestry. To determine the size of these keyholes, the design took into consideration the recommended bat habitat standoff distances from the tip of the turbine blades to the edge of the forestry.

On-site Infrastructure Layout Iterations

19. Following the evolution of the turbine layout design, the design of the access tracks, construction compounds and substation/energy storage compound was undertaken. The infrastructure required on the site was designed and arranged in such a way as to avoid the main on-site environmental constraints identified.

20. The site benefits from existing access from the M74 Junction 11, along an existing tarmac haul road and then (following construction of a short new link road) along existing forestry access tracks to the main body of the Proposed Development site. The on-site access tracks are also part defined by existing infrastructure (forestry tracks) which has been re-used wherever possible. Proposed new tracks have been designed to take into account existing breaks between forest blocks in order to reduce impacts on the commercial forestry operations and are also based on site topography, underlying ground conditions and to minimise the need for, and appropriately locate water crossings. Therefore, of the 37.5 km of tracks required for the Proposed Development, only approximately 10 km will be new tracks, with the remainder being existing tracks.

21. The first proposed construction compound and laydown area are located at the entrance to the main development area to optimise construction activities. The proposed substation location, which will also incorporate an energy storage facility, and the second construction compound are located near the centre of the main development area. All have been sited to avoid watercourses and areas of deep peat and to minimise impacts on sensitive habitats.

The Proposed Development

22. The Proposed Development (**Figure 3**) comprises 21 wind turbines of up to a maximum blade tip height of 200 m when vertical, each generating around 6 megawatts (MW) in power rating. A number of ancillary development components are also proposed, including: two construction compounds and turbine laydown area; hardstandings adjacent to the wind turbines for construction, maintenance and decommissioning cranes; access tracks; underground cables between turbines; an onsite substation and maintenance building with welfare facility; an energy storage facility of around 40 MW output; three borrow pit search areas; and two new permanent meteorological monitoring masts.

23. The total power generation capacity of the turbines within the Proposed Development would be around 126 MW. Based on a calculated site specific capacity factor, the annual indicative total power output for the site would be around 325 GW hours per annum, indicating the Proposed Development would generate enough electricity to power approximately 90,000 average UK households (based on RenewableUK, 2019 UK average domestic household consumption is 3,618 kWH), and displace around 173,842 tonnes of carbon dioxide annually (5.2 million tonnes over the proposed 30 year lifetime of the Proposed Development). The Proposed Development would contribute towards international and national targets for the generation of renewable energy and reduction in greenhouse gas emissions, including contributing significantly towards Scotland's target of net zero by 2045 (further information is provided on this matter in Volume 1, Chapter 3 of the main EIAR and the accompanying Planning Statement).

24. The Proposed Development has secured a grid connection via the existing Coalburn Substation to the north-east of the site to allow the electricity produced to be exported to the wider electricity network. The electrical power produced by the individual turbines will be fed to an on-site substation and energy storage compound via underground cables. The substation and control room building will accommodate all the equipment necessary for automatic remote control and monitoring of the Proposed Development, in addition to the electrical switchgear, fault protection and metering equipment required to connect the Proposed Development to the electricity network. The design of the substation building and energy storage unit on site is flexible and detailed design will be provided nearer to construction.

25. To enable the construction of the turbines, a crane hardstanding area at each turbine location will be required to accommodate assembly cranes and construction vehicles. This will comprise a crushed stone hardstanding area measuring approximately 50 m long by 30 m wide and will remain in place during the lifetime of the Proposed Development to facilitate maintenance works.

26. Two steel lattice tower meteorological monitoring masts will be required to monitor wind speeds for the operational life of the Proposed Development. It is proposed that these masts will be approximately 100 m in height.

27. As noted above it is proposed that vehicular access to the site will principally be from the M74 leaving at junction 11 (Poniel). All construction materials, wind turbine components, site staff and visitors will use this route to access the site. Any timber to be removed from the site to facilitate the Proposed Development will be via the permitted forestry haul route to Station Road at Douglas West, as is presently the case. Any pre-construction Site Investigation works will also use the Station Road access.

28. A transport assessment (Volume 1, Chapter 12 of the EIAR) has been undertaken in support of the S.36 application for the Proposed Development and this provides greater detail on access routes to the site and provides an estimate of vehicle trip generation during construction. The transport assessment includes a review of the proposed construction route, and construction traffic impacts.

29. Existing onsite access tracks will be retained, re-used and upgraded (as necessary) wherever possible, however some additional areas of new access tracks will be required. The new stretches of access track

AT A GLANCE....

Number of Turbines: 21

Dimensions: Maximum height of 200m to blade tip

Operational Lifespan: 30 years

Generation Capacity: Around 6 MW per turbine or around 126 MW in total

Energy Storage: On site energy storage facility of around 40 MW output

Community Benefit: £630k per year or £18.9m in total*

Energy Generated: Provide electricity for approximately 90,000 households*

Principal Access: Via Junction 11 of the M74

**based on 21 x 6MW turbines being installed*

within the site boundary will be approximately 5 m wide and will cross a small number of watercourses within the site.

30. Two construction compounds, as well as concrete batching plant and a laydown area, will be required as a control centre for all site activities and to provide facilities for the day-to-day needs of the project and the workforce. The dimensions of the construction compounds will be approximately 100 m long by 60 m wide and the turbine laydown area will be approximately 150 m long by 70 m wide. On completion of construction works, it is proposed that all temporary structures be removed and the compound areas be restored for forestry purposes.

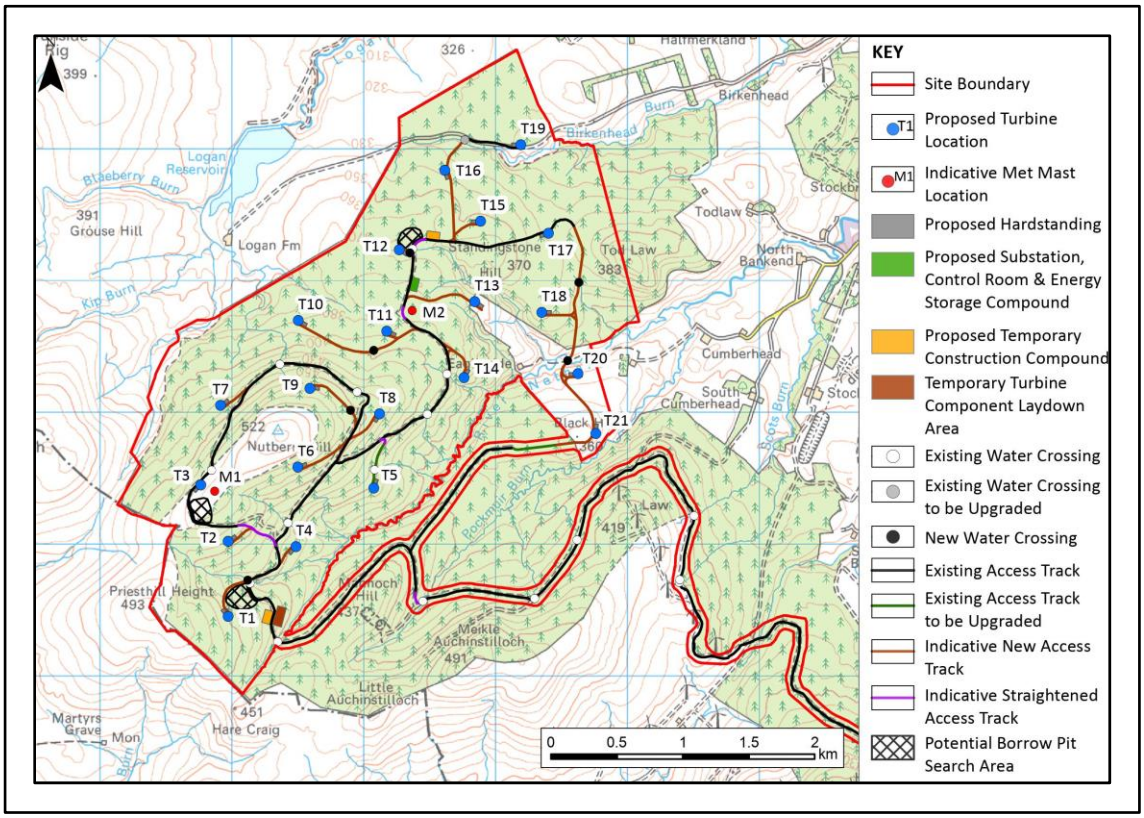


Figure 3 Proposed Development Layout (main site area)

Forward Strategy & Community Benefits

31. During the operational period of the Proposed Development, the Applicant proposes to make community benefit contributions of £5,000 / MW of installed capacity, which means that the project would generate an £18.9 million Community Benefit Contribution (based on a total installed capacity of 126 MW) to local communities over its lifetime. The Applicant is exploring the potential to establish a new mechanism to receive and manage community benefit income from the Proposed Development (alongside income from the neighbouring Douglas West Extension and Hagshaw Hill Wind Farms) which would yield the financial resources to deliver a Community-Led Investment Strategy for the local villages (Coalburn, Lesmahagow, Douglas, Glespin, Rigside and Douglas Water).

32. The Applicant is also committed to exploring the potential for community investment in the Proposed Development, creating the opportunity for local community groups to acquire a share in the future revenue of the wind farm.

33. The Proposed Development creates opportunities to develop and fund (through the Community Benefit Contribution) outdoor recreation infrastructure in the local area which could act as a catalyst to grow an Adventure Tourism offering in the local area.

34. The Proposed Development represents a significant investment in the region and the Applicant has committed to taking a number of steps to ensure that benefits from the Proposed Development are maximised locally. The Applicant is committed to a local supplier approach that will endeavour to source supplier contracts locally wherever possible, sustaining local businesses and providing employment opportunities for local people.

Programme

35. The on-site construction period for the Proposed Development is expected to be approximately 18 months as shown in **Table 1**.

Task	Month Number																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Mobilisation																		
Access & Site Tracks																		
Foundations																		
On-site Cabling																		
Substation Works																		
Substation Construction																		
Crane Hardstanding																		
Off-site Cabling																		
Turbine Delivery																		
Turbine Erection																		
Commissioning & Testing																		
Site Reinstatement																		

Table 1 Indicative Construction Programme

36. Normal construction hours will be between 07:00 and 19:00 Monday to Friday and 07:00 to 13:00 on a Saturday, no construction will take place on a Sunday. These times have been chosen to minimise disturbance to local residents. It must, however, be noted that during the turbine erection phase, operations may proceed round the clock to ensure that lifting processes are completed safely. A fully detailed construction programme will be provided in a Construction Environmental Management Plan (CEMP) prior to the commencement of construction.

37. The operational lifespan of the Proposed Development would be 30 years, after which it would be appropriately decommissioned. It is expected that decommissioning would take approximately twelve months. If, after the operational lifespan of the Proposed Development has expired there is potential for re-powering the development, this would be subject to a new and separate application.

Consultation

Statutory Consultation

38. A formal EIA Scoping Opinion was requested from the Scottish Ministers in June 2020 through the submission of an EIA Scoping Report. The EIA Scoping Report contained details of the site baseline, the Proposed Development, proposed environmental impacts to be assessed in the EIA, and the assessment methodologies that would be used. The Scottish Ministers consulted with a variety of statutory and non-statutory consultees before providing an EIA Scoping Opinion on the 9th September 2020. A summary of how the Scoping responses were addressed in the final submission is presented in an EIA Gatecheck Report that can be found in EIAR Appendix 4.4.

39. Direct consultation has also been undertaken with specific statutory consultees, to confirm and agree the detailed approach to the technical surveys and assessments on a topic by topic basis.

40. Further information on the consultation process is given in Volume 1, Chapter 4 of the Proposed Development EIA Report.

Public Consultation

41. A programme of pre-application community engagement for the Proposed Development has been undertaken by the Applicant which has included various meetings, correspondence, and telephone discussions with local community groups, neighbours and elected representatives, alongside a leaflet drop to properties within 2 km and an online public consultation website which was advertised in the local paper.

42. The Pre-Application Consultation Report which accompanies the S.36 submission details the findings of that work and illustrates the ways in which community engagement has helped identify potential issues arising from the emerging development proposal and, where appropriate, shape the final proposal which is now the subject of this application.

43. Due to the COVID-19 restrictions requiring social distancing, face-to-face consultation was not possible during the consultation process. In lieu of holding in person public information events, the Applicant developed an online consultation website to provide details of the proposed scheme via virtual information boards and to allow the public to provide feedback. This form of community consultation was agreed with the Scottish Government and South Lanarkshire Council as being an appropriate alternative to a public event in the circumstances. The pre-application consultation undertaken was in line with the Town and Country Planning (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 which make temporary suspension of the requirement for face to face meetings and events during the COVID-19 pandemic.

44. The pre-application consultation has helped identify the issues that are important to the local community and, where appropriate, shape the final proposal which is now the subject of this application. The Applicant confirms that the company will continue to liaise with the local community during the S.36 application process and during the construction, operational and decommissioning phases of the Proposed Development.

Environmental Impact Assessment (EIA)

45. The EIA considers the effects of the Proposed Development during construction, operation and decommissioning on the following topics:

- landscape and visual (effects on the character of the landscape and views from agreed locations);
- ecology (the effects on protected habitats, flora and fauna, excluding birds);
- ornithology (the effects on birds and protected bird habitats);
- noise and vibration (effects on local properties from noise and vibration arising from the Proposed Development);
- cultural heritage (effects on the integrity and setting of historic sites and/or features);
- hydrology, hydrogeology and geology (the effects on surface water, groundwater, rocks and soils);
- traffic and transport (effects from traffic travelling to, and from, the Proposed Development on local roads and receptors);
- socio-economics, tourism, and recreation (effects on the local and national economy, local tourism businesses, and recreation facilities);
- aviation, radar and telecommunications (effects on civil and military aviation facilities and air space and telecommunications facilities);
- shadow flicker (effects caused by the passing of the turbine blades in front of the sun); and
- forestry (effects on the commercial forestry operations at the site as a result of the Proposed Development).

46. Volume 1, Chapter 4 of the EIA Report describes the EIA process in more detail.

47. For each topic the existing conditions (the baseline) was identified and the effects of the Proposed Development on these conditions assessed (the potential effects). Potential effects are assessed on a scale of negligible, minor, moderate and major, with effects of moderate or major deemed to be significant in the terms of EIA. Mitigation measures have then been proposed to minimise significant adverse effects where required. Following this, an assessment was undertaken of the effects of the Proposed Development on the existing conditions taking into consideration the proposed mitigation (the residual effects).

48. In addition to the above, the cumulative effects of the Proposed Development, i.e. effects considered in conjunction with other developments in the local area, primarily other wind farms, were assessed.

49. A summary of the baseline conditions, the proposed mitigation, the resulting residual effects and the cumulative effects for each topic is provided below. Full details of the EIA for each of the topics are provided in Volume 1, Chapters 6 to 16 of the EIA Report.

Landscape and Visual

50. The full assessment of the effects on landscape and visuals receptors is provided in Volume 1, Chapter 6 of the Proposed Development EIA Report.

51. The landscape and visual impact assessment assessed the landscape and visual effects arising from the Proposed Development in two different baseline scenarios. Firstly, it assessed the effects of the project on the existing baseline which includes existing wind farms. Secondly, it assessed effects on a 'future baseline' scenario that includes the nearby consented wind farm schemes of Douglas West (now under construction), Cumberhead, Hagshaw Hill Repowering, Dalquhandy and Broken Cross. Given the number of consented and not yet constructed schemes in the vicinity of the Proposed Development, it was considered useful to bring forward the consideration of the consented and not yet constructed schemes into the main assessment as a material consideration, as this is the most realistic context against which the acceptability of the Proposed Development should be assessed.

52. The main findings of the assessment are that there will be some inevitable significant landscape and visual effects upon the existing baseline environment as a result of the Proposed Development, with no significant effects predicted to any designated landscapes.

53. In terms of landscape character effects, the Proposed Development would result in direct and significant effects to some landscape character types in both the existing and future baseline scenarios. However, in other landscape character types and sub types where significant effects are predicted in the existing baseline, these would no longer be significant in the future baseline scenario.

54. In relation to visual effects, it is accepted that the Proposed Development would be visible from various nearby properties and settlements as well as the surrounding road network and footpath network, similarly to the other wind farms in the Hagshaw Cluster. However, it has been assessed that when considered against the existing baseline, significant effects on visual amenity would be localised to within approximately 8.3 km of the Proposed Development, out as far as the viewpoint at Cairn Table. The assessment also found that effects were no longer considered significant in the future baseline scenario in all but one location, on the minor road at Brackenridge. Volume 3, Appendix 6.5 of the EIAR provides further detail.

55. The residential visual amenity study concludes that although there would be significant visual effects experienced at five of the 12 assessed properties or property groups within 2 km of the proposed turbines, the Proposed Development would not result in any overbearing visual effects and none of these properties would become an unattractive place to live.

56. The assessment of landscape and visual effects of aviation lighting has identified that the visible lighting would be screened by landform and topography from significant parts of the wider surrounding area within 10 km, in particular from Douglas, parts of Lesmahagow and large sections of A70. Those views which are available are generally seen in areas where night time lighting is a familiar element of the landscape. The assessment has identified significant effects on the character of the landscape in the immediate vicinity of the site during low-light levels, up to approximately 4 km. Significant visual effects have been identified for the minor road network to the north-east of the site and a small number of associated residential receptors with a view towards the site, again up to approximately 4 km. Coalburn would experience a significant visual effect when assessed against the existing baseline, but this would

reduce to non-significant once the future baseline landscape, including the lit turbines at Dalquhandy, is considered. Elsewhere, the proposed aviation lighting would not give rise to any significant landscape and visual effects. Embedded lighting mitigation has been designed into the Proposed Development to reduce the intensity of the aviation lights in certain atmospheric conditions by reducing their intensity and reducing the amount of vertical downwards lighting in order to reduce the visual impact experienced by receptors below the lights.

57. As the landscape and visual assessment assessed the effects of the Proposed Development against a future baseline, the cumulative assessment focussed solely on the additional effects arising from the Proposed Development if the other in-planning schemes were approved and constructed. It found that the introduction of the nearby Douglas West Extension and Hare Craig schemes would reinforce the presence of 200 m plus turbines in the immediate vicinity of the site, and in the case of Hare Craig, would reduce significant effects resulting from the Proposed Development on some landscape character types. In relation to cumulative visual effects, it is clear that some receptors in the local area would experience a significant visual effect as a result of the other existing, consented and proposed wind farms. Therefore, the Proposed Development would consolidate an existing effect rather than introduce notable new significant cumulative visual effects.

58. Overall, the findings of the landscape and visual assessment are that the Proposed Development would result in a series of landscape and visual effects, which would be expected with any commercial scale wind energy development. These effects are however largely reduced in the future baseline scenario. Whilst the assessment identified some significant landscape and visual effects it is considered that the landscape has the capacity to accommodate the effects identified, particularly when the neighbouring consented wind farms are taken into account.

Ecology and Nature Conservation

59. The full assessment of the effects on flora and fauna at the site is provided in Volume 1, Chapter 7 of the Proposed Development EIA Report.

60. The scope of the ecological assessment was determined through a combination of a desk study to identify existing ecological data, by considering the previously collected baseline survey results of those local wind farm projects surrounding the site, consultation with relevant nature conservation organisations, and baseline field surveys of the site.

61. Ecological field surveys within the site were undertaken in 2019 and 2020, including detailed National Vegetation Classification habitat surveys and protected species surveys. The Proposed Development has been designed to minimise impacts on important habitats or protected species to achieve non-significant effects. It was possible to eliminate most species and habitats recorded in the study area from the impact assessment by virtue of their low conservation value, the type and frequency of field signs present, the small extent of the sensitive habitat, or the negligible scale of potential effects. The ecological features taken forward for further assessment due to their higher conservation value and potential sensitivity to remaining impacts were blanket bog and Nyctalus and pipistrelle bats.

62. During the construction stage of the Proposed Development there would inevitably be some direct and indirect habitat loss due to the construction of new infrastructure. Effects of loss of blanket bog and wet modified bog were assessed. No significant effects were predicted, with the extent of direct and indirect losses not being significant in a regional context, particularly with the modified bog identified on site being of low quality.

63. Potential effects on bats were assessed, with the main potential impact identified being the risk of collisions with the turbines during the operational phase. It was determined that although a collision risk exists for pipistrelle species, collision rates due to the Proposed Development alone would not be significant in a regional population context. Due to uncertainties in Nyctalus population sizes and a higher overall risk, a precautionary approach suggests that unmitigated, a potentially significant collision risk may exist, and to address this risk, a minimum set-back distance of trees from operational turbines and a Bat Mitigation and Monitoring Plan would be put in place.

64. Although no significant effects are predicted to occur to bog habitats, restoration and enhancement of bog within the site is proposed as part of a Habitat Management Plan, which would provide an overall beneficial effect.

Ornithology

65. The full assessment of the effects on birds is provided in Volume 1, Chapter 8 of the Proposed Development EIA Report.

66. Field surveys were conducted to determine the current bird species within the 2 km study area during 2019 and 2020. Ornithological surveys have regularly taken place for wind farm projects close to the Proposed Development site over the last 15 years and as a result, a number of adjacent projects' survey areas have, at least in part, overlapped spatially with the Proposed Development site. The assessment therefore utilises relevant long-term data recorded for local wind farm sites as well.

67. In general, the bird species recorded during surveys of the Proposed Development site during 2019 and 2020 corresponded with results of surveys undertaken for other wind farm projects in the local area, with few species sensitive to wind farm development present within the site. Ornithological features taken forward to assessment included hen harrier, merlin, goshawk, black grouse, curlew and golden plover. Due to potential connectivity with the Proposed Development, the Muirkirk and North Lowther Uplands Special Protection Area (SPA), and associated Muirkirk Uplands Site of Special Scientific Interest (SSSI), was scoped into the assessment.

68. The ornithological assessment identified as potential impacts: habitat loss and disturbance during the construction and decommissioning phases, and displacement, collision risk and lighting effects during the operational phase. Unmitigated effects from construction, operation and decommissioning activities on all ornithological features were assessed as being not significant. The likelihood of a significant effect is reduced further by the consideration of mitigation and enhancement measures in the form of a Breeding Bird Protection Plan during the construction period, and a Habitat Management Plan during the operational period.

69. It was concluded that there was no potential for the Proposed Development to adversely affect the integrity of the Muirkirk and North Lowther Uplands SPA, either alone or in-combination with other projects.

70. With the implementation of the mitigation measures as described, it is considered that there are no significant effects, or cumulative effects, on the ornithological features at the Proposed Development site.

Noise and Vibration

71. The full assessment of the potential noise and vibration effects from the Proposed Development on local receptors is provided in Volume 1, Chapter 9 of the Proposed Development EIAR.

72. The levels of noise and vibration likely to occur at local residential properties as a result of the operation of the proposed wind turbines have been assessed in respect of the Proposed Development in isolation, and cumulatively with other local wind farm developments. Potential noise and vibration effects from construction activities and any borrow pit workings have also been assessed.

73. Baseline noise surveys to establish the pre-existing sound levels at selected local dwellings were not possible owing to the large number of existing operational wind turbines in the local area. The noise and vibration assessment was conducted on the basis that the noise limits in the planning conditions for neighbouring and recently consented sites will be appropriate to the Proposed Development, as agreed with South Lanarkshire Council's Environmental Health department.

74. The assessment showed that the Proposed Development will meet all the conditions regarding noise and vibration contained within the recent consents for wind energy development on adjacent sites, and it is concluded that there will be no significant effects on nearby residential properties in terms of noise immission or ground-borne vibration.

75. The noise from the Proposed Development turbines over that already occurring or likely to occur from cumulative operational and consented wind farms in the locality was assessed to be subjectively unnoticeable at most locations, and within acceptable limits (as agreed with the Environmental Health department) and therefore not significant.

Cultural Heritage

76. The full assessment of the effects on cultural heritage is provided in Volume 1, Chapter 10 of the Proposed Development EIA Report.

77. The baseline assessment established that there are 14 cultural heritage assets that lie within the site boundary. These are almost exclusively of post-medieval date and relate to pastoral farming practices and small-scale industrial activity, with the exception of a possible standing stone. Within 1 km of the site there is some limited evidence of prehistoric activity, as well as further evidence of the post-medieval farming settlements, mostly located at lower lying levels along or close to watercourses and avoiding the upland areas. These assets have all been avoided by the design of the wind farm layout, and mitigation has been proposed that would address any potential direct effects upon previously unrecorded cultural heritage sites. Taking account of the current land-use and surrounding historic landscape character, the potential for further archaeological discoveries within the site is assessed as being low.

78. The assessment has considered the effect of the Proposed Development on the settings of designated heritage assets in the wider landscape, following the approach approved by Historic Environment Scotland (HES). The effects on the settings of heritage assets are assessed as being not significant in EIA terms.

79. The cumulative effect resulting from the addition of the Proposed Development to the emerging baseline of operational, consented and in planning applications is assessed as being not significant.

Hydrology, Hydrogeology and Geology

80. The full assessment of the effects on hydrology, hydrogeology and geology is provided in Volume 1, Chapter 11 of the Proposed Development EIAR.

81. A combination of desk study and field survey work was undertaken to identify and characterise the geological, hydrological and hydrogeological receptors which could be subject to impacts from construction, operation and decommissioning of the Proposed Development.

82. Surface water drainage from the site flows into the River Nethan to the south and the Logan Water to the north (itself flowing into the River Nethan), ultimately draining into the River Clyde to the north-east of the site. Six new water crossings and one upgraded water crossing will be required, where access tracks will need to traverse the on-site watercourses. Additionally, there are a number of existing water crossings which will be maintained for use in the Proposed Development.

83. Site geology comprises sedimentary bedrock sequences overlain largely by peat and till. A localised area in the southwest of the site is identified as Class 1 Peat according to the SNH Carbon and Peatlands Map 2016. However, detailed peat surveys undertaken in autumn 2020 identified variable thicknesses of peat across the site, with approximately 32% of probes recording peaty or organo-mineral soils (peat depth <0.5 m) rather than peat. Localised areas of deep peat (>1 m) were identified around the central, low-lying valley between Nutberry Hill and Standingstone Hill, the far north of the site, and the far southwest.

84. Extensive design iteration works were undertaken to avoid siting turbines or other infrastructure on deep peat wherever possible. This has resulted in areas of deep peat being avoided in siting all except one turbine, all turbine hardstandings, all except two short stretches of new track, and all other infrastructure.

85. A peat slide risk assessment has identified low risks at all turbine and other infrastructure locations, except one turbine which was assessed as negligible risk and one borrow pit search area which was assessed as medium risk.

86. Potential construction and operational effects arising from the Proposed Development (in the absence of mitigation) include changes to the groundwater flow regime, the risk of pollution of watercourses (including due to peat slide, and increased erosion following forestry felling) resulting in adverse effects on water quality, and effects on the integrity of watercourse banks.

87. Proposed mitigation measures to avoid or reduce potential impacts, include developing and implementing a Construction Environmental Management Plan (CEMP), key-hole forestry felling and re-planting, felling works in accordance with good practice, undertaking pre-construction site investigations to inform micro-siting and avoid sensitive receptors where possible, surface water quality monitoring, and implementing a Peat Management Plan and a Habitat Management Plan to restore peatland habitat. Additionally, any features of geological interest exposed during excavations will be observed and recorded, and post-construction, the Applicant proposes to install an information board or similar at the Birkenhead Burn Site of Special Scientific Interest (designated for geological interests).

88. Outline drainage design provisions and water crossing designs have been developed to ensure appropriate control of run-off, and continuous greenfield flows. Detailed designs will be agreed with SEPA and South Lanarkshire Council in advance of construction.

89. Following implementation of committed mitigation measures, the significance of residual effects on geology, surface water and groundwater is considered to be not significant. No cumulative effects are predicted.

Traffic and Transport

90. The full assessment of the effects on traffic and transport is provided in Volume 1, Chapter 12 of the Proposed Development EIA Report.

91. The Proposed Development has the potential to affect the surrounding transport network during its construction, operation and decommissioning phases. During construction, potential effects could arise from traffic travelling to and from the site delivering materials and plant. The Applicant expects all these vehicles to arrive at and depart from the site via Junction 11 of the M74, with the exception of timber-related traffic. The effects of the additional traffic estimated to be generated during the construction of the Proposed Development have been assessed and considered to be negligible. No mitigation is proposed, but 'good practice' measures will be implemented.

92. The Proposed Development will generate only the occasional maintenance or inspection vehicles during its operational period and the effects of this traffic are also considered to be negligible. The number of vehicle trips generated during the decommissioning of the Proposed Development is considered to be less than during construction and is also therefore considered to be negligible.

93. Potential cumulative effects could arise from the traffic generated by the Proposed Development and other consented developments. However, the traffic estimated to be generated by the Proposed Development is relatively small compared to the total of that estimated to be generated by the consented developments. Furthermore, the traffic generated during the construction of the Proposed Development is expected to last for only around 18 months, after which the Proposed Development will be fully operational and traffic volumes will reduce. The cumulative effects arising from the Proposed Development and the other consented developments are considered to be negligible.

Socio-Economics, Tourism and Recreation

94. The full assessment of the effects on socio-economics, tourism and recreation is provided in Volume 1, Chapter 13 of the Proposed Development EIAR.

95. The assessment found that the local area has a population older than the South Lanarkshire and Scottish averages with limited opportunities for education or employment. The local economy has been adversely affected by the decline of coal mining and other local industries and there are a limited number of tourism assets and accommodation providers in the local area.

96. It was estimated that:

- during the development and construction phase, the Proposed Development would invest approximately £152 million, that could generate up to:
  - £13.3 million GVA and 202 years of employment in South Lanarkshire; and
  - £42.6 million GVA and 657 years of employment in Scotland (including South Lanarkshire).

- during each year of the operational phase, the Proposed Development would spend around £3.3 million on operations and maintenance. This could generate up to:
  - £0.7 million and 10 jobs in South Lanarkshire; and
  - £1.2 million GVA and 18 jobs in Scotland.

97. The Proposed Development would form part of a wider cluster of onshore wind developments in the area. This presents an opportunity for local suppliers to have continuity of work across multiple projects and encourages local suppliers to diversify into the onshore wind market.

98. There would also be wider benefits associated with the Proposed Development as a result of the provision of community benefit funding of £5,000 per MW of installed capacity per year (a total of up to £630,000 per year, based on an installed capacity of 126 MW). This would enable the local communities surrounding the Proposed Development, such as Coalburn, Lesmahagow, Douglas, Glespin, Rigside, and Douglas Water to invest in the local area, and meet the objectives set out in their community action plans. This could involve developing the area's adventure tourism offering, resulting in increased visitor numbers and tourism. There could also be additional benefits as a result of an offer from the Applicant to explore the potential for shared ownership in the Proposed Development with the local community.

99. There would also be benefits to the public sector from payment of non-domestic rates estimated to be worth £1.3 million each year.

100. A review of the latest research evidence suggests that there is no evidence of wind farm developments adversely affecting the tourism economy of Scotland. A specific assessment of the potential effect of the Proposed Development on local tourism assets, accommodation providers and tourism routes was undertaken and found that no adverse effects were expected. The assessment notes that there may be positive effects on the tourism economy if community benefit funding or revenue from any shared ownership in the Proposed Development is invested in developing the local area's adventure tourism offering.

101. Overall, there were no significant adverse effects identified.

Aviation, Radar and Telecommunications

102. The full assessment of the effects on aviation, radar and telecommunication infrastructure is provided in Volume 1, Chapter 14 of the Proposed Development EIAR.

103. An initial scoping study relating to aviation, radar and telecommunications identified those stakeholders potentially affected by the Proposed Development. The scoping process considered all military and civil aerodromes in the wider area out to circa 60 km, all radar installations out to the limit of their range, all navigational aids, air-ground-air communications stations and low flying activities, as well as operators of telecommunications links. The scoping process identified potential impacts to primary radars operated by NATS, Glasgow Airport and Glasgow Prestwick Airport. Additional analysis determined no impacts to the Glasgow Prestwick Airport radar.

104. Consultations were conducted with NATS, Glasgow Airport, Glasgow Prestwick Airport, Atkins, the Joint Radio Company and Arqiva; additionally, the Ofcom online database of fixed links was interrogated to identify any links near the Proposed Development site.

105. Potential impacts to the NATS and Glasgow Airport primary radars that were identified can be mitigated through the blanking of the affected radars and the provision of in-fill coverage from unaffected radar; commonly referred to as blanking and in-fill. Two potential in-fill radars exist that are capable of mitigating the impacts. Dialogue continues with the stakeholders to determine the most appropriate in-fill radar. Mitigation Agreements with these organisations will be put in place, to allow their conditional approval of the Proposed Development.

106. It is anticipated that there will be no significant residual effects on aviation or telecommunication infrastructure as a result of the construction, operation and decommissioning of the Proposed Development.

Shadow Flicker

107. The full assessment on the effects of shadow flicker is provided in Volume 1, Chapter 15 of the Proposed Development EIAR.

108. This assessment considers whether the effect known as 'shadow flicker' is likely to be caused by the Proposed Development and assesses the potential for impact on sensitive receptors. Shadow flicker is the effect of the sun passing behind the moving rotors of the turbines, casting a flickering shadow through the windows and doors of neighbouring properties. This occurs in certain combinations of geographical position, time of day, time of year and specific weather conditions.

109. Within the study area for shadow flicker there are ten identified receptors with potential to experience flicker effects.

110. Calculations have shown that the realistic scenario modelling of shadow flicker at eight of these receptors is found to be within the accepted guidelines and therefore not significant. The theoretical duration of shadow flicker exceeded thresholds at two receptor locations. These receptors are both financially involved with the Proposed Development and there are existing blocks of forestry between the receptors and the turbines which have not been accounted for in the assessment, which will reduce the shadow flicker experienced in reality. It is also important to stress the theoretical and conservative nature of the model, which does not consider local screening from vegetation, blinds or curtains at the properties or true window orientation relative to the turbines, which in reality will reduce further the potential time receptors are likely to experience shadow flicker over the course of the year. For these reasons it is unlikely the number of hours predicted in the 'realistic' scenario would actually occur or be experienced by inhabitants at the sensitive receptors.

111. Notwithstanding these points and the financial involvement of the properties, the Applicant is committed to providing a Shadow Flicker Mitigation Protocol to be engaged should any founded concerns in relation to shadow flicker effects from the turbines be raised by neighbouring properties during the operational period.

112. A cumulative assessment indicated that for the one receptor identified, the maximum occurrence of shadow flicker is anticipated to be within the accepted guidelines and does therefore not experience significant effects.

113. Therefore, shadow flicker is expected to be not significant for all receptors during the operational phase of the Proposed Development.

Forestry

114. The full assessment of the effects on forestry is provided in Volume 1, Chapter 16 of the Proposed Development EIA Report.

115. The Proposed Development is situated within an extensive area of commercial forestry known as the Cumberhead Forestry Complex, which was originally planted between 1974 and 1989. Felling and replanting has been taking place under a Forestry Commission Scotland/Scottish Forestry (FCS/SF) approved Forest Plan since 2006, steadily restructuring the age and species profile of the forest.

116. The Proposed Development will have an infrastructure and associated tree free area footprint of 98.64 ha, requiring 59.38 ha of woodland to be felled. Of this 98.64 ha area, 61.96 ha was due to be replanted predominantly with Sitka spruce under the baseline forest plan. As the Proposed Development precludes this replanting, 61.96 ha (3.0 % of the total forest area) will be subject to compensatory planting, to be delivered through a Compensatory Planting Plan on third-party land via option agreement with the landowner. A number of search areas for borrow pits have been identified within forestry areas and these areas have been included within the compensatory planting calculation.

117. The Proposed Development results in a relatively minor change from the Baseline Felling Plan: a 1.8 % change in felling over the entire forest property and a slight decrease in timber production of 1.5 % over the 20-year Forest Plan period.

118. Timber harvesting to facilitate construction will occur ahead of the main construction phase, with all timber extracted via the existing forest road access to Station Road at Douglas West. As the Proposed Development has been designed to fit closely with the Baseline Forest Plan, there is little generation of

forestry residues, however a Forest Residue Management Plan has been produced detailing how the small volumes generated will be utilised.

119. Overall, the Proposed Development is considered to have a good fit with the Baseline Forest Plan and a correspondingly modest effect on the social, economic and environmental benefits delivered by the Cumberhead Forest Complex, with the Wind Farm Forest Plan having an overall minor beneficial effect.

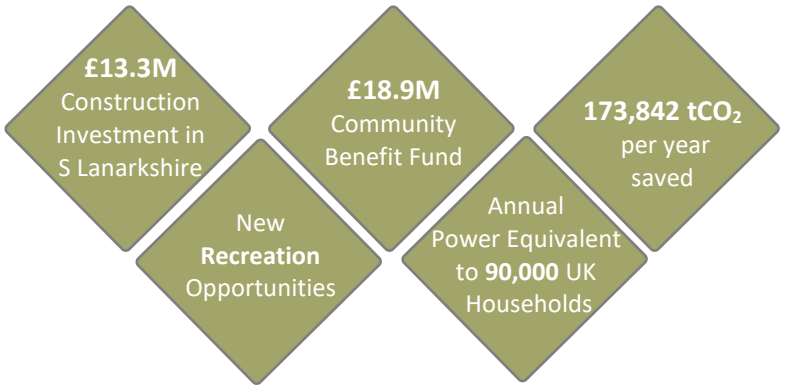
Benefits of the Proposed Development

120. The principle of wind development in this general location has already been established by the existing and consented wind developments immediately surrounding the site. The addition of the Proposed Development will deliver the following key benefits.

- The Proposed Development would contribute to the attainment of the UK and Scottish Government policies of encouraging renewable energy developments; and in turn contribute to the achievement of UK and Scottish Government targets for renewable electricity generation. The Proposed Development, with an installed capacity of approximately 126 MW, would make a valuable contribution to meeting such targets.
- The Government has confirmed its long-term commitment to the decarbonisation of electricity generation and the Proposed Development would help advance this policy objective.
- The Proposed Development would have a total capacity of 126 MW, generated by twenty one ~6MW turbines which together would produce around 325 GWh/year of clean power which would generate enough electricity to supply approximately 90,000 average UK households.
- The Proposed Development is expected to save approximately 173,842 tonnes of carbon dioxide per year, resulting in a total saving of 5.2 million tonnes over the 30-year lifetime of the development, through displacing carbon-emitting generation.
- Energy generated from renewable sources makes a significant contribution to Scotland and the UK's energy security. The Proposed Development will increase indigenous production of renewable energy in Scotland while reducing the country's reliance on foreign fossil fuels, generating wealth from our own natural resources and improving the country's energy security. This will occur at a time when the country's demand for electricity is set to soar with the move to electric vehicles; it is important that the additional generation capacity to meet that demand comes from renewable sources.
- Based on an installed capacity of 126 MW, the Proposed Development will deliver up to £630,000 per annum in Community Benefit Funding or up to £18.9 m in total over its 30 year operational life.
- The Applicant proposes that a new mechanism be established to receive Community Benefit Funding to deliver a Community-Led Investment Strategy for the local area. Consultation with the local community is ongoing in this regard.
- The Applicant is also committed to exploring the potential for community investment in the Proposed Development, creating the opportunity for local community groups to acquire a share in the future revenue of the wind farm.
- Total construction and operational spend on the Proposed Development over its 30-year lifetime is estimated at approximately £251 million, with the Applicant committed to a local supplier approach which aims to deliver a significant proportion of construction and operational contracts to local companies.
- The Proposed Development has a number of characteristics which reduce the effects of the scheme such as excellent access to the motorway network (thereby no requirement for traffic to pass

through any communities), utilisation in large part of existing tracks, excellent grid connection proximity which can happen relatively quickly. The grid connection date is in Q4 of 2024 which would allow the contribution to targets from the project to flow from late 2024 onwards.

- The Proposed Development is part of an existing cluster, which means that the significant effects would be limited due to the existing characterising effects. The Proposed Development fits with the pattern of development. The scale of the landscape in this part of South Lanarkshire can accommodate the modern technology – which can successfully co-exist with the underlying forestry use. The evolution and growth of the established cluster can work to the long-term benefit of the regional and national supply chain.
- Investment in Public Access and Outdoor Recreation opportunities via the Community Benefit Contribution could support the development of the local area's adventure tourism offering.
- If approved, the Proposed Development will be capable of rising to the challenge set by the Scottish Government for the onshore wind industry in Scotland to start building wind farms without public subsidy.



Conclusion

121. This Non-Technical Summary of the EIAR provides an overview of the EIA undertaken for the Proposed Development. Within Chapter 18 of the EIAR a schedule of commitments can be found which details the environmental mitigation measures, summarised above, which the Applicant has committed to implement.

122. Volume 1, Chapters 17 to 19 of the EIAR summarise the potential effects, the mitigation to be implemented and the resulting residual effects. It also provides a summary of the cumulative effects of the Proposed Development in combination with other proposed, consented and operational developments in the local area.

123. The final layout has been informed by a robust EIA and lengthy design iteration process, considering potential environmental impacts and their effects, physical constraints, and health and safety considerations. The information used to inform the design iteration process included consultation responses received, baseline data and the impact assessment undertaken.

124. Consideration has been given to a range of design issues as well as various environmental, ecological and technical requirements. Predicted environmental effects arising from the Proposed Development have been mitigated as far as possible, if not eliminated during the iterative design process.

125. The Proposed Development site is considered an appropriate and viable location for a wind energy project due to:

- Remoteness from communities;
- Good average wind speeds and generation capacity, evidenced by the surrounding operational sites;

- Being within an established wind farm landscape, where there is an opportunity to progress a coordinated strategy as part of the 'Hagshaw Cluster';
- Easily accessible direct from the M74 without the requirement to pass through any communities;
- Ability to re-use approximately 27 km of existing access tracks (both to and within the Proposed Development site) with minor upgrading, and only approximately 10 km of new track;
- Ability to extend existing borrow pits used previously for forestry access track construction;
- Close proximity to a viable grid connection point;
- Positive contribution to regional and national renewable energy and carbon reduction targets; and
- Provision of social and economic benefits to the local area.

126. Overall, the Proposed Development is an appropriately designed, and sensibly located wind farm which is in line with policies in the local and strategic development plans and conforms to national policy. The Proposed Development has been designed to maximise energy production from an existing wind farm landscape, within acceptable environmental limits. The Proposed Development will provide a valuable contribution towards the ambitious national targets for electricity generation from renewable sources and contribute towards sustainable economic growth in South Lanarkshire and Scotland as a whole.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