



VALE OF LEVEN WIND FARM LIMITED

# VALE OF LEVEN WIND FARM

NON-TECHNICAL SUMMARY · 663510 – 3 (00) · OCTOBER 2023



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# INTRODUCTION

## BACKGROUND TO THE NON-TECHNICAL SUMMARY

This is the non-technical summary (NTS) of the Environmental Impact Assessment Report (EIAR) for the proposed Vale of Leven Wind Farm (hereafter 'the Proposed Development'). The EIAR is the main document accompanying the application for consent, and the NTS summarises its key findings.

The NTS describes the Proposed Development in non-technical language, identifying the likely effects it may have on people and the receiving environment. It also describes the mitigation measures proposed by Vale of Leven Wind Farm Limited (hereafter 'the Applicant') to avoid or reduce potential adverse effects that have been identified. It will also discuss how environmental issues will be managed during and after construction.

## INTRODUCTION TO THE PROPOSAL

Vale of Leven Wind Farm Limited is a joint venture company created by project partners Coriolis Energy Limited and ESB. Coriolis Energy identifies and works on the development of wind farm proposals and ESB constructs and operates those wind farms. Coriolis Energy Ltd. is a wind farm development company responsible for the development of over 100 megawatts (MW) of operational onshore wind farms in the UK. ESB is Ireland's part state-owned electricity utility company and an independent power generator in the UK. ESB is involved in onshore and offshore wind, electric vehicle infrastructure and renewable heating systems, such as the low-carbon heating and cooling system it installed in the V&A Dundee.

The Applicant has submitted an application for consent for the Vale of Leven Wind Farm located within the Kilpatrick Hills, West Dunbartonshire. The nearest settlement to the Site is Bonhill, which lies just over 2 km to the west of the nearest proposed turbine, and approximately 600m to the northwest of the Site boundary and proposed access track. The larger settlements of Alexandria and Dumbarton are approximately 4 km to the west and south-west of the Site respectively, as shown on Figure 1.

The Proposed Development comprises up to 10 wind turbines up to 250m in height, with an installed capacity of around 70 MW, and it would generate enough electricity to supply the equivalent of 39,664 homes\*. A 20 MW Battery Energy Storage System (BESS) has also been included as part of the Proposed Development. A BESS enables energy to be stored and then released when the national grid needs power most.

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## THE PROJECT TEAM

The Applicant appointed RSK Environment Limited (RSK), an experienced environmental consultancy, as the lead consultant to carry out the EIAR and related assessments that will accompany an application for planning consent to the Scottish Government's Energy Consents Unit (ECU). RSK was supported by:

- **DAVID BELL PLANNING** – provided specialist planning assessment
- **OP-EN** – provided specialist landscape and visual modelling and assessment
- **MACARTHUR GREEN** – provided specialist ecology and ornithology surveys, modelling and assessments
- **SLR** – provided specialist design advice, geology, hydrology, hydrogeology and peat assessments
- **PELL FRISCHMAN** – provided specialist traffic and transport assessment
- **HEADLAND ARCHAEOLOGY** – provided specialist archaeological and cultural heritage assessment
- **RSK ACOUSTICS** – provided specialist noise modelling and assessment
- **BIGGAR** – provided specialist socio-economics assessment
- **AVIATICA** – provided specialist aviation and telecommunications assessments
- **CROSSCUT FORESTRY** – provided specialist forestry assessment
- **RSK ENVIRONMENT** – provided specialist shadow flicker assessment
- **NATURE POSITIVE** – provided specialist climate change assessment.

\* Using the formula described on the RUK website (<https://www.renewableuk.com/page/UKWEDEexplained>) and a site-specific load factor of 39.6%.

# EIA PROCESS

## CONSENTS AND AUTHORISATIONS

The Applicant is seeking to secure approval for the Proposed Development, by an application under Section 36 of the Electricity Act 1989 to Scottish Ministers.

## ENVIRONMENTAL IMPACT ASSESSMENT

The Electricity Works (Environmental Impact Assessment (EIA)) (Scotland) Regulations 2017 applies where consent is being sought for developments under Section 36 of the Electricity Act 1989. In accordance with this, an EIA has been undertaken to identify the likely significant effects that the Proposed Development could potentially have on the receiving environment. The purpose of the EIAR is to ensure that any effects on the environment are fully understood and are taken into account during the design, consenting and authorisation process. The methods and findings of the EIA are outlined within this NTS.

## CONSULTATION

Consultation has been integral to the design and development of the Proposed Development, as well as being key for the identification of existing environmental constraints and sensitivities, and the identification and assessment of the likely environmental effects of the Proposed Development.

Extensive consultation has been undertaken with key stakeholders. Consultation took place through the following ways:

- Informal stakeholder liaison, including meetings and correspondence by letters, emails and by phone
- Scoping, which involved the submission of a formal EIA Scoping request to the ECU, and statutory and non-statutory consultees
- Community engagement, including four in-person public consultation events hosted within the local communities (Gartocharn, Balloch, and Bonhill x 2) and a dedicated project website
- Attendance at community council meetings.

Full details of the community engagement process are included in the Pre-Application Consultation Report (PAC Report) which is included as a supporting document to the application.

## ALTERNATIVES

As part of the design development, consideration has been given to a number of alternatives regarding layout, design and operational aspects. The Proposed Development went through a series of four design iterations to reduce potential environmental impacts. Alternatives explored for the Proposed Development included a variety of potential turbine locations, varying turbine heights, and a number of access route options to and between development infrastructure.

The final design layout can be seen in Figure 2.

## CLIMATE CHANGE, ENERGY AND PLANNING POLICY

The EIA identified and reviewed national policy guidance and local development plans, relevant to the location and design of the Proposed Development, to establish overall compliance with policy objectives.

The Proposed Development will have an installed capacity of over 50 MW. In Scotland, onshore renewable energy developments that have capacity to generate over 50 MW require consent from the Scottish Ministers under Section 36 of the Electricity Act 1989 (the Electricity Act). In such cases, the

Planning Authority is a statutory consultee in the development management process and procedures.

Notwithstanding the role of the Development Plan in the decision making process, a separate Planning & Sustainable Place Statement assesses the conformity of the Proposed Development with the Development Plan and other material considerations.

National policy identifies a requirement to encourage the use of renewable technologies to tackle the issue of climate change, strengthen the economy and improve energy security. In May 2019, the Scottish Government declared a climate emergency and passed the Climate Change (Emissions Reduction Targets) (Scotland) Act, which legally requires a 100% reduction in CO<sub>2</sub> emissions by 2045.

The Proposed Development would contribute to national and local emission targets by replacing fossil fuel energy with renewable energy and thereby reducing greenhouse gas emissions.

## EXISTING ENVIRONMENT

The land use within the Site is dominated by upland moorland predominately used for grazing sheep. Dumbarton Muir Site of Special Scientific Interest (SSSI) is located to the east of the Site. Auchencroch Glen SSSI lies to the south-west. Within the site there are several watercourses, some of which flow through steep gullies, particularly in the south-west portion of the site.

The surrounding land use in the immediate vicinity is predominantly agricultural, with some areas of forestry to the west and east. Auchencarroch Landfill Site is located to the west of the Site.

The Loch Lomond and Trossachs National Park (LLTNP) and the Loch Lomond National Scenic Area (NSA) lie a minimum of 1.7 km and approximately 3.5 km respectively to the north of the northern Site boundary.

## THE PROPOSED DEVELOPMENT

The main components of the Proposed Development would comprise the following:

- 10 wind turbines of approximately 7 megawatts (MW) each, with a maximum blade tip height of up to 250m
- Hardstanding areas at the base of each turbine, with a permanent area of approximately 7,800m<sup>2</sup>
- Site entrance and wind farm access track up to 9.2 km in length from the south-west, via a new road through Murroch Farm, accessed from a new junction on the A813 Stirling Road, roughly opposite the Aggreko Lomondgate facility in Dumbarton
- Sub-station/control building with parking and welfare facilities
- A network of onsite access tracks and up to 4 associated watercourse crossings
- Transformers and underground cables to connect the turbines to the onsite substation
- Telecommunications equipment
- 3 temporary construction compounds and laydown area
- 3 borrow pit search areas, to provide suitable rock for access tracks, turbine bases and hardstandings
- Battery Energy Storage System (BESS) with a capacity up to 20 MW.



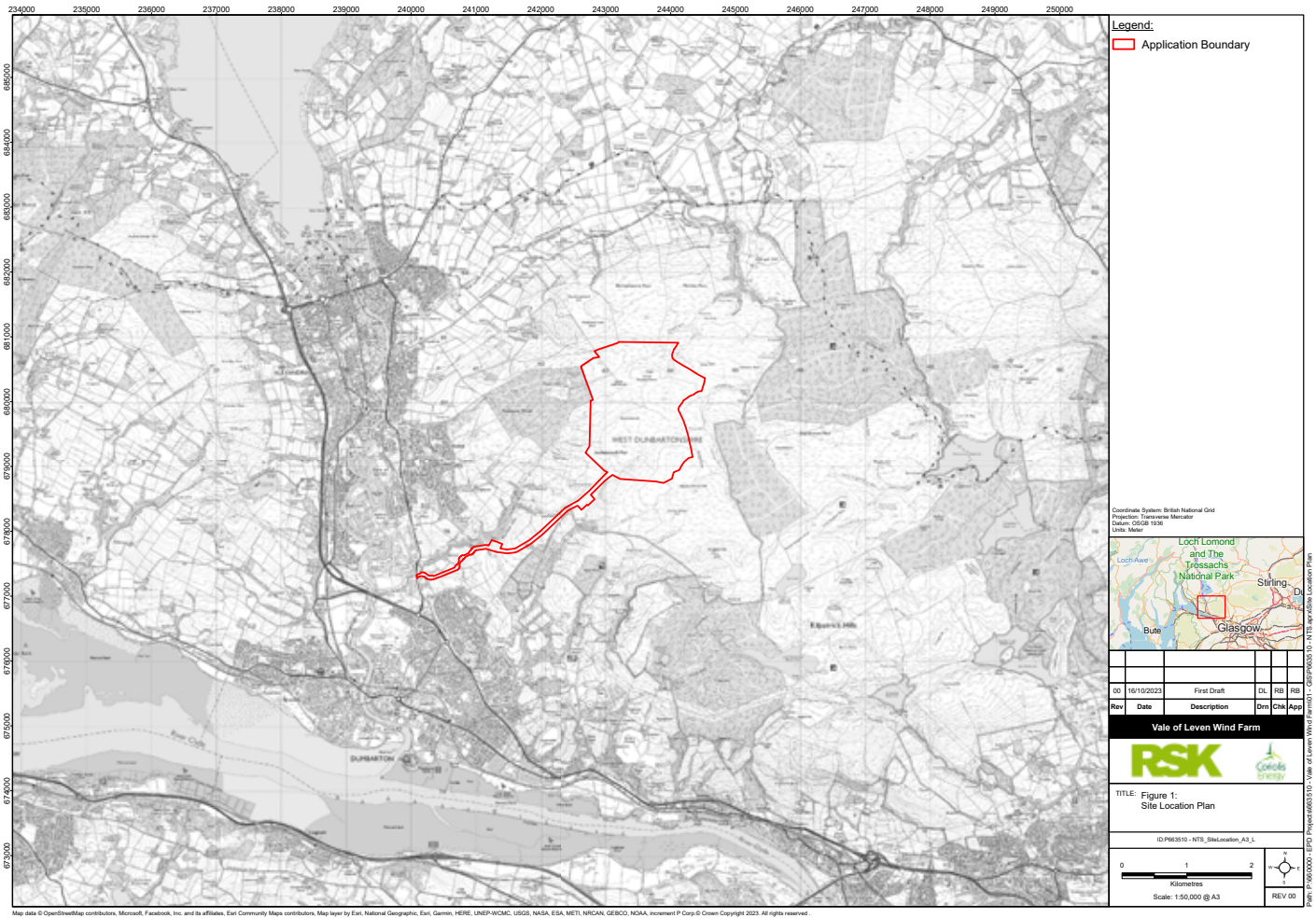


FIGURE 1. SITE LOCATION PLAN

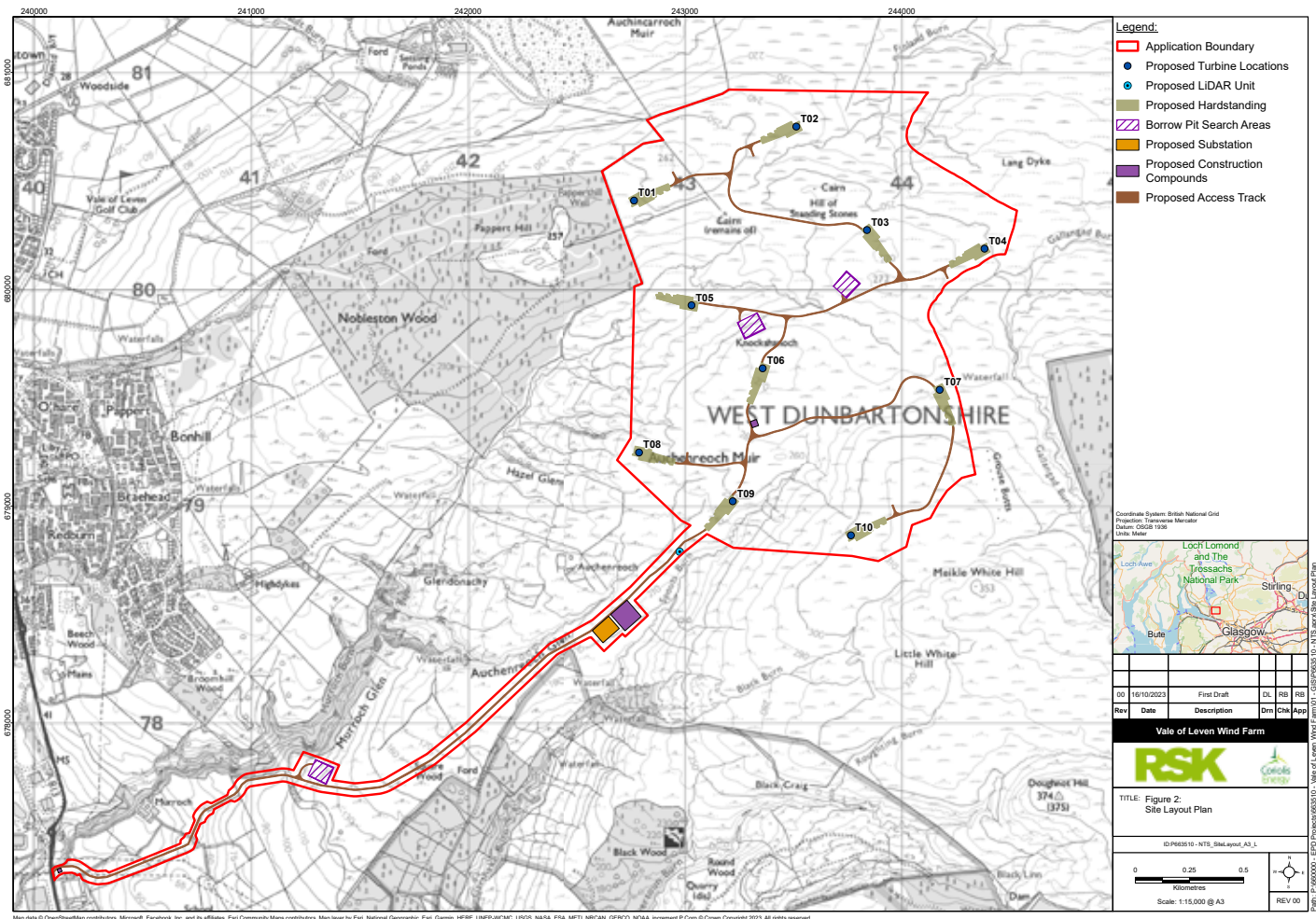


FIGURE 2. SITE LAYOUT PLAN



The infrastructure layout of the Proposed Development is illustrated on Figure 2.

The Proposed Development seeks permission to operate for 40 years, after which it would be decommissioned and the turbines dismantled and removed, unless permission is sought to extend the operational lifespan. A decommissioning and restoration plan will be prepared and agreed with West Dumbartonshire Council prior to decommissioning.

Movement of construction vehicles and heavy goods vehicles (HGVs) will be required; moving to, from and around the Proposed Development site to deliver the turbine components, works machinery and materials. Following the construction phase, the temporary construction compounds will be reinstated.

The entrance to the Proposed Development site for vehicles delivering both construction materials and turbine components, such as tower sections and blades, would be from a new road, via Murroch Farm, to the south-west of the Site. The road would be accessed from a new junction on the A813 Stirling Road, roughly opposite the Aggreko Building.

Tracks used by construction vehicles would be retained throughout the lifetime of the Proposed Development for use by maintenance vehicles. The running width of the tracks would be a minimum of 5.5m with some localised widening and a requirement for passing places and laydown areas. The track surface would have a cross fall for the runoff to drain into ditches on the downhill side of the track where necessary. Lateral and cross drains would also be installed, with erosion protection, where required.

## TYPES OF IMPACT CONSIDERED

Direct impacts may occur when some aspect of a development physically impinges upon a valued resource; for instance the proposed construction of a house may result in loss of ecological habitat, or an archaeological site.

Indirect impacts could occur in either time, or location, from the source; for instance construction works on a slope could result in heavy rainfall washing exposed soil into a nearby watercourse, which could damage aquatic life.

Cumulative impacts are defined as:

- impacts that result from changes caused by a proposed development, together with other past, present or future developments
- impact interactions that may arise from a combination of separate impacts on one or a small number of receptors, due to the same proposed development.

Information on possible future developments was gathered through the research of relevant planning documentation. The possibility of cumulative impacts arising has been considered in each of the technical chapters of the EIA Report.





## APPROACH TO THE EIA

An EIA (Environmental Impact Assessment) is a systematic process to identify, predict and evaluate the environmental effects of proposed developments.

The requirements of the EIA were informed by a Scoping process, which considered the potential for environmental effects to occur as a result of the Proposed Development, given the nature of the receiving environment.

The scoping exercise involved a review of available documentation, consultation with statutory and non-statutory organisations, and desk-based and site-based surveys.

The Scoping process concluded that the aspects listed below would require further assessment, in form of an EIA, due to their potential to cause environmental effects.

- LANDSCAPE AND VISUAL IMPACTS
- ARCHAEOLOGY AND CULTURAL HERITAGE
- ECOLOGY
- ORNITHOLOGY
- GEOLOGY, HYDROLOGY, HYDROGEOLOGY AND PEAT
- NOISE AND VIBRATION
- TRAFFIC AND TRANSPORTATION
- AVIATION AND RADAR
- SOCIO-ECONOMICS
- TELECOMMUNICATIONS
- SHADOW FLICKER
- CLIMATE CHANGE
- FORESTRY

The main stages of the EIA that were followed are illustrated opposite. It should be noted that for the Proposed Development different technical assessments adopt this same broad approach, but vary in the detail of how they are applied, such as study areas, established guidance or assessment criteria.

Any significant residual effects that the EIA identifies as arising from the Proposed Development are key to understanding the outcome of the EIA process, because these are given the greatest weight by decision makers and stakeholders when considering an application for consent.

## THE MAIN STAGES OF THE VALE OF LEVEN WIND FARM EIA



### DATA GATHERING

#### Project data gathering

Data to describe the construction and operation of the development, including identification of the project activities, materials to be used, discharges and emissions that are likely to occur.

#### Environmental data gathering

Collection of available information on the existing environment within a suitable area of search.



### SCOPING AND SURVEY

#### Identification of environmental sensitivities

Identification of receptors and their environmental sensitivity that could be affected by the proposed development. Consultation with regulatory authorities to discuss aspects associated with the proposed project activities.

#### Site survey work

Surveys of the existing environmental conditions to fill gaps in data, to ensure sufficient and adequate data are available and form a suitable baseline for the determination of impacts.



The purpose of the Landscape and Visual Impact Assessment (LVIA) is to identify and record the potential effects the Proposed Development would have on the landscape features and elements. It also examines 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 on the turbine hubs.

The Study Area covers a radius of 45 km from the outer turbines in the Proposed Development. The assessment focuses on 33 viewpoints within this Study Area that represent visibility of the Proposed Development have been identified and each of these is illustrated with visualisations that show the likely appearance of the Proposed Development. These viewpoints represent views from various sensitive locations, including settlements, road/railway/walking/cycling routes, tourist attractions and areas that have been designated for their scenic qualities (including the Loch Lomond NSA and LLTNP).

The assessment has shown that the effect on the landscape and visual resource of the great majority of this Study Area would be not significant, which means that the Proposed Development would not be one of the defining influences on the landscape and visual resource and the existing characteristics of the landscape and views would continue to prevail. Importantly, the assessment indicates that the Proposed Development would not affect the integrity of the Loch Lomond NSA or LLTNP and would not significantly affect local scenic designations with the exception of the Kilpatrick Hills Local Landscape Area (LLA).

While the effect on the majority of the Study Area would be not significant, as described above, the LVIA has indicated that there is potential for the Proposed Development to result in some significant effects on the 20 km study area that has been defined for the detailed assessment. The LVIA has identified that there is potential for significant effects to arise as follows:

- intermittent or very intermittent significant effects on the landscape character of the site and some parts of its surroundings up to a maximum of approximately 9 km away from the nearest turbine
- significant effects on two of the Special Landscape Qualities (SLQs) of LLTNP and Loch Lomond NSA
- significant effects on SLQs of the Kilpatrick Hills LLA
- intermittent or very intermittent significant effects on views from some settlements, where there is a clear, open view with high visibility of the Proposed Development, including Balfron, Balmaha, Bishopton, Bridge of Weir, Brookfield, Croftamie, Drymen, Dumbarton, Gartocharn, north-western Greater Glasgow, Greenock/Port Glasgow, Houston, Killearn, Langbank, and Vale of Leven
- intermittent or very intermittent significant effects on views from road routes and railway lines up to a maximum of approximately 15 km away, (and generally a maximum of approximately 13 km away) where there is a clear, open view with high visibility of the Proposed Development, including

the A82, Clyde Sea Lochs Trail, West Highland Line Railway (with significant effects arising only within Dumbarton and Cardross)

- intermittent or very intermittent significant effects on views from core paths, long distance recreation routes and cycle routes and up to a maximum of approximately 15 km away, where there is a clear, open view with high visibility of the Proposed Development, including the John Muir Way, Rob Roy Way, Scottish National Trail, Three Lochs Way, West Highland Way, National Cycle Route (NCR) 7 and NCR 75, and core paths at the Whangie, Duncryne Hill, Inchcailloch Island, Endrick Viewpoint, and Dumgoyne Hill
- intermittent or very intermittent significant effects on views from waterborne routes (e.g. on Loch Lomond) up to a maximum of approximately 15 km away, where there is a clear, open view with high visibility of the Proposed Development
- views from hilltops/visitor destinations at Doughnot Hill, Dumbarton Rock, Cameron House seaplane jetty and Finlaystone Estate.

As well as assessing the effect of the Proposed Development itself, the LVIA considers the cumulative effect that may arise when Proposed Development is added to various scenarios of operational, under-construction, consented and application-stage wind farms. The assessment concludes that there would be no significant cumulative effects arising either from the combined effects of all wind farms, including the Proposed Development, or from the addition of the Proposed Development to other wind farms, and as a result, it would not lead to a perception that views or landscape character are defined by the presence or influence of more than one wind farm.

It is a requirement for aviation safety purposes that the hub of each turbine would be fitted with a light that is visible during the hours of darkness. In clear visibility conditions, these lights operate at an intensity of 200 candela (cd) while in poor conditions, where visibility is less than 5 km, the intensity would increase to 2,000 cd. The night-time assessment therefore considers two different scenarios: firstly, with 200 cd lighting and secondly with 2,000 cd lighting. Both of these scenarios are illustrated in visualisations for five of the LVIA viewpoints.

The night-time assessment has indicated, very broadly, that the effects of visible aviation lighting on views that gain a clear and open outlook towards the Proposed Development are likely to be significant up to a maximum around 5.9 km away in the 200 cd scenario and up to around 10.7 km away in the 2,000 cd scenario. It is possible that these effects may be mitigated through the use of a light fitting that reduces lighting intensity through the vertical elevation angle, and if this mitigation is achieved, many of these significant night-time effects would become not significant. Moreover, the conclusions of the assessment of night-time effects do present a worst-case scenario as a number of visual receptors that are at closer proximity to the Proposed Development are within urban areas and are therefore subject to extensive baseline lighting that would reduce the effect of the aviation lighting on the turbines.

Overall, the Proposed Development would result in some significant effects, including night-time effects, on aspects of the landscape and visual resource. It is important to note, however, that assessments of this type tend to focus on those locations and receptors where significant effects may arise, and there are large parts of the 45 km Study Area where the Zone of Theoretical Visibility (ZTV) diagrams show that there would be no visibility of the wind farm at all or very limited visibility.





## ECOLOGY

The scope of the ecological assessment and baseline conditions were determined through a combination of desk study, targeted surveys and consultation with relevant nature conservation organisations. The assessment was based on best-practice guidance including the Chartered Institute for Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland

The proposed Site comprises primarily open upland habitats, with blanket bog and marshy grassland predominant and accounting for over 73% of the Application Boundary area. The remaining area is made up of smaller proportions of many other habitat types such as wet dwarf shrub heath, wet modified bog, acid grassland, flushes and bracken, amongst others.

The following Important Ecological Features (IEFs) were taken forward to the assessment stage: ancient woodland, blanket bog and wet modified bog, and bat activity.

The assessment concluded that the most tangible effect during construction of the Proposed Development on ancient woodland and bog would be direct habitat loss due to the construction of infrastructure, in addition to some potential indirect drainage effects for blanket bog/wet modified bog. In regards to bat activity, it was concluded that effects of collision risk would be not significant.

No significant decommissioning or cumulative effects were identified.

The Proposed Development has been designed to minimise impacts on important habitats, peatland and protected species. This process, combined with further commitments to certain mitigation measures pre-construction, during construction, and during operation allowed potential effects on several habitats and species present to be scoped-out of the assessment.

Enhancement, restoration and creation of habitats through the delivery of a Biodiversity Environmental Management Plan (BEMP) would reduce effects on ancient woodland and other habitats even further. The Outline Biodiversity Enhancement Management Plan (OBEMP) includes provisions for the protection, maintenance, restoration and/or enhancement of bog habitats locally, and also for the respective qualifying habitats within Auchenreoch Glen Site of Special Scientific Interest (SSSI). Furthermore, it would deliver native broadleaved and mixed scrub enhancement, creation and expansion to enhance the existing broadleaved woodland and the assisted regeneration of ancient woodland areas locally, with the aim also to increase woodland connectivity and join up fragmented stands locally. The OBEMP also aims to deliver native hedgerow creation.

The Proposed Development provides an opportunity for the creation and enhancement of habitats; post construction, the net gain for biodiversity is 13.3% over and above the baseline and pre-development value with beneficial effects likely in the longer term.



## ORNITHOLOGY

In order to determine baseline conditions to inform the ornithology impact assessment, field surveys were undertaken following NatureScot guidance between March 2019 to August 2022. Data collected between September 2008 to August 2009 for the Merkins Windfarm Environmental Statement was also considered as part of the baseline for the Proposed Development.

Three Important Ornithological Features (IOFs) were taken forward for assessment, due to potential for significant effects from the Proposed Development: osprey, goshawk and black grouse. The Endrick Mouth and Islands SSSI was scoped in due to potential connectivity with the Proposed Development, and the integrity of Loch Lomond Special Protection Area (SPA) and Loch Lomond Ramsar site were also assessed, but no significant effects were concluded for any of them.

The design process for the Proposed Development identified at an early stage the potential for IOFs to be disturbed during construction, and so efforts were made to avoid locating infrastructure close to important habitats. The following embedded mitigation is integral to the final layout:

- Locating infrastructure at least 500m from any known nest site of a Schedule 1 breeding species
- Locating wind turbines at least 500m from any known black grouse lekking location.

Pre-construction surveys and restriction measures are proposed within a Breeding Bird Protection Plan (BBPP) which would avoid disturbance to any lekking or breeding birds, should pre-construction surveys record them within 750m of planned construction activities, including the construction compound.

Operational effects (displacement and collision risk) were considered for each IOF. Again, the design process took these into consideration, thereby minimising risks. The OBEMP includes a Habitat Management Plan offering improvements to habitats for lekking and foraging black grouse, which makes the residual effects no more than Minor adverse and Not Significant for all IOFs.

Decommissioning effects were considered to be similar to those predicted for construction effects and were no more than Moderate/Minor adverse and Not Significant when mitigation is considered.

The assessment predicted no significant effects due to the Proposed Development alone.



STOCK IMAGE



## GEOLOGY, HYDROLOGY HYDROGEOLOGY AND PEAT

A comprehensive desk-based assessment was undertaken to characterise the site geology, hydrology and hydrogeology, and the findings were then verified by a programme of site inspection and investigation. The desk study, field investigation and feedback from consultees (including WDC, Scottish Water, NatureScot and SEPA) were used to identify potential receptors, which were then taken forward and assessed in the EIA.

Further consultation was undertaken with regard to the potential presence of Groundwater Dependent Terrestrial Ecosystems, peat depths and watercourse buffers. Further consultation was also undertaken with Scottish Water to ensure potential impacts on their interests were appropriately assessed.

There are no designated sites within the site boundary. The Auchenreoch Glen SSSI lies west of the site boundary and is designated for its lowland calcareous grassland, springs and flushes. Dumbarton Moss SSSI lies east of the site boundary and is designated for its blanket and raised bog habitats.

The site lies within the surface water catchments of the Gallangad (Catter) Burn to the east, the River Leven to the west and the Gruddies Burn to the south

There are areas of peat within the site. A comprehensive programme of peat depth probing has been completed to delineate these and the site design has avoided these where possible. Characterisation of the peat has also been undertaken by a programme of augering in consultation with the project ecologists, to complete a peatland condition assessment. A site specific Peat Landside Hazard Risk Assessment (PLHRA) and Peat Management Plan (PMP) has been prepared to assess and show how peat landslide risk is mitigated and how peat and carbon rich resources on Site can be safeguarded.

The presence of Private Water Supplies has been confirmed and it has been shown that there are none at risk from the Proposed Development.

A commitment to deploy sustainable drainage system (SuDS) measures is made to control both the rate and quality of runoff shed from the Proposed Development, which will ensure existing water flow paths are maintained, there is no increase in flood risk, and existing water contributions to water dependent habitat are maintained.

The assessment has shown, subject to the adoption of best-practice construction techniques, there would be no likely significant effects on soils (inc. peat), geology, or water (hydrology or hydrogeology) including Scottish Water infrastructure, and the qualifying interests of Auchenreoch Glen SSSI and Dumbarton Moss SSSI during construction and operation of the Proposed Development.

Monitoring of water quality in the principal watercourse that drains from the site during the construction phase of the project has been proposed in order to confirm there are no impacts on water resources. It is also proposed a geotechnical risk register is maintained during the construction phase.



## ARCHAEOLOGY AND CULTURAL HERITAGE

A desk-based assessment was undertaken to identify known heritage assets and the potential for currently unrecorded assets within the Proposed Development site and proposed access route which may be impacted by the Proposed Development. In addition, a 'stage 1' assessment has identified assets in the wider landscape that may be affected. A final list of receptors was agreed with Historic Environment Scotland and taken forward for assessment as part of the EIA.

The assessment considered potential direct physical impacts on heritage assets related to construction of the Proposed Development, indirect impacts that could adversely affect the preservation of heritage assets, and any impacts on the setting of a heritage asset that could affect its cultural significance.

The Proposed Development site and proposed access route are of up to medium archaeological potential for previously unrecorded remains of prehistoric or medieval date, and up to high potential for previously unrecorded remains of the later historic periods.

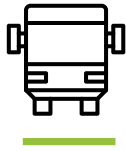
A programme of archaeological mitigation relating to the assets, which would be physically impacted is proposed along with a watching brief over ground-breaking works in areas of archaeological potential. These works will be agreed with West of Scotland Archaeology Service, the archaeological advisors to West Dunbartonshire Council.

Thirteen heritage assets including Scheduled Monuments, Inventory Gardens and Designed Landscapes, and Listed Buildings were subject to detailed setting assessment.

No significant cumulative or residual effects arising from the Proposed Development are identified or predicted.



STOCK IMAGE



## TRAFFIC AND TRANSPORTATION

The EIA considers the likely significant effects on receptors along the transport routes as a result of vehicle movements associated with the construction of the Proposed Development, as this is considered to be the phase which has the greatest potential impact. Except for the turbine components, most traffic would be normal construction plant and would include grading tractors, excavators, high capacity cranes, forklifts and dumper trucks. Most would arrive at the site on low loaders. The operational phase is restricted to maintenance operations and is not considered to be in excess of daily traffic variation levels on the road network.

The methodology adopted in this assessment involved, among other things, assessing the existing network and transport baseline, describing the potential effects, and the mitigation measures proposed to address likely significant effects and, assessing the residual effects remaining following the implementation of mitigation (if required).

The Proposed Development will be accessed via a new simple priority junction on the A813 Stirling Road, located to the south of the access junction to Murroch Farm. The access junction will provide access to the Site for all Abnormal Indivisible Loads (AILs) associated with the turbine deliveries, as well as access for Heavy Goods Vehicles (HGVs) delivering construction materials and general Site traffic.

Construction traffic associated with the delivery of materials to the Proposed Development will approach the Site predominantly from the south, via the A813 Stirling Road.

All AIL traffic access will access the Proposed Development via A813 Stirling Road from the Port of Entry at Clydebank Dock on the north of the River Clyde.

A review of the existing pedestrian and cycle facilities within the Study Area was undertaken. In the immediate vicinity of the

Site, there are footways located along the western side of the A813. A pedestrian refuge island is located on the A813 Stirling Road to facilitate safe crossing to the existing bus layby, which is located at the proposed Site access location. A combination of paths and footways, as well as crossing facilities, are provided within the wider Study Area in the vicinity of built-up areas.

Construction traffic would result in a temporary increase in traffic flows on the road network surrounding the Proposed Development. The peak of construction in terms of vehicular movements will be 116 daily journeys (40 car/light haulage and 76 HGV journeys), estimated to occur in 5 months of the overall 21-month programme.

It should be noted that the impacts relate solely to the peak of construction activities and that the construction period is short lived and the effects transitory in nature.

During the construction period, a project website, blog or X feed would be regularly updated to provide the latest information relating to traffic movements associated with vehicles accessing the site. This would be agreed with West Dunbartonshire Council.

The following measures will be implemented to mitigate any adverse effects of construction traffic during the construction phase:

- Construction Traffic Management Plan
- Abnormal Load Transport Management Plan
- On-site Path Management Plan
- a Staff Travel Plan.

With the implementation of appropriate mitigation during construction, no significant residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be slight or insignificant and as they would occur during the construction phase only, they are temporary and reversible.

To mitigate any adverse issues that could affect the public road network throughout the operational life of the site, the site entrance would be well maintained and monitored, with regular maintenance being undertaken to keep the track drainage systems fully operational and the road surface in good condition.



STOCK IMAGE





## NOISE

Noise will be emitted during the construction, operation, and decommissioning of the Proposed Development, which predominately comes from the construction activities, traffic, turbines and site equipment.

The level of noise is mainly determined by the source level and distance to receptors. Due to the distance between the Proposed Development and receptors, there are no significant vibration effects.

Construction noise is temporary and variable. A desk-based study of proposed construction traffic has been completed and compared with guideline values. No significant effects are predicted, and good-practice measures would be implemented through the CEMP.

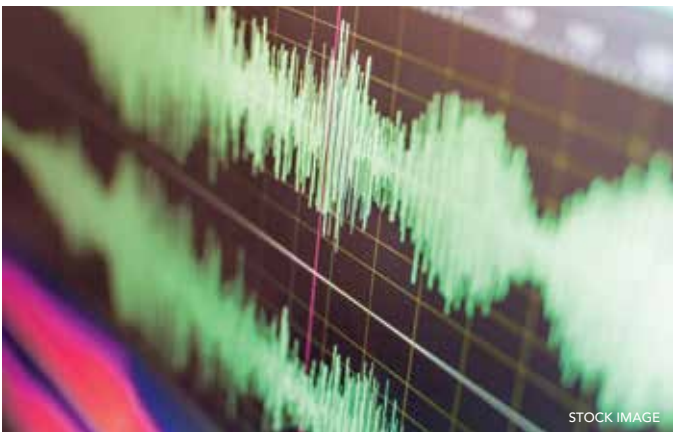
Turbines emit noise from the rotating blades when they pass through the air, sometimes described as having a regular 'swish' sound, which is dependent on the wind speed. When there is little wind, the turbine rotors will turn slowly and produce lower noise levels than when there is more wind, where the turbine rotors will turn more quickly and reach its maximum output and rotational speed.

Background noise levels, which are also influenced and increase by wind speed, are compared against the noise from the turbines. Sources of background noise can consist of wind passing through trees and around buildings, which makes the noise from the turbines less perceptible.

Noise level monitoring to collect background noise levels was completed at two properties, one to the west and one to the north of the Proposed Development.

The operational assessment found no exceedances to the ETSU-R-97 limit (UK governments preferred method of assessing wind farm noise for planning purposes) at any of the noise sensitive receptors. Therefore, the operation of the Proposed Development would cause no significant effect and no mitigation would be required.

Decommissioning is likely to result in less noise than during construction of the Proposed Development. The construction phase has been considered to have no significant effects, therefore decommissioning will also have no significant effects.



## SOCIO-ECONOMICS

An assessment of the potential socio-economic effects of the Proposed Development and the likely significance of these on employment generation and other indirect effects was undertaken.

The assessment indicates that the Proposed Development will generate economic benefits, both during its construction, and during the operation and maintenance phase.

During construction the economic benefits that are expected are:

- £4.2 million Gross Value Added (GVA) and 54 years of employment in West Dunbartonshire
- £20.7 million GVA and 322 years of employment in Scotland.

The expenditure for the operation and maintenance of the Proposed Development could deliver up to:

- £0.4 million GVA and 2 jobs in West Dunbartonshire
- £1.6 million GVA and 17 jobs in Scotland.

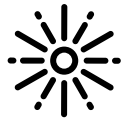
The Applicant is committed to maximising the economic benefits of the Proposed Development. Activity to support this to date has included joining Dunbartonshire Chamber of Commerce and working with the Chamber to identify local businesses who could be suppliers. The Applicant will also work with the Chamber to organise Meet the Buyer Events, to ensure that local businesses are aware of the opportunities and how to capitalise on them.

The Proposed Development will also support local government's revenue through the annual payment of £0.8 million in non-domestic rates.

The Applicant is committed to supporting the long-term ambitions of local communities through local community benefits, worth an estimated £14.4 million over the 40-year operational lifetime of the Proposed Development. This fund would be expected to support economic activity in local communities, the scale and nature of which will depend on what the community decides to use the funding for.

The Applicant is also committed to offering shared ownership of the Proposed Development, allowing the community the opportunity to invest in and have a share of the wind farm.

Overall, based on the range of community and economic benefits expected, it can be concluded that the Proposed Development maximises net economic impact through construction, workers and operational staff, as well as through the community funding package, and it would support local businesses and communities achieving a wider cumulative benefit to the economy besides the development of renewables and green jobs.



## AVIATION

Wind turbines have the potential to affect the performance of radars used for air traffic control, air defence and meteorological forecasting. They can also present an obstacle hazard to aircraft flying at low altitude and may affect the specified minimum altitudes for aircraft flying instrument approach procedures at airports.

The Proposed Development lies 13 km from Glasgow Airport. The turbines will infringe on the airport's Outer Horizontal Surface, as does the existing terrain and other obstacles in the area to the north of the airport. The Proposed Development would not prevent the safe visual manoeuvring of aircraft in the vicinity of Glasgow Airport but would require mitigation in the form of reporting of obstacles and lighting.

The Proposed Development may affect one or more of Glasgow Airport's Instrument Flight Procedures (IFPs). If effects on IFPs are confirmed, mitigation will be applied in the shape of revised IFP charts. The potential for the Proposed Development to impact on radar assets used by National Air Traffic Services (NATS), En Route plc (NERL) or Glasgow Airport has also been assessed, and the applicant is in dialogue with the relevant stakeholders about appropriate mitigation measures.

There will be no effects on Glasgow Prestwick Airport, nor military low flying.

The Met Office has also confirmed that the Proposed Development will not affect the operation of Meteorological Office Holehead rainfall radar.



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## TELECOMMUNICATIONS AND ELECTROMAGNETIC INTERFERENCE (EMI)

Radio waves and microwaves are used in a variety of communications. Structures such as wind turbines have potential to interfere with their reception. As part of the EIA process, consultation was undertaken with bodies that are responsible for managing and maintaining telecommunications networks. No impacts on any telecommunications assets were identified.



## SHADOW FLICKER

Shadow flicker can occur under certain combinations of geographical position and time of day when the sun passes behind the rotors of a wind turbine, casting a shadow over neighbouring properties. Rotating wind turbine blades can cause brightness levels to vary periodically at locations where they obstruct the sun's rays. As the blades rotate, the shadow flicks on and off, an effect known as shadow flicker.

To undertake a shadow flicker assessment, information on the Proposed Development, the location of potential residential receptors and other parameters are included in a computer model in order to predict and quantify the impact shadow flicker may have on receptors within the vicinity of the Proposed Development. In line with the Scottish Government guidelines on shadow flicker assessments, 10 rotor diameters (1.7 km) from each proposed wind turbine has been established as the shadow flicker Study Area. The assessment identified that no residential dwellings fall within the shadow flicker Study Area and, therefore, no shadow flicker effects are anticipated on any residential receptors within the vicinity of the Proposed Development.



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## CLIMATE CHANGE MITIGATION

Wind farms provide value in terms of the renewable electricity they generate; they also provide an important mechanism for the reduction of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases into the atmosphere. Operational wind farms achieve emissions savings by reducing the consumption of fossil fuel generated mains electricity.

However, during their manufacture, construction and decommissioning, wind farms can result in the emission of greenhouse gases, particularly in such instances as where natural carbon stores, such as forestry and/or peat, are present and potentially impacted by the development.

The Scottish Government has prepared a carbon assessment tool for wind farms to help ensure such cases are avoided, and A Greenhouse Gas (GHG) assessment has been applied to the Proposed Development utilising this tool.

The carbon calculator confirmed that the Proposed Development is predicted to deliver total emissions savings of 1,102,474 tCO<sub>2</sub>e over its 40-year operational lifetime, against grid mix electricity generation.

Emissions associated with the construction, operation, and decommissioning of the Proposed Development are projected to be offset within 1.5 years against a fossil fuel mix of electricity (electricity sourced through the combustion of fossil fuels alone), or 3.3 years against a grid-mix of electricity (electricity where the main sources of energy are identical to those used for the National Grid, i.e., could include fossil fuels, renewable energy, nuclear, etc).

The overall impact is considered to represent a significant and positive beneficial effect.

Due to the proposed construction and grid connection being pre-2030, the Proposed Development makes an important contribution to securing the quick deployment required by Scottish Governments net zero ambitions for 2030. The Proposed Development also assists in meeting the Scottish Government's target of securing an overall ambition of 20 GW of installed onshore wind capacity in Scotland by 2030 as set out in the Onshore Wind Policy Statement (2022).



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## FORESTRY

The Proposed Development site is not located within woodland, but the proposed access route will pass through Barr Wood, part of the Vale of Leven (East) Tree Preservation Order and recorded on the Ancient Woodland Inventory (AWI) as Long-Established Woodland of Plantation Origin 2b (LEPO 2b).

The access track for the proposed development will impact a small area (approximately 0.06ha) of woodland, resulting in the felling of up to 28 mature/semi-mature beech (*Fagus sylvatica*) hedgerow trees and 3 mature Downy Birch (*Betula pubescens*) to facilitate construction of the track. Some of these trees are not old enough to be considered ancient, but are considered "veteran trees", which means they are already partially windblown and/or suffering from extensive decay.

As mitigation, compensatory planting will be secured by a condition of planning consent, and a Compensatory Planting Plan (CPP) will be developed as part of the OBEMP in accordance with the UK Forestry Standard for approval by Scottish Forestry with works being implemented in accordance with good forestry practice.

The Vale of Leven Wind Farm OBEMP proposes several environmental improvement measures including the potential for up to 111ha of new native woodland, enrichment planting and the creation of deadwood habitats, using the trunks of the trees to be felled. This will significantly expand the native woodland resource locally whilst also creating new and enhancing existing forest habitat networks, all within the same land ownership as that of the wind farm.

This considerably exceeds the minimum requirement for compensatory planting and would deliver significant public benefits far outweighing the adverse impacts arising upon trees and woodland from the proposed development.



## POPULATION AND HUMAN HEALTH

The 2017 EIA Regulations state that an assessment of population and human health should be considered during the EIA process. At Scoping stage, it was proposed that this requirement be covered through the findings of other assessments undertaken as part of the EIA process and so no dedicated EIA chapter will be produced. Particular aspects of population and human health are therefore addressed in the Noise, Landscape and Visual, Traffic and Transportation, Aviation and Radar and Other Issues chapters of the EIA Report, as well as in Chapter 2 "Proposed Development". No significant effects are predicted.





## NEXT STEPS

The Scottish Government Energy Consents Unit will consider the findings of the EIA, of which this NTS forms a part, together with other documents submitted as part of the Section 36 application for the Proposed Development. Once the application has been submitted comments can be made to the Energy Consents Unit – see details below.

If Scottish Ministers were to grant consent for the Proposed Development, then it is envisaged that construction of the Proposed Development could begin in 2027, becoming operational around 2029.

## CONTACT DETAILS

Representations, expressions of support or opposition, and opinions on the Proposed Development should be sent to:

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

Email: [representations@gov.scot](mailto:representations@gov.scot)

Website: [www.energyconsents.scot/Register.aspx](http://www.energyconsents.scot/Register.aspx)

## FURTHER INFORMATION

Further information can be found on the Vale of Leven Wind Farm project website at:

<https://valeoflevenwindfarm.com>

