



Acheilidh Wind Farm

Design and Access Statement

Energiekontor UK Ltd

April 2024

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1 INTRODUCTION

Context

- 1.1 This Design and Access Statement has been prepared by Energiekontor UK Ltd ("the Applicant") to accompany an application under Section 36 of The Electricity Act 1989 (Section 36 Application) to Scottish Ministers, along with deemed planning consent under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended) for a wind farm consisting of up to 12 wind turbines and associated infrastructure ("the Proposed Development") located approximately 7.6km south-east of Lairg and 8km west of Pittentrail¹.
- 1.2 This Design and Access Statement explains the design rationale behind the layout, providing an explanation of the design principles and concepts that have informed the Proposed Development (as described in Chapter 3 of the Environmental Impact Assessment Report (EIAR)) and how transport and access issues have been taken into consideration.

The Applicant

- 1.3 Energiekontor UK Ltd (EK) is a renewable energy development company with offices in Glasgow, Edinburgh and Leeds. The company was formed in 1999 and develops small to medium-sized onshore wind farm and solar farms throughout the United Kingdom. The company operates seven existing wind farms in the UK and has a number of other wind and solar projects at various stages of the development process throughout the UK.
- 1.4 EK is part of the Energiekontor Group. The parent company, Energiekontor AG, was established in 1990 in Bremerhaven in Northern Germany. It has since grown to become one of the leading wind energy companies in Europe, having built more than 118 wind farms in Europe.

Methodology

- 1.5 Design and Access Statements are not a statutory requirement for Section 36 applications, however, are seen as positive tools to assist understanding of the Design Evolution.
- 1.6 The process involved in formulating the design of the Proposed Development has been led by a combination of environmental design and engineering requirements. The aim has been to arrive at an appropriate layout in terms of

energy yield whilst seeking to avoid or reduce environmental effects.

- 1.7 The EIA process also provides opportunities for positive design, rather than merely seeking to avoid adverse environmental effects. The Design and Access Statement is seen as having an important role in contributing to the design process through the clear documentation of design evolution. Windfarms are a sustainable form of development, and the potential environmental effects are usually associated with the construction period and the temporary effects during the operational period of wind turbines on landscape and visual amenity. The Proposed Development has therefore been developed with environmental considerations at the forefront of both site selection and site design.

The Application

- 1.8 In addition to this Design and Access Statement, the application is accompanied by the following documents which should be read together:
- EIAR Volume 1: Written Text;
 - EIAR Volume 2: Figures
 - EIAR Volume 3 : NatureScot Visualisations
 - EIAR Volume 4: Technical Appendices
 - EIAR Volume 5: The Highland Council Visualisations
 - Environmental Impact Assessment Report Non-Technical Summary
 - Pre-Application Consultation Report
 - Planning Statement



¹ When measured from the centre of the Site.

2 SITE SELECTION

Introduction

- 2.1 This section of the Design and Access Statement describes the Site and the surrounding area before setting out the approach to site selection.

The Site

- 2.2 Spanning across approximately 2078 hectares, the proposed site is situated within the Caithness and Sutherland area in the Highlands. The site around 7.6km south-east of Lairg, and 8km west of Pittentrail² and lies within the administrative boundary of the Highland Council.
- 2.3 The site is primarily open moorland used for livestock grazing by local crofting associations, and areas of native woodland plantations.
- 2.4 The topography of the site reaches a high point of 336m Above Ordnance Datum (AOD) at An Stoc-bheinn in the north of the site.
- 2.5 Within 5km of the site boundary, the settlements of Pittentrail, Muie, Rogart, Little Rogart are located to the east/north-east of the site, whilst the settlement of Lairg lies to the north-west.
- 2.6 A number of watercourses cross the site. These include Allt Loch na Saobhaidhe which drains the site from north to south. Feith Buidhe, another watercourse, travels from west to east joining Allt Loch na Saobhaidhe. There are a total of five lochans contained within the site: Loch Cracail Mor, Loch Cracail Begg, Loch na Soabhaidhe, Lochan na Faolaig and Am Bru Lochan.
- 2.7 The site sits between two component areas of the Strath Carnaig and Strath Fleet Moors Sites of Scientific Interest (SSI) and Special Protection Area (SPA), designated for Hen Harrier.
- 2.8 The site will be accessed via the road to Torroble which connects to the A836 near the Lairg railway station, approximately 4km south of Lairg village.

Site Selection Criteria

- 2.9 The overall approach to wind farm site selection is to identify areas of land where the siting of a wind farm would result in minimal environmental effects, be free from overriding technical constraint and be viable on an economic basis.

The criteria involved in the selection of Acheilidh Wind Farm were based on:

- A review of the planning context for renewables in Scotland and at the local authority level;
- Geographical Information System (GIS) constraints mapping;
- Analysis of wind speed data;
- Site access and transportation

- 2.10 These are discussed further below.

GIS Constraints Mapping

- 2.11 A Geographical Information System (GIS) "sieve mapping" exercise was carried out as part of the site selection process. This involved identifying and mapping constraints to wind farm development in order to identify potential sites. The various constraints considered as part of the site selection exercise for the Proposed Development included but were not limited to:

- Hydrological, geological, and hydrogeological constraints including effects on groundwater, water resources and local geology;
- Landscape designations including National Parks and Special Landscape Areas;
- Ecological designations including Ramsar sites, Special Protection Areas, Special Areas of Conservation and Sites of Special Scientific Interest;
- Cultural heritage designations – including Gardens and Designated Landscapes, Registered Battlefields, World Heritage Sites, Listed Buildings, Properties in Care, Conservation Areas, and Scheduled Monuments
- Aviation interests including local licensed aerodromes and visibility to radars, both military and civilian.
- The pattern of settlements
- Existing, approved, or proposed wind farms.

Review of Planning Context

- 2.12 Information on the planning context for renewables in the local planning authority of The Highland Council was reviewed as part of the site search exercise, which is set out fully in Chapter 5: Renewable Energy and Planning Policy and the Planning Statement which accompanies the application. Planning policy considerations include:

- National Planning Framework 4 (2023)
- Highland-wide Local Development Plan (HwLDP)(2012)
- Caithness and Sutherland LDP (2018)

- Onshore Wind Energy: Supplementary Guidance (2016) with addendum ((2017)

Wind Speed Data

- 2.13 The predicted wind resource in any given location is an important consideration in identifying potentially suitable wind farm sites. The electricity that can be generated by a wind farm is directly affected by the wind speed. Wind speed increases with height above ground level and the amount of electricity generated increases disproportionately with increases in wind speed. This in turn affects the carbon emission savings and the commercial viability of a site.

- 2.14 The information on unconstrained areas from the GIS sieve mapping exercise was therefore compared with data on wind speed to identify suitable locations for wind farm development. This was done using the then Department of Trade and Industry (DTI) wind speed database NOABL which provides annual mean wind speeds on a kilometre grid square basis.

Access Suitability

- 2.15 An assessment is required to ensure that appropriate access to a potential wind farm site is available for the transportation of wind turbine components. Further information on access can be found in section 5 of this Design and Access Statement.

Selection of Acheilidh Wind Farm

- 2.16 The information from the sieve mapping exercise was combined with relevant planning policy and wind speed data to identify suitable areas within the study area for potential wind turbine development. From the various land areas identified, Acheilidh Wind Farm was selected due to a number of factors, including:

- **Energy capture** – software modelling indicates that the Site offers a strong wind resource with few obstacles or areas of pronounced topography close enough to interrupt wind flow.
- **Environmental designations** – the Strath Carnaig and Strath Fleet Moors SSSI and SPA lies partially within the Site Boundary however through careful siting and design, a sufficient distance from this designation has been maintained.
- **Residential separation distances** – the Site is able to provide separation distances in excess of 1.2km from the nearest non-involved and uninhabited residential

² When measured from the centre point of the Site

property while having potential for a high installed capacity. Through siting and design, the turbines have been situated in excess of 2km from inhabited residential properties.

- **Landscape** – The site is located approximately 8km north of the Dornoch Firth NSA. This was recognised at an early stage of the design process, with efforts being made throughout the design process to minimise visual effects of the proposed development from the NSA.
- **Transport infrastructure** – the Site benefits from suitable access for turbine component delivery.

3 DESIGN INFLUENCES

Introduction

- 3.1 Once a site has been selected, the design of the wind farm is optimised in order to produce a layout which maximises the use of land available for power generation, balancing this against the overall environmental, social, and economic effects of the development. Optimising the layout of a wind farm in this way depends on a range of technical, economic, planning, and environmental criteria.

Design Criteria

- 3.2 Technical requirements and constraints are parameters that can physically constrain wind farm design. For the Proposed Development these have included:

- **Energy capture** – the NOABL database indicates that the Site has a favourable wind resource.
- **Land availability** – as agreed with the landowner, the land available for the wind farm.

- 3.3 In addition to the technical requirements and constraints, a range of environmental considerations have also had an influence on the design of the wind farm. These include:

- **Landscape and visual** – the design of the Proposed Development seeks to match the scale of the turbines and the scale of the overall development with the scale of the landscape. Computer modelling was used as a tool to aid design and 3D model/wireframes were generated for views from key design views around the Site.
- **Ecology** – the layout takes account of the ecological interests of the Site and the surrounding area.
- **Archaeology** – all known on-site archaeological features have been plotted, assessed and avoided as far as possible.
- **Residential properties** – a minimum separation distance from residential properties of 1.2km was included in the design.
- **Deep peat** – turbine positions have been located to avoid areas of deep peat (>0.5m) present on the Site.
- **Hydrology** – all watercourses within the Site have been considered in the design, with appropriate buffers from all infrastructure provided in the design to safeguard the hydrogeology of the area.

- 3.4 In addition to the above considerations, planning guidance and discussions with statutory and non-statutory consultees

and the local community have also had an influence over the evolution of the design. Views from the tenanted crofters have been taken into consideration when developing infrastructure design and turbine placement to ensure the proposed development is in keeping with existing land use and crofting activities.

Planning History

- 3.5 The EIA studies commenced at an early stage in the evolution of the proposed development, with the scoping process commencing in July 2022. These studies defined the environmental sensitivities, and constraints associated with the Proposed Development, the Site, and its surroundings.

- 3.6 The area has a known planning history for wind energy developments. The proposed development would be located around 1.7km east of the consented Lairg II wind farm, 1.4km north-east of the in-application Garvary Wind Farm and 2.3km south-east of the operational Lairg Wind Farm.

Design Guidance

- 3.7 The inherent nature of wind turbines as tall, modern structures means that the form of the wind farm as a whole is important. The appearance of the wind farm as an object or composition in the landscape has been a key factor in generating the layout. In this respect the design evolution has taken account of the following guidance:

- Siting and Designing Wind Farms in the Landscape, SNH (2014);
- Onshore Wind Energy Supplementary Guidance, The Highland Council (2016); and
- Spatial Framework for Onshore Wind Energy, August 2016 - Caithness and Sutherland LDP Area.

Design Consultation

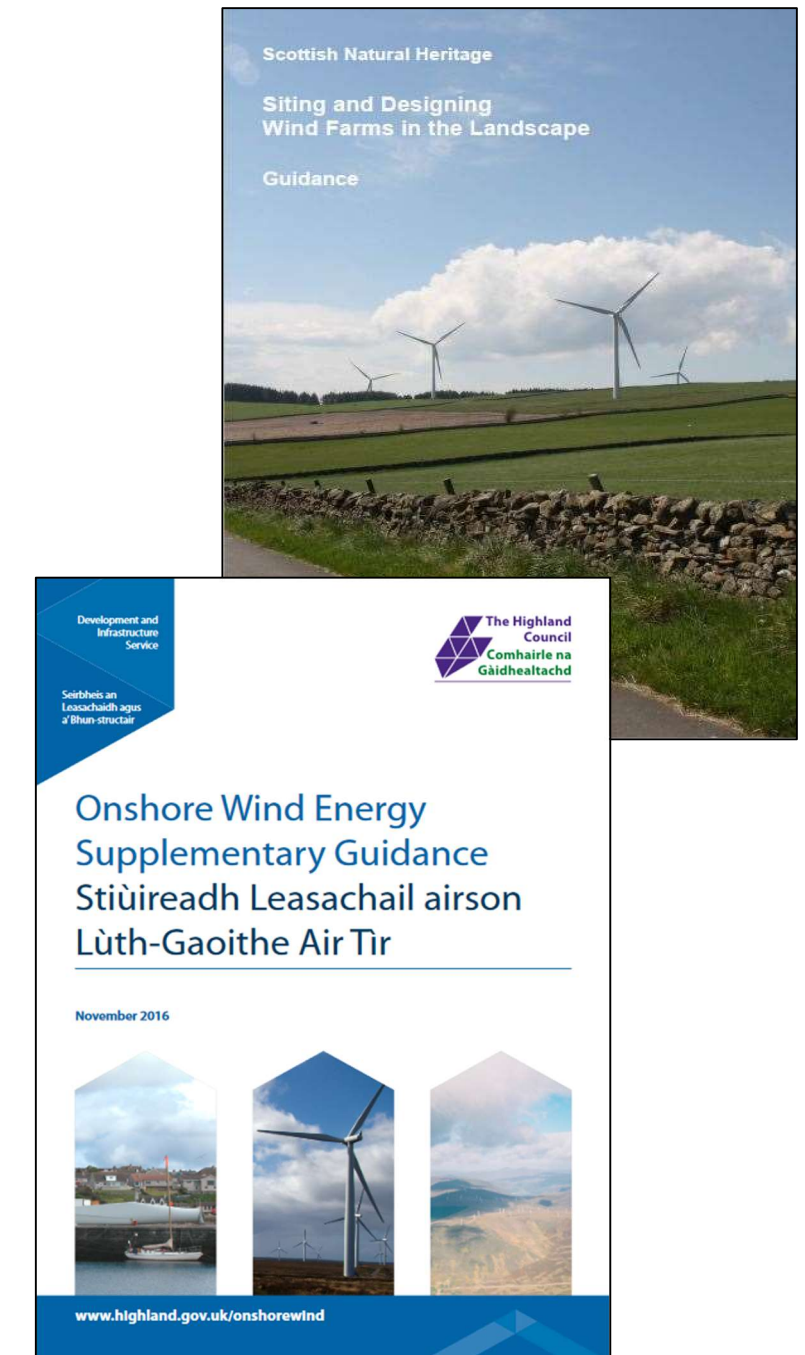
- 3.8 The Applicant has undertaken a programme of consultation prior to the submission of this planning application, which is detailed within the Pre-Application Consultation Report.

- 3.9 A Scoping Report was submitted in July 2022 for a wind farm layout of up to 20 turbines with subsequent public exhibitions held in January, May and November 2023 to introduce the proposals to the public.

- 3.10 Consultation with a range of stakeholders, including the tenanted crofters, has also been ongoing since the submission of the Scoping report and these have been documented within each of the assessment areas as

detailed in Volume 1 of the EIA Report and in EIAR Volume 1, Chapter 4: Design Evolution.

- 3.11 This process of consultation has identified a number of potential design constraints which the Applicant has subsequently sought to address as part of the EIA and design process. Further details are set out in the various stages of the design iterations below and relevant chapters of the EIA Report.



4 DESIGN EVOLUTION

Introduction

- 4.1 The wind farm layout in its proposed form takes account of stakeholder feedback received during pre-application discussions as well as environmental and technical constraints identified throughout the site selection and iterative design process. In designing a layout which is simple in composition and restrained in size, the final design results in a development which takes into account the constraints associated with the site and is sympathetic to its local and wider setting.

Constraints Mapping

- 4.2 The starting point for the design of a wind farm is the preparation of a detailed constraints map which sets out all relevant buffer distances, key features and other factors that may constraint the location of wind turbines,
- 4.3 The process of EIA plays an important role in this as it enables all the technical constraints to be identified which could restrict the location of wind turbines. The evolution of design has as such been informed by matters including standoff distances to residential properties, ecological buffers, and separation distances between existing and proposed wind turbines.

Technical Constraints

- 4.4 The following technical considerations were taken into account in the design process:
- A minimum separation distance between the turbines in order to minimise turbulent interactions between wind turbines (wake effect);
 - Distance from residential properties; and
 - Civilian and military aviation radar coverage of the Site.

Relevant Planning Policies

- 4.5 The relevant policies identified in section 3 have been taken into consideration in the site selection process and also subsequently, where relevant, in the design of the Proposed Development.

Landscape and Visual

- 4.6 The principal design objectives of the Proposed Development have been to achieve a coherent and compact design, which minimises direct and indirect adverse effects on the local and wider landscape.

Noise

- 4.7 The wind farm design has been developed to ensure that a standoff distance of at least 1.2km can be achieved between wind turbines and residential properties.

Ecology and Ornithology

- 4.8 A full suite of ecological and ornithological studies has been undertaken which has allowed the layout to be designed around sensitivities such as the Strath Carnaig and Strath Fleet Moors SSSI and SPA.
- 4.9 Additionally, in consultation with the tenanted crofters, the design evolution has taken impacts upon native woodland into consideration in order to minimise felling as far as possible through careful infrastructure design and turbine placement.

Archaeology and Cultural Heritage

- 4.10 Certain assets that are deemed to be of particular importance are given legal protection. The importance of heritage assets and the protection of these and their settings is recognised in legislation as well as national, regional and local planning policy.
- 4.11 There are no statutorily designated cultural heritage assets within the Site however Scheduled Monuments within 10km of the Site boundary have been taken into consideration and an assessment on setting effects have been carried out.
- 4.12 Careful siting and design have been undertaken to minimise potentially significant effects on these assets.

Design Iterations

- 4.13 The design process has been undertaken over a prolonged period and the proposal has been progressively revised and refined during this time to take account of the information arising from pre-application consultation and the findings of EIA assessments.
- 4.14 Details of some of the key iterations of this design process are outlined below.

Layout 1: Scoping Layout

- 4.15 The first design iteration consisted of 20 wind turbines of up to 230m in height to blade tip as illustrated in Figure 4.1 below.
- 4.16 This layout was the basis for the Scoping Report submitted in June 2022 with the resultant Scoping Opinion provided by Scottish Ministers in October 2022.
- 4.17 The Scoping layout presented a theoretical maximum number of turbines which could be accommodated on site and took account of the following environmental and technical constraints:
- 4.18 At this stage of the project, a key focus of this design was to determine landscape suitability whilst considering the initial buildability of the turbine locations.
- Application of a 50m buffer from watercourses;
 - Application of a 1.2km residential buffer;
 - Ornithological considerations relating to Black and Red Throated Diver
 - Class 1 and 2 Priority Peatland Habitat

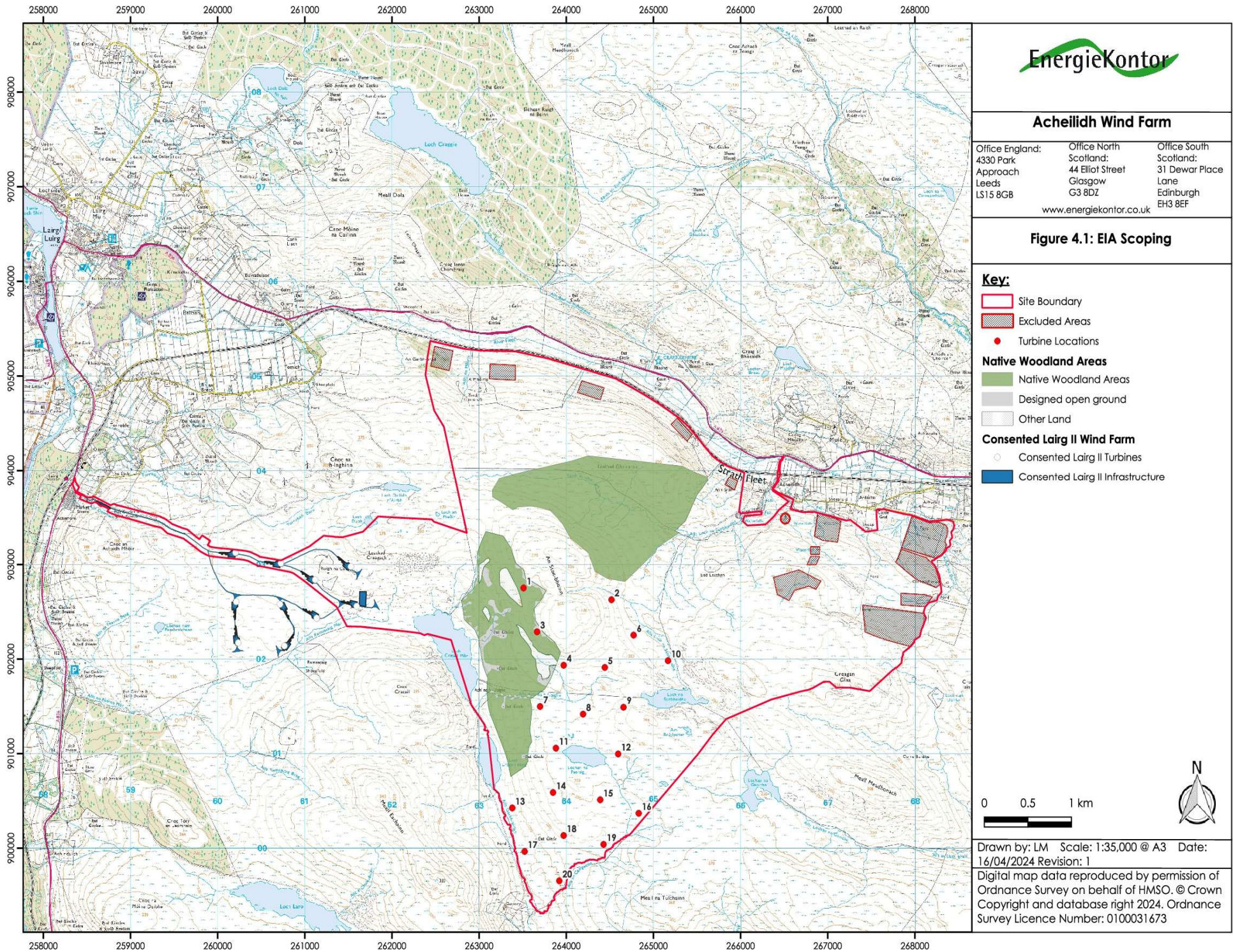


Figure 4.1: EIA Scoping Layout

Layout 2: Post-Scoping Layout

- 4.19 Illustrated in Figure 4.2, the Second Iteration comprised 17 turbines wind turbines of up to 200m to blade tip and was presented to the local community at a community council meeting.
- 4.20 The layout maintained the buffers around watercourses and residential properties and took account of ecological and ornithological onsite constraints.
- 4.21 Following the survey works undertaken within the site boundary, the layout was amended to avoid areas of deep peat where possible.
- 4.22 A total of three turbines were removed from the design. This included the deletion of T2 depicted on Layout 1: EIA Scoping, which had been placed on the eastern slopes of An-Stoc Bheinn, to reduce visibility from the A839 and the wider Strath Fleet landscape.
- 4.23 Turbine 8 was also deleted following further consideration of Phase 1 peat probing results which indicated that the surrounding peat was greater than 2m and as such was determined to be an unacceptable location for turbine placement. The final deletion arose due to an increase in spacing between the turbines to reduce stacking from key design viewpoints and reduce wake effect.
- 4.24 The angle of the slopes within the site boundary were also taken into consideration for construction purposes. This also meant that turbines were placed on areas of lower elevation around the southern slopes of An-Stoc bheinn to improve visual screening.

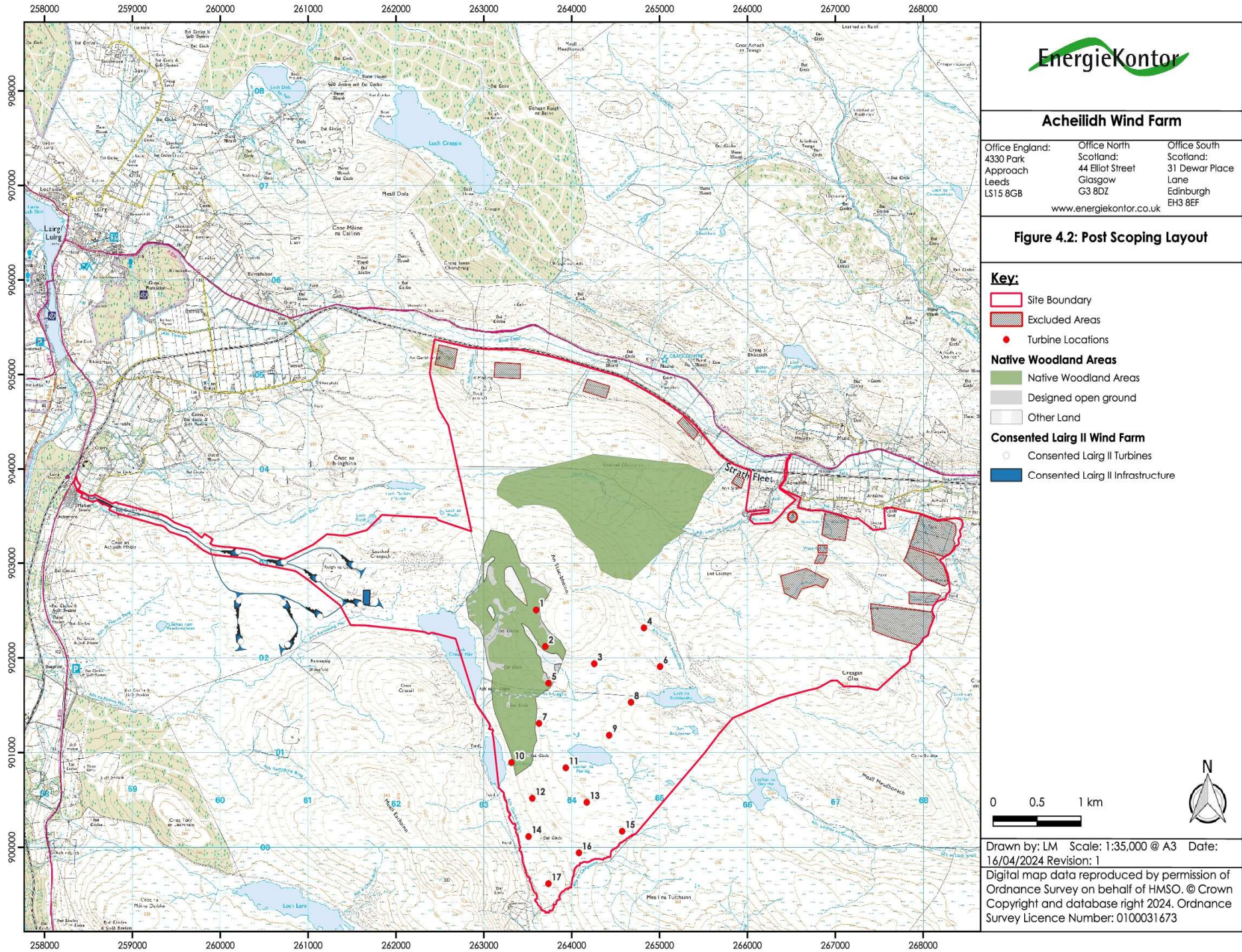


Figure 4.2: Post-Scoping Layout

Layout 3: Round 1 Public Exhibition

- 4.25 Illustrated in Figure 4.3, Layout 3 comprised 12 wind turbines of up to 230m to blade tip and was presented at the public exhibition held on the 19th of January 2023 in Rogart Hall.
- 4.26 Layout 3 was based on the feedback received as part of the scoping process, meetings undertaken with consultees (including the landowner and tenanted crofters) and further environmental survey with the following considerations used to inform changes to the layout:
- Peatland habitats;
 - Ecological considerations such as GWDTE;
 - Ornithological interests;
 - Landscape and visual effects
- 4.27 Turbine numbers were further reduced due to an increase in turbine spacing. The deletion of turbines to the south of the Site were a result of the application of a 1.2km buffer from the abandoned Garvary Cottage to safeguard potential future visual amenity and noise levels. The removal of turbines also improved views and turbine composition to the south when viewed from Dornoch Firth National Scenic Area (NSA).
- 4.28 The reduction of the proposed development from 17 to 12 turbines required a review of key design viewpoints which revealed an increase to 230m could be accommodated within the receiving landscape due to the coherent design created through careful turbine placement. This increase in turbine tip height to 230m promoted an increase in energy yield for the proposed development.
- 4.29 The infrastructure design for this layout was developed at this stage. Access tracks were used to join turbine positions and turbine compounds followed contours and avoided gradients of greater than 12% in line with turbine manufacturer guidance and to minimise incursion into peat wherever practicable. Tracks were also designed for the turning radius of an up to 80m blade. The infrastructure design also sought to reduce the visual impact of onsite tracks, as well as take into account other constraints such as watercourses with a 50m watercourse buffer applied with the exception of watercourse crossings.
- 4.30 In addition to this, the infrastructure sought to connect the consented Lairg II wind farm with the proposed development in order to avoid the creation of new access tracks for turbine delivery and construction traffic, ultimately reducing infrastructure whilst maximising energy production. By connecting to the consented Lairg II wind farm, the proposed development will utilise an established access junction however amendments will be required.

- 4.31 The substation compound was located on relatively flat land whilst maintaining a topple distance buffer of rotor diameter +10% from the turbines. The main construction compound (and eventual location for battery storage) was placed on similar nearby ground.

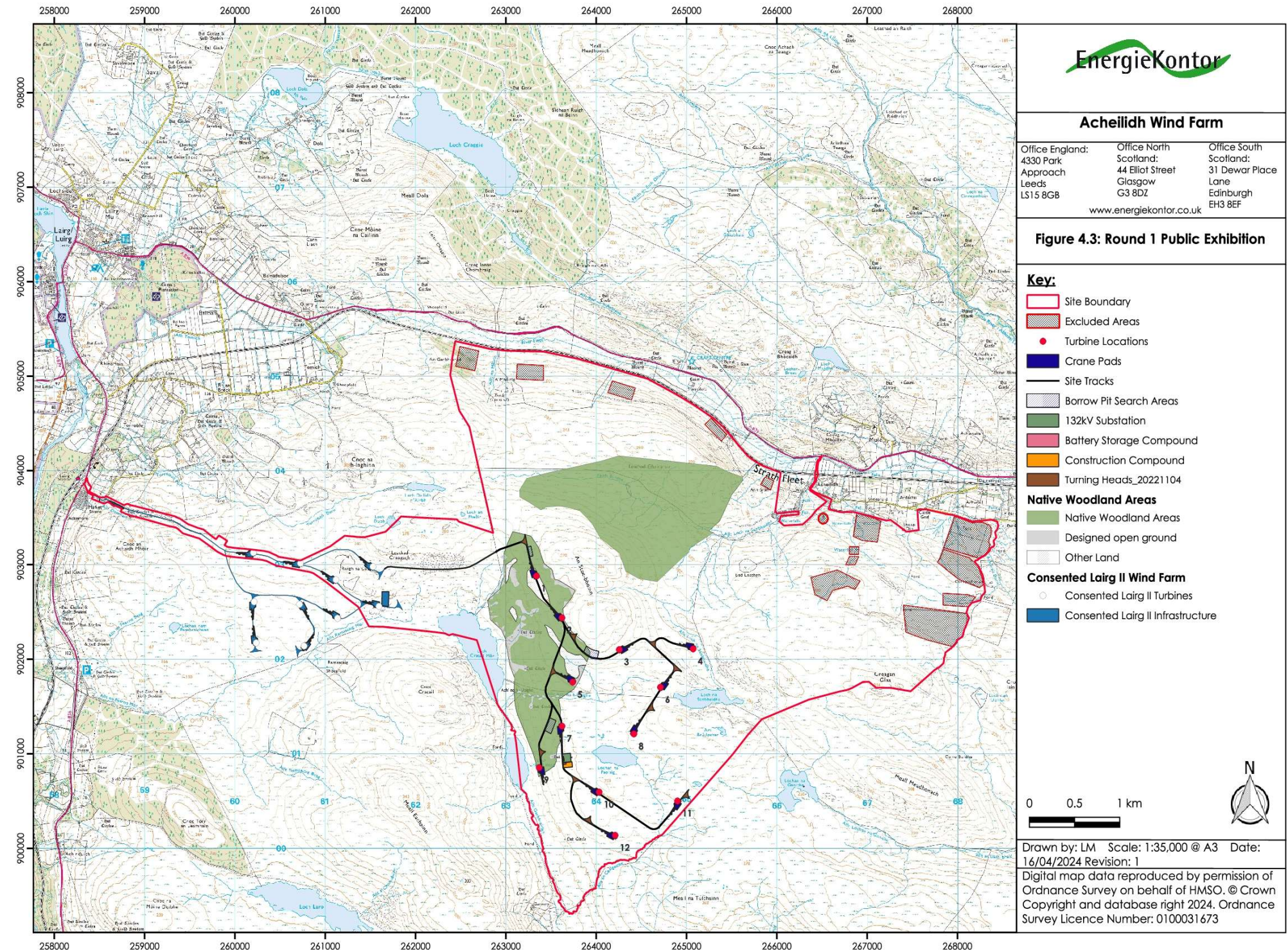


Figure 4.3: Round 1 Public Exhibition Layout

Layout 4: Round 2 Public Exhibition

- 4.32 Following consultation with the tenanted crofters, a significant revision of turbine placement and associated infrastructure took place to minimise impacts upon native woodland within the Site boundary. This included the amendment of turbine locations (in particular T5 and T7) track realignment and the re-orientation of crane pads into designed open ground to reduce the amount of felling required.
- 4.33 The placement of Turbine 11, previously located in the south-east of the Site (see Figure 4.3) also underwent significant infrastructure amendments to avoid impacts upon peatland habitats. Following ecological survey works, a GWDTE was identified in the south-east of the site and a 250m GWDTE buffer was applied. Whilst this buffer was maintained, exploratory Phase 2 peat probing revealed that peat depths within this area of the Site were deemed unacceptable for development, and this was further confirmed upon consultation during a design workshop with SEPA on the 28th of February 2023.
- 4.34 To avoid impacts upon deep peat, the location of T11 was moved to the south of Lochan na Folaig with a search area produced to determine peat depth. A suitable location was found within the area of exploration and T11 was placed on peat <1m. The movement of turbines and subsequent track re-alignment also resulted in the reduction of on-site tracks, further reducing the footprint of the development.
- 4.35 Comments from the community and stakeholders coupled with further design work resulted in half of the proposed turbines being reduced to 200m with wirelines and photomontages produced to test the visual effects from several locations. The turbines reduced in height included T1, T2, T4, T8, T9 and T12 which were considered to be the perimeter turbines. These were lowered in order to reduce turbine visibility along the A839 and created a more cohesive layout with a reduced lateral spread when viewed from the Dornoch Firth NSA. The reduced tip heights for T1 and T2 led to a slight reduction in turbine visibility from Strath Fleet.
- 4.36 A decision was taken to retain heights of 230m for the remaining turbines due to some being sufficiently screened by topography and their internal position within the Site. Ultimately, the retention of the higher tip heights improved the overall lateral composition of the proposed development, particularly from key design viewpoints. Consideration was also given to the design of the neighbouring Garvary wind farm in order to avoid creating two distinctive design patterns in the landscape whilst respecting site-specific constraints.

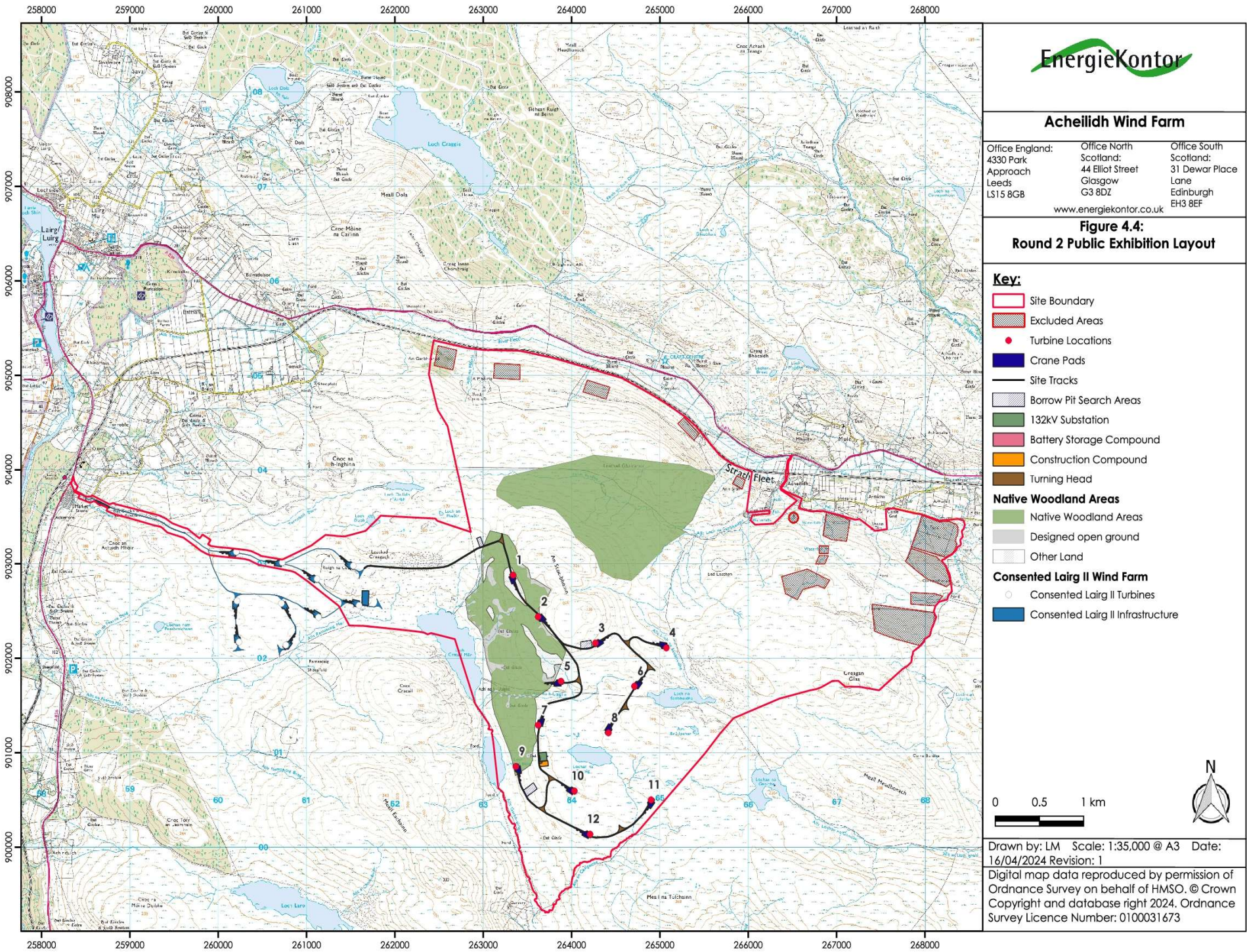


Figure 4.4: Round 2 Public Exhibition Layout

Layout 5: Pre-Application Layout

- 4.37 As set out in Figure 4.5, the turbine positions remain the same as depicted in the previous layout, following consultation with the tenanted crofters a significant revision was carried out to the on-site tracks linking to T1 and T2. Changes to infrastructure also included the re-orientation of crane hardstandings for T5 to further minimise felling of native woodland.
- 4.38 Whilst the turbine positions remain the same as depicted in the previous layout, following consultation with the tenanted crofters, a significant revision was carried out to the on-site tracks linking to T1 and T2. Changes to infrastructure also included the re-orientation of crane hardstandings for T5.
- 4.39 In order to reduce impacts upon native woodland, on-site tracks were placed outside of the native woodland area. The changes made to the proposed infrastructure reduced felling from 5.77 hectares (ha) to 1.31ha as well as reducing potential breaches within the fence line of the plantation to limit impacts associated with deer.
- 4.40 The re-routing of these tracks also resulted in the deletion of a watercourse crossing and a loaded turning head, ultimately reducing the number of watercourse crossings from four to three and further minimising the footprint of the development.

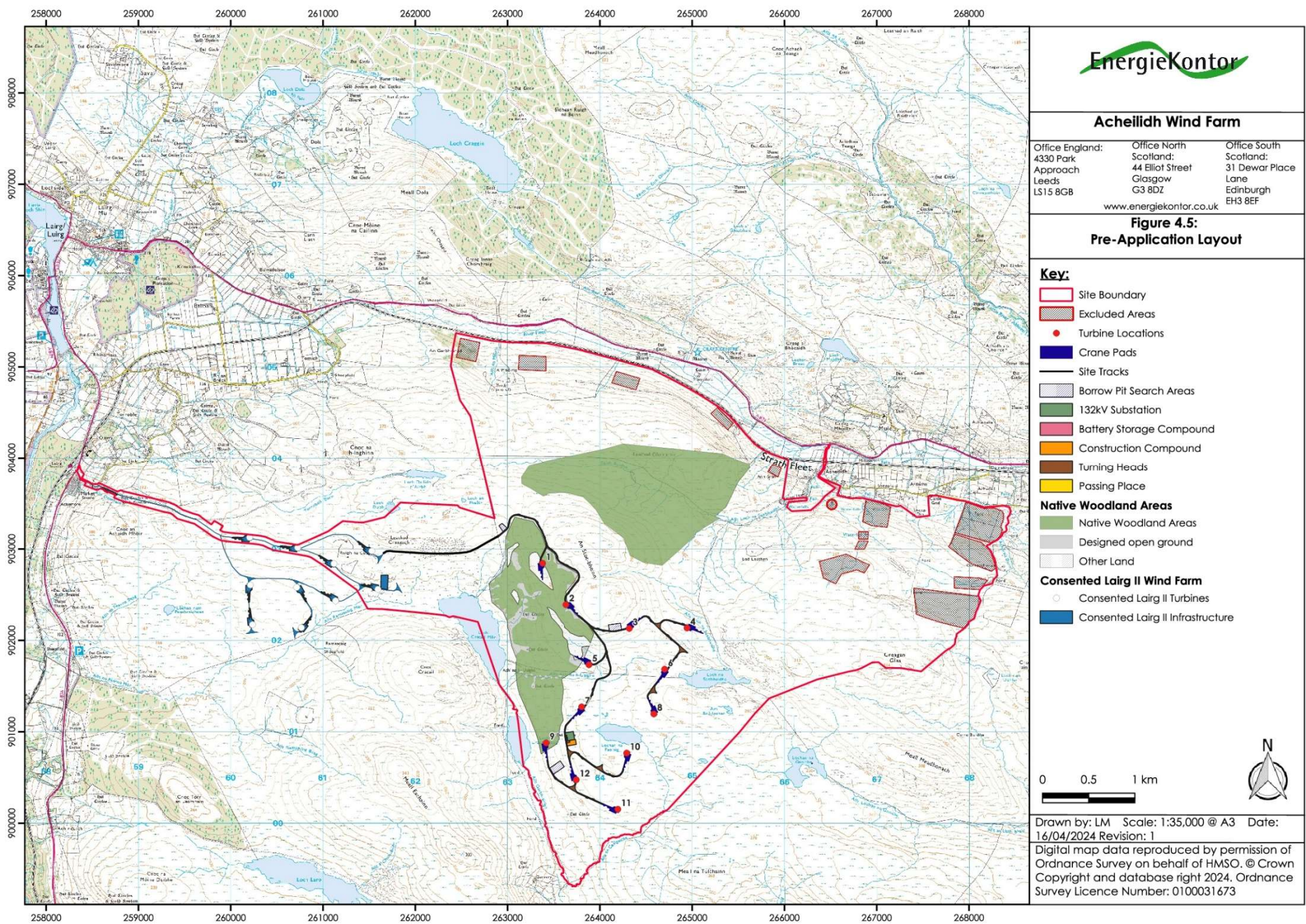


Figure 4.5: Pre-Application Layout

Layout 6: Application Layout

- 4.41 The layout, set out in Figure 4.6, which forms the basis of this EIAR represents the culmination of specialist input on LVIA, ecology, ornithology, hydrology, peat, and other matters.
- 4.42 Following the presentation of the revised layout, further feedback was provided by the tenanted crofters. As a result of the feedback provided, all turbines and infrastructure were subsequently removed from the native woodland plantation, resulting in no felling requirements associated with the proposed development. The retention of the forestry has meant that the native woodland plantation, comprising species such as Scots Pine and birch will continue to mature and remain unaffected throughout the lifetime of the project.
- 4.43 The design changes were also carefully considered from key design viewpoints and sought to maintain the design principles seen in the previous layouts. From the design changes made, when viewed from the Dornoch Firth NSA, specifically Viewpoint 12: B9176 Struie Layby presents a more compact composition with T9 being moved closer into the turbine array and, subsequently avoided being backclothed by Ben Klibreck in the distance. This was previously raised during consultation with THC and as such, the design has been amended to take this into consideration. This can also be demonstrated at Viewpoint 2, where the turbine array has a reduced lateral spread whilst avoiding turbine stacking. Despite the changes made to the layout, the key design principles set out in the sections above have been reflected
- 4.44 The application layout has seen the movement of Turbines 1, 2, 3, 4, 5, 7, 9, 11 and 12 whilst the position of Turbines 6, 8 and 10 remain unchanged from the previous layout. The tip heights across the site also remain unchanged. Additional peat probing data was gathered in order to determine peat depths for the relocated turbines with turbines being placed in peat less than 1m and an NVC survey was carried out to complete the ecological data for the assessment.
- 4.45 The substation, temporary construction compound and battery storage have also moved to the north of the site and one of the borrow pit search areas relocated to their former position. These changes were made to reduce the distance to potential grid connection points and reduce the length of track in order to reach the construction compound. The relocated substation also falls outwith the topple distance buffer. The movement of the infrastructure has created opportunities for visual screening of the substation and energy storage compound as the trees mature over the proposed 35-year operational period. In addition, the realignment of tracks has led to a further reduction in track length to 7.22km and also has resulted in the deletion of a

watercourse crossing with the proposed development now having a total of two.

- 4.46 As a result of turbine movement, a revised aviation lighting strategy was also agreed with the CAA with the requirement for six turbines to be lit.

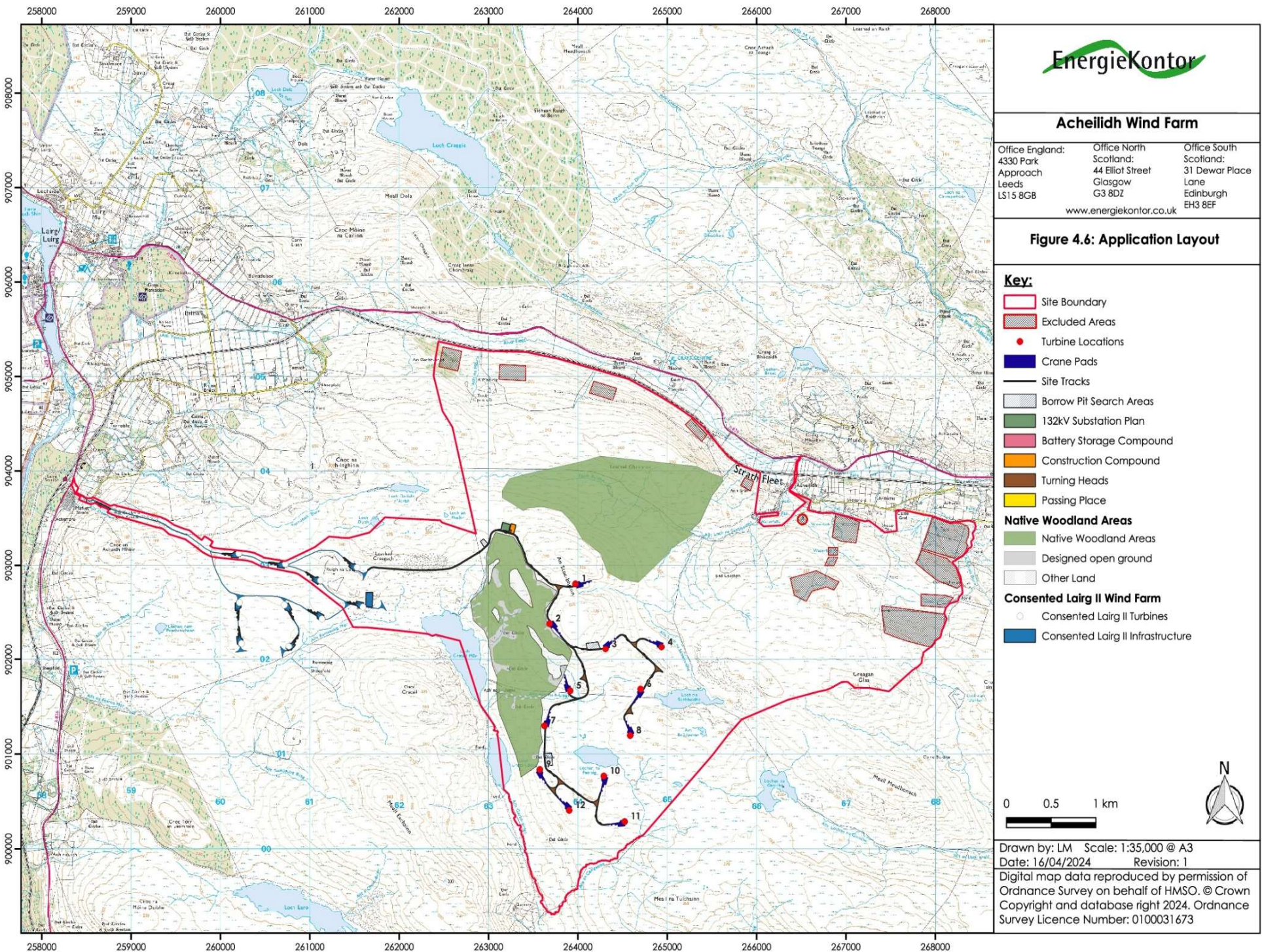


Figure 4.6: Application Layout

5 THE PROPOSED DEVELOPMENT

Introduction

- 5.1 The Proposed Development consists of the construction, 35-year operation and subsequent decommissioning of a wind farm consisting of 12 wind turbines together with associated infrastructure.
- 5.2 The wind farm would provide circa. 79.2MW of generating capacity with an additional 5MW of battery storage, depending on the final turbine selection. This would be made following the grant of consent and be subject to a competitive tendering exercise.
- 5.3 The planning application includes an allowance for potential micro-siting of the wind farm infrastructure. If consent is granted, the Applicant would commission detailed ground investigations and geotechnical surveys to determine the overall ground conditions.
- 5.4 It is possible that there may be a requirement for micro-siting of other infrastructure following these investigations and any other pre-construction environmental surveys. Consequently, the planning application boundary seeks a potential micro-siting allowance of 100 metres for turbines and associated development such as tracks and crane pads.

Key Elements of the Proposal

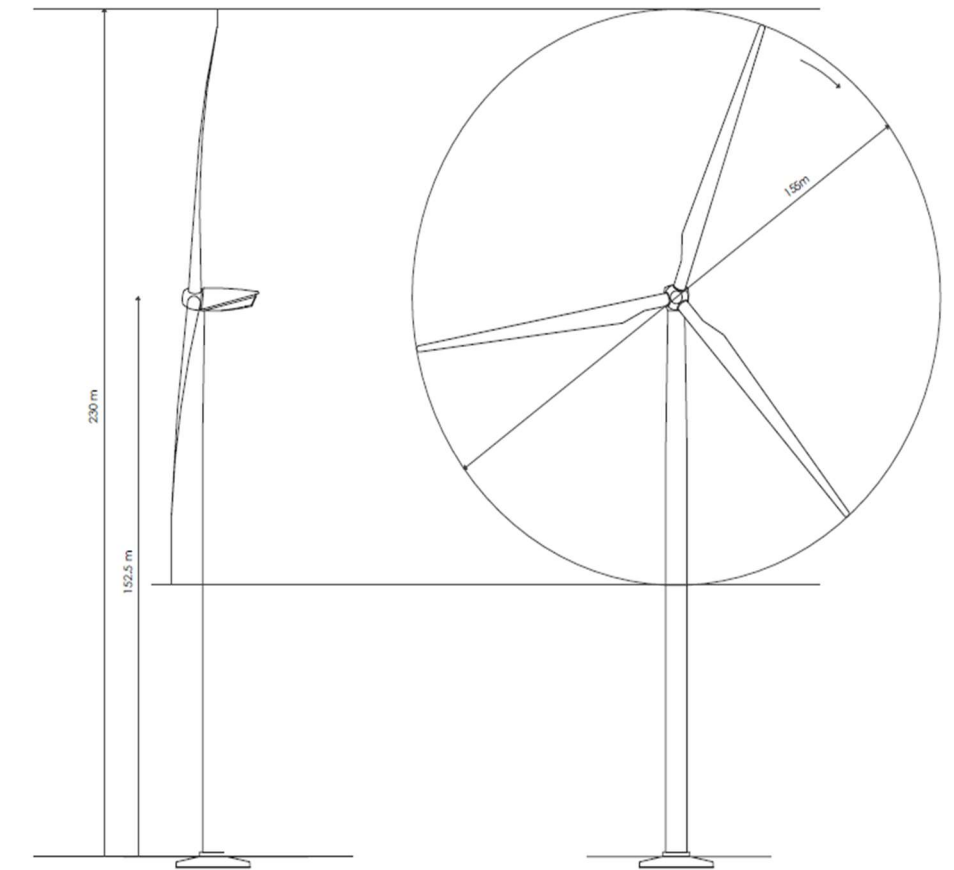
- 5.5 The principal elements of the Proposed Development include:
- **Wind turbines** – up to 12 wind turbines.
 - **Turbine foundations** – The foundations could be either reinforced concrete gravity structures or piled foundations. This would be dependent on the ground and hydrological conditions at the turbine locations would also determine the overall size of the support structure.
 - **Crane hardstandings** – To provide a level and firm base for the cranes at the location of each turbine and would be surfaced with coarse aggregate. A typical crane hardstanding layout would occupy an area of approximately 0.72 hectares (ha); however, this is dependent on the turbine model chosen;
 - **Site tracks** – To provide access for construction and maintenance vehicles from the site access to the substation and wind turbines. These would be constructed at the commencement of the construction phase and would remain until the end of the decommissioning phase. They would have a running

width of approximately 5m, the final width dependent on turbine supplier requirements. The tracks would feature local widening on corners and would be surfaced with coarse aggregate.

- **High voltage and control cables** – To form power and control circuits linking each turbine to the on-site substation, cables would be placed in trenches (dimensions to be determined by the ground conditions, but typically 0.5m x 1m deep) routed alongside the tracks.
- **Substation / switchgear housing building** – A 90mx90m space would be required for the construction of a 132kV substation
- **Energy Storage Compound-** The energy storage equipment would be housed within ISO shipping containers with a 2.4m high palisade fence in a compound 17.5m by 31.9m. Battery containers will be positioned a minimum of 2.5m apart to facilitate access to all sides Battery energy storage equipment will be factory assembled and delivered to site in standard 12.2m long x 2.4m wide ISO shipping containers. A plan and elevation are presented as figures 3.13 and 3.14. Figure 3.1 shows the construction compound area that this would be housed within.
- **Construction compound/storage area** – The compound to facilitate construction of the Proposed Development, and would also provide a storage area for plant and materials and is temporary during the construction phase.
- **Site access** – Access point is proposed to access the Site via the road to Torroble which connects to the A836 near the Lairg railway station, approximately 4km south of Lairg village.

Wind Turbines

- 5.6 It is proposed to erect up to 12 wind turbines on the Site. They would be of a typical modern design comprising a three bladed rotor hub mounted on a rotatable nacelle (containing a gearbox and a generator), a tower and foundation.



6 ACCESS

Introduction

- 6.1 This section of the Design and Access Statement sets out the issues and options considered during the development of the proposals to ensure that the transport and construction of the Proposed Development causes the minimum disruption to the highway network and highway safety.
- 6.2 The site access point and accompanying internal track layout have been designed to accommodate the range of vehicles anticipated during the construction and operation of the Proposed Development.

Existing Highway Environment

- 6.3 The preferred option for access for turbine components to the Site is detailed in Chapter 11 of the EIA Report. Although the vehicles used to deliver turbine components are large, the delivery route is considered suitable for commissioning of the Site.
- 6.4 The main transport movements during the construction phase would be associated with the movements of Heavy Goods Vehicles (HGVs) to and from the Site. Vehicle movements would be associated with delivering turbine components, concrete and the travel of workers to and from the Site.
- 6.5 Once the development is operational, it is envisaged that the amount of traffic would be minimal. Occasional visits may be made to the Site for maintenance activities. The vehicles used for these visits are likely to be a 4x4 or similar and there may be occasional need for a HGV to access the Site for maintenance and repairs.

Access to Site

- 6.6 The Acheilidh windfarm is proposed to be accessed through the existing Lairg II windfarm. Therefore, the likely Point of Entry (PoE) for the turbines would be the Port of Nigg near Tain, from where the abnormal loads vehicles would navigate onto the B9175 towards the A9, then continue on the A9 heading north for approximately 27km until the junction with the A839. The abnormal loads vehicles would turn left onto the A839 and continue west for approximately 23km to Lairg, then turn left onto the A836 heading south for 2.8km before turning left again onto the local road to Torroble opposite Lairg Railway Station. From here the Site is accessed via the Lairg II development.
- 6.7 The proposed route is indicated by Figure 6.1.

Access Design Process

- 6.8 Swept Path Analysis assessments were undertaken to identify whether the delivery route could accommodate the swept path of the abnormal load delivery vehicles carrying components such as the turbine blades and nacelle. This type of analysis is consequently used to identify any necessary works.
- 6.9 The design of the Proposed Development has taken into consideration the movement and subsequent access of vehicles involved with the construction and operation of the wind farm. The initial site selection considered potential access restrictions associated with the movement of vehicles required to transport large turbine components.

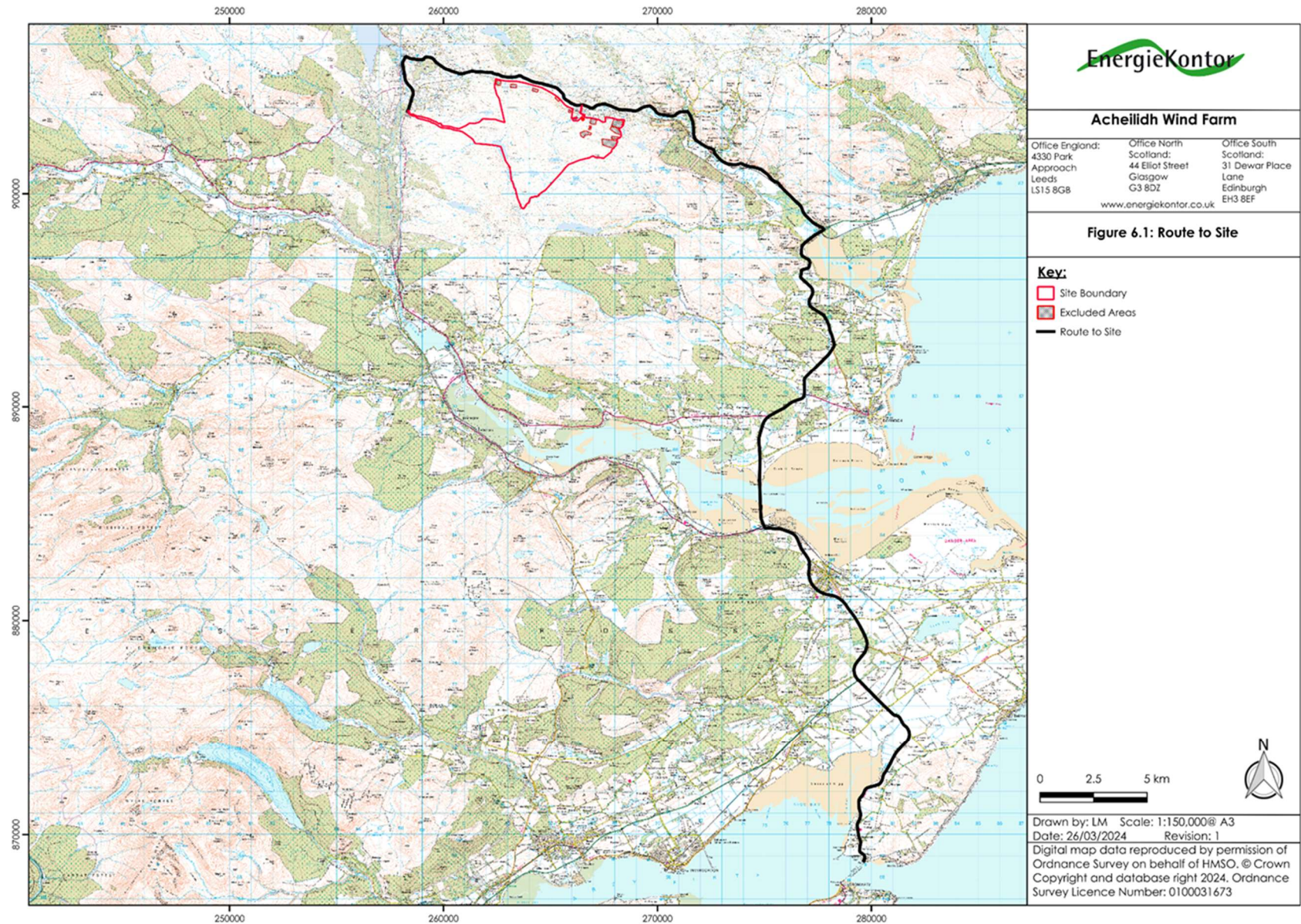


Figure 6.1: Abnormal Loads Route From Port to Site

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