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Introduction

3.1 This Chapter describes the proposed development which is subject to this EIA. It sets out the way in which the proposed development would be constructed, including a description of the wind farm layout, its proposed scale, and the associated infrastructure. It also outlines the anticipated construction activities connected with the proposed development and a description of the operational elements of the wind farm.

3.2 The layout for the proposed development is shown on **Figure 3.1**. Information on construction methods are provided in **Technical Appendix 3.1: Outline Construction and Environmental Management Plan (CEMP)**. The outline CEMP illustrates the construction measures which are inherent in the project development and design, and which are therefore considered present at the outset of the environmental assessment.

Proposed Development

Scheme Overview

3.3 The site is centred on NGR NN 87737 02889, with the application boundary encompassing an area of approximately 1,474ha. The characteristics of the site are described in **Chapter 2: Site Description and Design Evolution**.

3.4 The proposed development would comprise 13 three-bladed horizontal axis turbines up to 149.9m tip height with a combined rated output in the region of approximately 65MW. The proposed development would include associated infrastructure including turbine foundations, crane hardstandings, new access tracks, underground cabling, a substation compound including a control building and up to 35MW of battery storage, up to two borrow pits and three temporary construction compounds (**Figure 3.1**).

3.5 The proposed development has been designed with an operational life of up to 40 years, at the end of which it would be decommissioned, or an application may be submitted to repower the site.

3.6 In total, approximately 10.03ha of blanket bog habitat (including already degraded bog habitat) would be permanently lost as a result of the proposed development. This permanent loss represents approximately 0.68% of the area of the site. In addition to this, approximately 43.42ha of blanket bog habitat (including already degraded bog habitat) would be indirectly or temporarily affected as a result of the proposed development. This indirect and temporary loss represents 2.9% of the area of the site. As a result of this, the proposed development includes the proposal for approximately 251.31ha of active blanket bog restoration, and approximately 360.59ha of blanket bog restoration through grazing management. More information is provided in **Technical Appendix 8.4: Outline Habitat Management Plan**.

3.7 As noted in **Chapter 2**, the proposed development has been designed to reflect the topographical, environmental, visual, and technical factors which exist across the site.

3.8 Each Chapter of the EIA Report takes an appropriate and topic specific approach to assess the proposed development. The EIA Report provides a worst-case assessment for each discipline and presents relevant information for consultees and the decision makers to comment on and determine the application. Each technical Chapter has set out the degree to which the proposed development has been assessed, in order to provide a clear and robust assessment that allows for the necessary flexibility in relation to turbine

procurement, post-consent. **Chapter 5: Environmental Impact Assessment**, provides further detail on the approach to assessment.

3.9 The key component parts of the proposed development include the following as detailed in **Table 3-1**.

Table 3-1: Proposed Development Key Components

Key Component	Detail
Wind Turbines	13 wind turbines including internal transformers, with blade tip heights of 149.9m.
Wind Turbine Foundations	13 turbine foundations (approximately 22.40m diameter) and associated crane hardstandings (approximately 41.5m x 36m and 1m in depth, with additional areas for the boom supports and blade storage trestles – shown on **Figures 3.5a** and **3.5b**)
Access Tracks	Approximately 3.76km of upgraded road (Sheriffmuir road widened from approximately 3.5m to 6m), and approximately 14.54km of new access tracks with a typical running width of 6m, (wider at bends and junctions) and associated drainage. 1.68km of the new track is anticipated to be floating track where consistent (30m distance or more) peat depths of over 0.5m or greater are identified along with shallow topography
Underground Cabling	Approximately 15.74km of underground cabling along access tracks to connect the turbine locations, and the onsite electrical substation
Substation Compound (including battery storage)	One onsite substation which would accommodate 33kV Switchgear to collect electricity from different parts of the site. The substation compound would have an area of 100m x 75m and would include a control and metering building (approximately 16m x 30m and 8m high), as well as up to 35MW of battery storage (battery units measuring approximately 12m (l) x 5m (w) x 4m (h) with ancillary equipment such as inverters).
Borrow Pits	Up to two borrow pits (covering approximately 0.89ha or 8,900m^2)
Construction Compounds	Three temporary construction compounds (covering approximately 1.78ha or 10,780m^2)

3.10 Typical details for the proposed turbines, foundations, access tracks, crane hardstandings, electrical infrastructure, borrow pits and construction compounds are shown on **Figures 3.2** to **3.9**.

Access to the Site

3.11 The proposed abnormal load route required to transport turbine components to the site is shown on **Figure 12.3** and is based on an assessment of the route from the port of Rosyth, via the M90, the A9 and the C468/Sheriffmuir road to site. The main site area (Turbine Developable Area) would be reached via a new track adjacent to the Carim Lodge residential property, southwards into the Ochil hills.

3.12 A Road Safety Risk Assessment was carried out, in 2023, at the junction of the A9 and C468/Sheriffmuir road, and it is anticipated that minor works (shrub/greenery clearance, temporary removal of some street furniture/signage) would be required at this junction in order to facilitate abnormal load deliveries.

3.13 Immediately south of the A9 and C468/Sheriffmuir road junction, it is proposed to construct a new section of track, solely for the use of abnormal loads and HGVs where required, in order to avoid a tight turn on the existing C468/Sheriffmuir road alignment. This new section of track would be gated in order to prevent its use outwith abnormal loads and HGV deliveries.

3.14 The rest of the C468/Sheriffmuir road from the junction with the A9, to Carim Lodge, would be upgraded in line with required track specification (6m wide).

3.15 The proposed abnormal load route was assessed and verified for up to 67.8m blades, identifying where permanent or temporary road upgrades would be required (see **Technical Appendix 12.1**.

3.16 It is proposed (see **Technical Appendix 3.1: Outline CEMP**, and **Technical Appendix 12.3: Outline Construction Traffic Management Plan**) that there would be a policy of 'left in / left out' at the A9 and C468/Sheriffmuir road junction, for construction vehicles of all sizes. This would avoid construction vehicles needing to turn across oncoming traffic at this junction. In addition to this, it is proposed that no construction vehicles would use the C468/Sheriffmuir road west of Carim Lodge (between Carim Lodge and Dunblane). These measures are outlined in **Technical Appendices 3.1** and **12.3** and would be formalised and included within the 'full' versions of these documents, which would be secured by condition of the deemed planning permission and agreed with input from relevant consultees, prior to construction commencing.

3.17 Full detail of the assessment of the effects on the road network is provided in **Chapter 12: Traffic and Transport**.

Grid Connection

3.18 The grid connection point for the proposed development is subject to confirmation by the network operator, however it is anticipated that the grid connection point would be the Braco West Substation. The precise route of the grid connection cabling has not been determined by the grid operator, meaning that its effects are not identifiable/assessable as it has yet to be designed and an application has not yet been made.

3.19 The grid connection will require separate consent under Section 37 of the Electricity Act 1989. The grid connection application would be made by Scottish and Southern Energy Electricity Networks (SSEN) who are responsible for the Transmission Grid in the area of the proposed development and who would own assets beyond the site substation. Any cumulative impacts between the grid connection and the proposed development would be considered as part of the Section 37 application.

Operational Life

3.20 It is anticipated that the proposed development would have an operational life of 40 years. At the end of this period, the proposed development would be decommissioned, or an application may be submitted to extend the project life or repower the site. Details of infrastructure removal and restoration are provided in summary in **Table 3-5**.

Embedded Mitigation

3.21 A key benefit of the EIA process is the opportunity it gives to integrate environmental considerations into the careful, iterative design of a project. Embedded mitigation proposals are those mitigation measures which are inherent to the proposed development and are integral to and should be included in consideration of the application.

3.22 Throughout the design evolution, embedding mitigation has been a feature of the process that has led to the final design of the proposed development; and this embedded mitigation therefore forms part of the proposed development which is assessed.

3.23 During the construction of the proposed development, effects can be further mitigated by the adoption of good practice, supported by robust project management and an Environmental Clerk of Works (EnvCoW), as set out in the outline CEMP (**Technical Appendix 3.1**), and by the application of the Pollution Prevention Guidelines (PPGs) and replacement Guidance for Pollution Prevention (GPPs).

3.24 Reference to good practice and standards, guidelines and legislation relied upon in the assessment methodology are referred to within each of the individual specialist topics, in **Chapters 7** to **14**. Such environmental measures are also included in the outline CEMP (**Technical Appendix 3.1**).

Design Principles

3.25 A number of design principles and environmental measures have been implemented and incorporated into the proposed development as standard practice described in **Chapter 2: Site Description and Design Evolution**.

3.26 One of the key approaches to the design has been a desire to maximise the potential energy yield of the site, whilst respecting environmental (including landscape and visual) constraints. Further details are set out in **Chapter 2** and the Design and Access Statement (DAS) submitted in support of the application.

Micrositing

3.27 During the construction process there may be a requirement to microsite elements of the proposed development infrastructure. This is an important measure which allows for further minimisation of environmental effects, under the supervision of the EnvCoW, where elements of the development can be moved to avoid areas of deep peat or other constraints, as more detailed information about site conditions are procured. It is proposed that a 50m micrositing tolerance of turbines and all other infrastructure would be applied to the proposed development (so long as infrastructure does not move within 50m of any identified watercourse, or move closer to a watercourse where it is already within 50m). Within this distance, any change from the consented locations would be subject to approval of the EnvCoW as required, and in consideration of other known constraints. It is anticipated that the agreed micrositing distance may form a planning condition accompanying consent for the proposed development. The assessment of the proposed development has assumed a 50m horizontal micrositing allowance.

Consent Prior to Commencement of Construction

3.28 Prior to commencing construction on the site, it may be necessary for the applicant to obtain a number of other statutory authorisations and consents to enable the proposed

development to be implemented. Where relevant, these are covered in the technical chapters of this EIA Report.

Construction Phase

Construction Timetable

3.29 It is anticipated that construction of the proposed wind farm would commence in 2027/2028 (subject to length of S36 determination period) and would last approximately 24 months. Construction would be undertaken over a period of 24 months to allow for any construction related mitigation e.g. no construction work taking place within 500m of a nest site during breeding season, or other such agreements reached with relevant consultees. Construction would include the principal activities listed within the indicative construction programme as provided in **Table 3-2**. The final detailed construction programme would be secured via the detailed CEMP and agreed with Clackmannanshire Council, and Perth and Kinross Council pre-construction.

Table 3-2: Indicative Construction Programme (Months)

Construction Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Access Road Improvements																								
Site Establishment																								
Tree Clearance																								
Construction of Tracks, Crane Pads and Compounds																								
Turbine Foundation Construction																								
Substation - Civil & Electrical works																								
Turbine Delivery and Erection																								
Cable Laying and Cable Bedding																								
Site Restoration																								

Cumulative Wind Farm Construction

3.30 Strathallan Wind Farm is located approximately 6.8km north west of the Windburn Wind Farm site application boundary (at the junction of the A9 and C468/Sheriffmuir road). Phase 1 of this wind farm is now operational. It is not anticipated that there would be any overlap in its construction and the construction of the proposed Windburn Wind Farm, should it be granted consent.

3.31 There are no other 'consented' wind farms, in the vicinity of the proposed development, that are considered likely to result in cumulative construction effects.

3.32 Craighead Wind Farm and Brunt Hill Wind Farm are both currently 'in planning' and are located approximately 12km and 14km east of the proposed development. The site entrances for both these projects are located to the south of the Ochils (off the A91). In addition to this, for the proposed abnormal load routes to site, only the port of delivery (for turbine blades) and a section of the M90 is shared with the abnormal load route for the proposed development. Therefore it is not considered likely that these projects would result in cumulative construction effects. Further detail is provided in **Chapter 12: Traffic and Transport**.

Construction Employment

3.33 The number of people employed during the construction period would vary depending on the stage of construction and the activities ongoing onsite. Staff numbers would start relatively low as site enabling works progress. Numbers would ramp up quickly as tracks reach turbine locations and foundations start to get built out. It is anticipated that the peak workforce requirement would be up to 32 construction staff, at a point where the civils and electrical works are overlapping with turbine erection teams. Staff numbers would then drop as civils teams demobilise and turbine erection and testing is completed.

Construction Hours

3.34 The construction working hours for the proposed development would be 07:00 to 19:00 Monday to Friday and 07:00 to 16:00 on Saturdays. It should be noted that out of necessity, some activities, for example abnormal load deliveries, concrete deliveries during foundation pours, and the lifting of turbine components, may occur outside the specified hours stated (excl. Sundays). Any works above and beyond these tasks and outwith these days / hours would not be undertaken without prior approval from Clackmannanshire Council, and/or Perth and Kinross Council. The principal contractor would keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern, all under the terms of a Construction Traffic Management Plan, secured via condition of any deemed planning permission, (an outline of which is provided in **Technical Appendix 12.3**) and as set out in **Chapter 12: Traffic and Transport**.

Construction Environmental Management Plan

3.35 An outline CEMP is provided as **Technical Appendix 3.1**. In acknowledgement that the CEMP is a live document that would evolve throughout the construction phase of the proposed development, only the principles of the CEMP are outlined at this stage. It is anticipated that submission and approval of a more detailed CEMP, following site

investigation works and further detailed design, would be the subject of a condition should consent for the proposed development be forthcoming.

Site Preparation and Establishment

3.36 Site preparation works would include the following key tasks, some of which would be undertaken concurrently:

- set up of welfare facilities;
- establishment of internal tracks or upgrading of existing tracks;
- formation of the construction compound areas;
- establishment of borrow pits.

Temporary Construction Compounds

3.37 Three temporary construction compound would be required for the duration of the construction phase. The location of the temporary construction compounds are shown on **Figure 3.1**.

3.38 Temporary construction compound No.1 (TCC1) would have a footprint of 0.55ha. Temporary construction compound No.2 (TCC2) would have a footprint of 0.67ha. Temporary construction compound No.3 (TCC3) would have a footprint of 0.56ha. The temporary construction compounds would contain some or all of the following:

- temporary modular building(s) to be used as a site office;
- welfare facilities;
- parking for construction staff and visitors;
- reception area;
- fuelling point or mobile fuel bowser;
- secure storage areas for tools; and
- waste storage facilities.

3.39 **Figure 3.9** illustrates an indicative temporary construction compound, although the layout may differ depending onsite topography and contractor requirements. Crane hardstanding areas, along with the construction compound, would be used for laydown during construction.

3.40 The buildings (e.g. welfare facilities, storage areas, offices and fuelling point) that form part of the temporary construction compounds would be removed at the end of the construction phase.

Borrow Pits

3.41 Two borrow pits have been identified on site, to provide approximately 75,136m³ of material to construct the proposed development. Borrow Pit No.1 is approximately 5,091m^2 and would produce an estimated 41,492m^3 of material, while Borrow Pit No.2 is approximately 3,737m^2 and would produce an estimated 33,644m^3 of material. The location of these borrow pits, and detail on excavation extents are provided in **Figures 10.3.2** and **10.3.5** respectively.

3.42 Quarrying these borrow pits is not anticipated to provide a sufficient volume of rock needed for the construction of the proposed development, and as such some rock/aggregate will likely need to be brought to site from elsewhere. The Traffic and Transport assessment (**Chapter 12**) has considered a worst case scenario of all aggregate required for construction of the proposed development, being imported to the site. Additional borrow pits have not been proposed due to lack of suitable areas identified, onsite constraints (e.g. deep peat, watercourse buffers) and also to minimise the potential landscape and visual effects (to walkers, cyclists and other recreational users) resulting from siting borrow pits within the Ochils.

3.43 For the purposes of the EIA, the location, size, and nature of all borrow pits have been assessed.

Access Tracks

3.44 Approximately 18.3km of new access track and upgraded road would be required to provide access to the wind turbines, substation, and temporary construction compounds (**Figure 3.1**). A total of approximately 14.54km of new track would be created and approximately 3.76km of existing road would be upgraded.

3.45 New tracks would be unpaved and constructed of a graded local stone with a typical running width of 6m (wider on bends and at junctions). The tracks have been designed to include up to 1.5m on either side of the track for cabling, and potential ditches and banks. The track would be wide enough for two vehicles to pass, however should this not be the case (e.g. during abnormal load deliveries), additional passing opportunities would be available using crane hardstandings and temporary construction compounds. Additionally, 5 turning heads would be constructed. It is proposed that a large amount of the stone required for construction of the tracks and hardstanding areas could be won from the identified borrow pits.

3.46 **Figure 3.4** provides a typical illustration of the design of an onsite track. the design of tracks would take account of recognised good practice guidance as noted in **Technical Appendix 3.1: Outline CEMP**.

3.47 Site visits have confirmed the presence of peat, of variable condition and depth across the site, with deeper peat present higher up in the Ochils in areas with shallow slopes and flatter topography. Where possible, the turbines and tracks have been positioned to avoid areas of deep peat. Where this has not been possible, floating tracks would be constructed. It is anticipated that approximately 1.68km of floating track would be required where peat depth of 0.5m or more has been identified, for a distance of 30m or greater and with shallow topography in the area. In areas where the peat is shallow, i.e. rockhead is less than 0.5m below the surface, then the track formation would be by cut and fill or by a cut operation where there is a slope. Where the peat layer is more than 0.5m in depth and where there is a side slope the peat would be removed to an appropriate horizon.

3.48 Floating track construction is described in the Outline CEMP (**Technical Appendix 3.1**). Details of the proposed floated track construction are provided on **Figure 3.4**. The construction comprises the laying of a geosynthetic (geotextile mat or geogrid reinforcement) across the soils prior to constructing the road. Where required, risk from run-off would be mitigated by directing drainage to settlement ponds. Erosion processes on the roadside embankments and cuttings would be mitigated by ensuring that gradients are below stability thresholds, which would also enable effective regeneration of vegetation. Sediment traps would be required in the early years following construction until natural regeneration is established.

3.49 The tracks would be left in place following construction to provide access for maintenance, repairs, and eventual decommissioning of the proposed development. At the end of the construction period, the edges of all new tracks would be restored using materials stripped from excavations.

3.50 There are three new watercourse crossings that would be required as part of the proposed development (there are no existing watercourse crossings to be upgraded along the section of Sheriffmuir Road included in the proposed development).

3.51 Details of the watercourse crossings within the site are provided in **Table 3-3** and shown on **Figure 10.1a-d**. **Chapter 10: Hydrology, Hydrogeology and Geology** and **Technical Appendix 10.4: Schedule of Watercourse Crossings** describe in more detail the identified watercourse crossings.

Table 3-3: Onsite Watercourse Crossings

Watercourse Crossing	Coordinates	New / Existing
WX01	288783, 701945	New
WX02	288508, 701699	New

Tree Clearance

3.52 The proposed development would require 1.08ha of mostly conifer forest to be cleared. This is to facilitate the new access track as it passes Carim Lodge and carries on uphill and southwards into the Ochils.

3.53 **Technical Appendix 3.2: Forestry** outlines the specific breakdown of forest species and the areas on site where felling would be required. Harvesting operations would take place early on in the construction programme and outwith the bird breeding season. It is expected that suitably worded planning conditions would be appropriate for managing the production and agreement of a forest felling plan and also for managing and agreeing the scale and location of compensatory planting required.

Lighting

3.54 Artificial lighting may be required during the construction phase to ensure safe working conditions, during periods of limited natural light. Examples include vehicle and plant headlights, construction compound lighting, floodlights and mobile lighting units, to be used around specific construction activities. It is intended that the type of lighting would be non-intrusive (e.g. directed towards works activity and away from the site boundary), to minimise impact on local properties and any other environmental considerations.

Materials Sourcing and Waste Management

3.55 For construction, the proposed development would require a range of materials (e.g. stone for access tracks, the temporary construction compounds and the substation compound). Excavated material from the turbine bases and access tracks would be used onsite for restoration/reinstatement.

3.56 A Site Waste Management Plan would be developed for implementation during construction, as discussed in the outline CEMP (**Technical Appendix 3.1**). This outlines

the material requirements and waste generation during construction and how the applicant intends to consider the management of these aspects.

3.57 Concrete would be batched onsite at the construction compounds for which water would be required. There may be potential to use water mains, or alternatively a location for a borehole would be required to be found onsite.

3.58 Water would also be required for welfare facilities and to dampen the track during dry weather, although this would be minimal and an abstraction license is not anticipated to be required for the activity.

Wind Turbine Layout

3.59 The proposed development is for 13, horizontal axis wind turbines. The proposed turbine locations are shown on **Figure 3.1** and the coordinates for each are provided in **Table 3-4**.

Table 3-4: Wind Turbine Coordinates

Turbine No.	Easting	Northing	Tip Height (m)	AOD (m)
1	288252	700800	149.9	536
2	287725	701125	149.9	507
3	288305	701193	149.9	551
4	288125	701536	149.9	544
5	288738	701844	149.9	530
6	287547	701901	149.9	554
7	288149	702088	149.9	533
8	288154	702470	149.9	500
9	287470	702553	149.9	524
10	288018	702816	149.9	480
11	288663	703155	149.9	490
12	287905	703143	149.9	461
13	288040	703493	149.9	451

Wind Turbines and Transformers

3.60 The exact model of the wind turbines to be installed at a proposed development would be selected through a competitive procurement process and would be dependent upon technology available at that time. This EIA Report has considered the use of an indicative turbine type shown on **Figure 3.2**.

3.61 It is anticipated that the turbines would be rated at approximately 5MW. A realistic anticipated capacity for the proposed development would be in the region of 65MW based on current turbine availability.

3.62 The turbines would each incorporate a tapered tubular tower and three blades attached to a nacelle that would house a turbine generator and other operating equipment e.g. a gear

box. The turbines would be semi-matt pale grey (in line with RAL 7038) or a finish agreed with Clackmannanshire Council, and Perth and Kinross Council.

3.63 For the purposes of the assessment, it is assumed that each turbine would be served by an electrical transformer that would be located internally.

3.64 Details of the final turbine model selected would be presented to Clackmannanshire Council, and Perth and Kinross Council, as part of the final setting out plans during the discharge of planning conditions, in the event of consent being granted.

Foundations and Crane Hardstandings

3.65 Turbine foundations would be designed to accommodate the final choice of turbines and to suit site specific ground conditions. The final design specification for each foundation would depend on the findings of detailed ground investigation of the land on which each turbine would be located. An illustration of a typical turbine foundation is provided on **Figure 3.3**.

3.66 The turbines would have gravity foundations laid using reinforced concrete and would have a diameter of approximately 22.40m.

3.67 Depth of the excavation would depend on the need to reach suitable ground. Excavations would be, on average, approximately 2.5m deep.

3.68 The sides would be graded back, from the foundation to approximately 25m diameter and battered to ensure that they remain stable during construction.

3.69 The turbines would be erected using mobile cranes brought to the site for the construction phase. A crane hardstanding would be built adjacent to each wind turbine and will have an estimated permanent footprint of approximately 41.5m x 36m and 1m in depth (with additional areas for the boom supports and blade storage trestles). The actual crane pad design and layout would be determined by the turbine supplier according to their preferred erection method. An indicative design, considered to be the worst-case in terms of size, has been considered for the purposes of this assessment and is provided on **Figure 3.5a**. The indicative crane pad design shown on **Figure 3.5b** shows the areas of the crane pad which are permanent hardstanding (e.g. turbine foundation area), and temporary hardstanding (e.g. additional crane pad / support areas).

3.70 The crane hardstanding would also be utilised as a laydown area. These areas would remain in situ for the duration of the operational phase of the proposed development.

3.71 Soils that are excavated during construction would be set aside for backfilling the batter areas around the turbine bases and hardstandings and use of small bankings either side of access tracks. Further details of soil storage are contained in **Technical Appendix 10.2: Peat Management Plan.**

Onsite Substation Compound (including Battery Storage) and Electrical Cabling

3.72 The proposed development would be connected to the electricity network via an onsite substation control building measuring approximately 16m x 30m and 8m high and located within the substation compound (approximately 75m x 100m) at NGR NN 86227 06321. The compound would include an area for car parking and High Voltage (HV) equipment, such as transformers and circuit breakers as well as a control building. This indicative onsite substation compound is shown on **Figure 3.7**.

3.73 The main control building would be single storey, built on a pre-cast concrete base and would measure approximately 16m x 30m and 8m high (pitched roof which would be 8m high at its tallest point). It is proposed that the buildings would have a rendered finish; the final external finishes would be agreed with Perth and Kinross Council, via condition, in the event of consent being granted. A typical control building elevation is shown on **Figure 3.8**.

3.74 The substation compound would contain up to 35MW of battery storage. This is anticipated to be formed primarily of an estimated 14 battery storage units (2.5MW each), with each battery storage unit measuring approximately 12m (l) x 5m (w) x 4m (h). The battery storage units would have multiple layers of operational protocol, monitoring, and fire suppression, used to prevent fires, and control/extinguish fires should they begin. It is anticipated that a Fire Safety Plan / Emergency Response Plan would be produced and its content agreed with relevant consultees, prior to any construction work. A Fire Risk Statement has been included as **Technical Appendix 3.3** and is anticipated to form the basis of a detailed Fire Safety Plan / Emergency Response Plan. The substation compound, including the indicative number and dimensions of battery storage units, are provided on **Figure 3.7**.

3.75 Underground power cables would run along the side of the access tracks in trenches from each of the turbines to the substation. Indicative cable trench arrangements are provided on **Figure 3.6**.

Site Signage (Construction)

3.76 During construction, the site will have suitable signage to ensure that contractors use the correct roads, and also to protect the health and safety of workers, contractors and the general public. Signage will provide the operator's name, the name of the Development and an emergency contact telephone number. The exact final locations and design of the signage will be defined prior to construction commencing.

Site Restoration Post Construction

3.77 Soils would be used for reinstatement works associated with access tracks, cable trenches, turbine foundations, crane hardstandings, borrow pits and the temporary construction area. The upper vegetated turfs would be used to dress infrastructure edges, and to reinstate the surface of restoration areas. It is anticipated that most of the soil resources within areas directly affected by construction activities would be able to be stored and reinstated as close as possible to where they were excavated, in accordance with best practice; so that the site would be restored with minimal movement of material from its original location. It is not anticipated that any excavated material would leave the site.

3.78 Further detail on site restoration would be provided within the CEMP, an outline of which is provided in **Technical Appendix 3.1**.

Operation and Maintenance Phases

Duration

3.79 The proposed development would have an operational life of up to 40 years from the first commissioning (export to the electrical grid).

Electricity Generation

3.80 The turbines would start to generate electricity at wind speeds of around 2.5m/s (5.6mph). Electricity output would increase as the wind speeds increase up to a maximum of around 13m/s (29.1mph), when the wind turbines would reach their maximum capacity. The turbines would continue to operate at maximum capacity up to wind speeds of around 28m/s (62.6mph). Above 28m/s the turbines would operate at a reduced output under a storm-control mode up to wind gusts of around 50m/s (112mph). Above 50m/s, the turbines would cut-out and automatically stop as a safety precaution.

3.81 The proposed development would produce an average of approximately 227,760 Mega Watt hours (MWh) of electricity annually (based on a site derived capacity factor of 40%). This equates to the power consumed by approximately 70,317 average UK households, which would be approximately 74.5% of the current energy requirements of the approximately 94,377 homes across Perth and Kinross, and Clackmannanshire.

3.82 The Battery Energy Storage System (BESS) included in the proposed development is for up to 35MW. For BESS, the MWh rating generally refers to the total amount of energy that the system can store e.g. a BESS rated at 35MWh could deliver 1MW of electricity continuously for 35 hours. The specific MWh rating of the BESS included in the proposed development would be determined at detailed design stage, post any consent.

Maintenance

3.83 The proposed development would largely be controlled and managed remotely, however, there would be technicians on site regularly and it would be maintained throughout its operational life via servicing at regular intervals. It is anticipated that there would be approximately four annual service visits per turbine by a service team of up to three people. Inspections of high-voltage equipment and general site safety are expected to be carried out monthly. Faults would be responded to as required, most likely by a team of two technicians.

3.84 This team would either be employed directly by the developer or by the turbine manufacturer. Management of the wind farm would typically include turbine maintenance, health and safety inspections, and annual civil maintenance of tracks, drainage and buildings. Turbine maintenance includes the following:

- annual civil maintenance of tracks and drainage;
- scheduled routine maintenance and servicing;
- unplanned maintenance or call outs;
- HV and electrical maintenance; and
- blade inspections.

Habitat Management Plan

3.85 As part of the proposed development an area of approximately 251.31ha would be targeted for active blanket bog habitat restoration, and a further approximately 360.59ha targeted for blanket bog habitat restoration via grazing management. This is in order to compensate for the 53.45ha of blanket bog habitat that would be lost as a result of proposed wind turbine infrastructure.

3.86 The blanket bog habitat restoration would be undertaken via a mixture of fencing, ditch blocking, and reduced grazing.

3.87 As part of the proposed development an area of approximately 14.43ha would be targeted for riparian zone woodland creation.

3.88 An outline HMP is provided in **Technical Appendix 8.4**.

Community Benefit

3.89 Should the proposed development gain consent, a Community Benefit Fund would be made available to the communities in proximity to the development. This is offered on the basis of a payment per MW of installed capacity at the Scottish Government recommended rate at the time of commissioning the proposed wind farm. At present, the recommended rate is £5,000 per MW. It is estimated that, depending on the type of investment selected, the community benefit fund alone would accrue benefits to the local economy of approximately £13 million over the 40 year life of the wind farm. The applicant has initially proposed a 'tiered' structure, whereby the share of the total community benefit fund received by each of the communities in the vicinity would be based upon the level of impact experienced from the proposed development. This initial proposal was consulted upon during the second round of public exhibitions in November 2023, and received broadly positive feedback.

3.90 The applicant would look to explore potential models for part community share ownership of the proposed development, whereby the local communities would have the opportunity to invest into the project.in line with the Scottish Government's Good Practice Principles..

Decommissioning Phase

3.91 At the end of its operational life, which would be defined by condition on the grant of any consent, the proposed development would be decommissioned unless an application is submitted to extend the operational period or to repower the site. The decommissioning period would be expected to take up to 12 months.

3.92 The ultimate decommissioning protocol would be agreed with Clackmannanshire Council, and Perth and Kinross Council, and other appropriate regulatory authorities in line with best practice guidance and requirements of the time. This would be done through the preparation and agreement of a Decommissioning and Restoration Plan (DRP). It is anticipated that the DRP would be the subject of a planning condition.

3.93 The final, detailed, DRP would reflect the relevant legislation, and best practice current at the time of decommissioning and restoration.

3.94 As decommissioning effects are, based on current information and guidance, not expected to exceed those at construction phase (for any technical topic), further detailed assessment of decommissioning effects has been scoped out of this EIA. More detail on this is provided in **Chapter 6: Scoping and Consultation** and in each technical topic chapter (**Chapters 7** to **14**).

3.95 **Table 3-5** sets out the potential decommissioning requirements for each element of the proposed development. These would be outlined further in the outline DRP and then updated in the detailed DRP.

Table 3-5: Decommissioning Requirements for Infrastructure / Decommissioning Statement

Element	Decommissioning and Requirement
Turbines	Turbines would be dismantled and removed from site. Turbine components would be dismantled onsite using standard engineering techniques similar to those used for the original installation. The re-use or recycling of components would be prioritised, this would include exploration of any viable second hand turbine market. Turbine oils or any other oils would be removed from the site and disposed of appropriately.
Turbine Foundations	Top soil material that has revegetated the foundations would be excavated first and temporarily stored for re-use following partial removal of foundations. The top 1m of the turbine foundation would be removed and disposed of appropriately. This is considered preferential to removing all infrastructure, due to the potentially lower environmental impacts associated with excavating, processing and removing concrete from the site. The excavated foundation would be reprofiled with soil and reseeded.
Crane Hardstandings	Top soil material that has revegetated the crane hardstandings would be excavated first and temporarily stored for reuse following partial removal of crane hardstandings. The top 1m of the crane hardstandings would be removed and disposed of appropriately. This is considered preferential to removing all infrastructure, due to the potentially lower environmental impacts associated with excavating, processing and removing aggregate from the site. The excavated hardstandings would be reprofiled with soil and reseeded. Recovered geogrids and geotextiles would be disposed of appropriately. All granular materials would be excavated and removed from the site, for re-use where practicable.
Access Tracks	Access tracks would be left in-situ, which would reduce potential environmental impacts associated with potential sediment migration into watercourses as a result of removing all tracks.
Watercourse Crossings	These would remain in-situ in association with the access tracks after decommissioning. This would reduce decommissioning activities in the vicinity of watercourses and thus potential for contamination as a result of run-off.
Underground Cabling	These are underground and therefore all cables would be made safe and left in-situ. This is considered preferential to extracting cables from the cable trenches due to the potentially greater environmental impacts associated with excavating, processing and removing the cable from the site.
Substation compound	All equipment from within the substation compound would be removed from site and either reused, recycled or disposed of appropriately. Oils or lubricants from the compound would be removed and disposed of appropriately. The control building, and related infrastructure, would then be demolished and all materials would be reused, recycled or disposed of appropriately.
Battery Storage Units	The full battery energy storage system would be de-energised and then any battery units, transformers or other electrical equipment that is re-usable, carefully dismantled and removed. The decommissioning process would essentially be the construction process but in reverse. Fencing shall be removed to ease access, and then all other above ground structures removed. Concrete plinths and other concrete foundations will be excavated and removed for recycling/disposal. Any contamination from the batteries or transformers would be investigated and the ground remediated where any contamination has occurred. This is likely to be isolated locations (if at all), and therefore removal of contaminated material for onward treatment or disposal is the most likely treatment. Cables and buried services would be removed. The area of the battery energy storage system would then be regraded and blended into the surrounding ground, taking note of any changes to the surrounding land during the lifetime of the facility.

Element	Decommissioning and Requirement
Substation Compound Foundation	The top 1m of the compound foundations would be removed and disposed of appropriately. The excavated hardstandings would be reprofiled with soil and reseeded.

References

The Electricity Act (1989).

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

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NatureScot (2016). Carbon and Peatland 2016 Map. Available at: https://www.nature.scot/professional-advice/planning-and-development/advice-planners-and-developers/soils/carbon-and-peatland-2016-map

Scottish Environment Protection Agency, Natural Resources Wales, the Northern Ireland Environment Agency (2019). Guidance for Pollution Prevention - Works and maintenance in or near water: GPP 5.