CONTENTS

INTRODUCTION

3.1 This Chapter describes the elements that constitute 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 provides a description of the construction, operation and decommissioning phases and associated main activities.

3.2 The layout of the Proposed Development is shown on **Figure 3.1a-b**. A number of best practice construction measures are considered to be inherent and 'embedded' in the development and design of the Proposed Development, which are therefore considered present at the outset of the environmental assessment. These measures as well as further information on construction methods to be employed are provided in **Technical Appendix 3.1: Outline Construction and Environmental Management Plan (CEMP)**. The final CEMP would be secured via a planning condition.

PROPOSED DEVELOPMENT

Scheme Overview

3.3 The site is centred on NGR 133900, 846750[1] and covers an area of approximately 476ha in total including the access route and area for habitat management. The area in which the proposed turbines would be located (the 'turbine envelope'[2]) is approximately 103ha. The characteristics of the site are described in **Chapter 2: Site Description and Design Evolution**.

3.4 The key components of the Proposed Development (as shown on **Figure 3.1a-b**) which would be constructed in accordance with the Construction (Design and Management) Regulations 2015 including detailed design and relevant Health and Safety requirements, comprise the following:

- 10 variable pitch (three bladed) wind turbines, each with a maximum blade tip height of up to 149.9m and maximum rotor diameter of up to 138m;
- turbine foundations (up to 25m diameter) and a crane hardstanding area which includes areas for blade, tower and nacelle storage (approximately 3,350m^2) at each wind turbine;
- a lattice met mast up to 83.5m height, including foundation and hardstanding area;
- up to 9.4km of new onsite access track and associated drainage with a typical 5m running width (wider on bends) and nine turning heads;
- underground cabling and electrical infrastructure along access tracks to connect the turbine locations, and the onsite electrical substation;
- one onsite substation which would accommodate 33KV Switchgear to collect electricity from different parts of the site. The substation compound would have a typical area of 35m x 30m

[1] Centre point of turbine envelope
[2] Turbine envelope refers to the area in which the proposed turbines would be located, with the boundary defined by the outermost turbine positions

and would include a control and metering building;

- search area for up to four borrow pits (covering approximately 48,900m^2);
- a construction compound (100m x 80m); and
- clearance of 77.75ha of conifer forest for Habitat Management purposes (**Technical Appendix 8.5: Outline Habitat Management Plan)**.

3.5 Indicative details of the proposed turbines, met mast, foundations, access tracks, hardstandings, electrical infrastructure, borrow pits, construction and substation compound are shown on **Figures 3.2 to 3.12.**

3.6 In total, up to 16.4ha of land would be used permanently for the Proposed Development including approximately 4.9ha of borrow pit areas. The extent of the Proposed Development permanent infrastructure and borrow pit areas represents approximately 2.4% of the area of the site.

3.7 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.

3.8 As noted in **Chapter 2**, the Proposed Development has been designed to reflect the existing site characteristics including ground conditions, hydrology, topography, environmental constraints landscape and visual amenity and technical factors such as telecommunications links.

3.9 Each Chapter of this EIA Report takes an appropriate and topic specific approach to assessment of the Proposed Development. The EIA Report provides a worst-case assessment for each discipline and presents enough 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 to provide a clear and robust assessment that allows for the necessary flexibility in relation to turbine procurement and detail design of the Proposed Development, post-consent. **Chapter 5: EIA**, provides further detail on the approach to assessment.

Forestry

3.10 The Proposed Development includes the felling of an area of 77.75ha of conifer forest for the purposes of restoring this area to blanket bog habitat, as part of the Habitat Management Plan (HMP), an outline of which is provided in **Technical Appendix 8.5**. This would extend the HMP area already consented as part of the Ben Sca Wind Farm and Ben Sca Wind Farm Extension creating a wider area of habitat enhancement and ensuring that the project delivers improved habitat quality and biodiversity enhancement to meet the requirements of NPF4 Policy 3(b). A report on the forest area to be felled was prepared by Crosscut Forestry and is provided in **Technical Appendix 3.3**.

3.11 **Technical Appendix 3.3** states that the quality of the trees in this area is poor to very poor (commercial forestry planted in former peat areas with low yield). Approximately 20.5ha of woodland comprises dead trees most likely caused by the fire which occurred in 2018 (discussed in **Chapter 2**).

3.12 Forest to bog restoration is in effect woodland removal and as such must be assessed against the requirements of the Scottish Governments Control of Woodland Removal Policy (2009) (CoWRP) and Forestry Commission guidance 'Deciding future management options for afforested deep peatland' (2015). The areas of woodland where the trees are dead do not require to be assessed

against the CoWRP resulting in a total area of up to 57.25ha of woodland assessed.

3.13 It is considered that the very low yield class, the depth of peat on site and the clear benefits of restoration, indicate that the proposal to fell without the need for restocking is appropriate at this site. As a result, the requirements of CoWRP are met, as the deforested area is to be restored to peatland and integrated into the wider site HMP therefore 'significantly enhancing priority habitats (in this particular case – blanket bog) and their connectivity'.

Access to the Site

3.14 The proposed abnormal load route required to transport turbine components to the site is shown on **Figure 12.4** and is based on an assessment from the Port of Kyle of Lochalsh via the A87, then along the A850 to site. The site would be accessed from the A850 on a track which was built for the Ben Aketil Wind Farm; and then via the consented spur track which will be created for the Ben Sca Wind Farm (**Figure 3.2**).

3.15 The proposed abnormal load route has been assessed and verified for up to 66.77m blades, identifying where permanent or temporary road upgrades would be required (**Figure 12.4** and **Technical Appendix 12.1: Abnormal Indivisible Load Route Survey**). Any road improvements would be undertaken within this envelope.

3.16 All other HGV and wind farm construction traffic would also use the entrance off the A850.

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

Grid Connection

3.18 Grid connection is dependent on the transmission network reinforcement, which is being progressed by Scottish & Southern Electricity Networks, and the connection point will be the new Edinbane Grid Supply Point (GSP), to the south east of the site, which is proposed to be delivered as part of the grid reinforcement. Significant upgrades to the electricity grid from Fort Augustus to the Isle of Skye (known as the Skye Reinforcement Project, Energy Consents Unit Application Ref: ECU00003395) are expected to be completed by the end of 2025, allowing the Proposed Development to be connected to the grid in 2026/2027.

3.19 The grid connection is likely to require consent under Section 37 of the Electricity Act 1989 which is the subject of a separate consenting process to the planning application for the Proposed Development. The grid connection application would be made by Scottish and Southern Electricity Networks who are responsible for the National Grid in the area of the Proposed Development and who would own assets beyond the site substation.

Operational Life

3.20 It is anticipated that the Proposed Development would have an operational life of up to 40 years. At the end of the operational life, the Proposed Development would be decommissioned, or an application may be submitted to repower the site. Details of infrastructure removal and restoration are provided in summary in **Table 3-4**.

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 layout of the Proposed Development; and this embedded mitigation therefore forms part of the Proposed Development which is assessed.

3.23 During the construction phase of the Proposed Development, effects will be further managed in line with the Construction (Design and Management) Regulations 2015 and as part of the detailed design process taking into account the adoption of good practice (including Pollution Prevention Guidelines (PPGs) and replacement Guidance for Pollution Prevention (GPPs), supported by robust project management and an Environmental Clerk of Works (EnvCoW).

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 15**. Such environmental measures are also included in the outline CEMP (**Technical Appendix 3.1**), the final version of which would be secured via planning condition.

Design Principles

3.25 A number of design principles and environmental measures have been implemented and incorporated into the Proposed Development as standard practice as 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 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 Environmental Clerk of Works (EnvCoW) who is responsible for overseeing and managing the implementation of environmental policies and procedures on a construction site, and for ensuring that the construction activities comply with relevant environmental legislation, regulations, and best practices. The EnvCoW would be onsite during construction in certain areas / months to be agreed with THC and NatureScot and in line with proposals set out in the Outline CEMP (**Technical Appendix 3.1**).

3.28 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 into the watercourse buffers, encroach on heritage features or telecommunication links and buffers). Within this distance any changes 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

3.29 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 and the Outline CEMP (**Technical Appendix 3.1**).

CONSTRUCTION PHASE

Construction Timetable

3.30 It is anticipated that construction of the Proposed Development would commence in 2026 and would last approximately 18 months. Construction would include the principal activities listed within the indicative construction programme as provided in **Table 3-1**.

Table 3-1
Indicative Construction Programme

Construction Activity	Months																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Site establishment	X																	
Access Road Improvements		X	X															
Forest clearance	X	X	X	X														
Construction of Haul Road & Site Access to Borrow Pits			X	X	X													
Construction of access tracks, crane pad and building compounds						X	X	X	X									
Turbine and Met Mast Foundation Construction								X	X	X	X	X						
Substation/storage - civil and electrical works							X	X	X	X								
Cable Delivery and Installation										X	X	X						
Crane delivery and demobilisation												X					X	

Construction Activity	Months																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Turbine and Met Mast Delivery and Erection													X	X	X	X		
Wind Farm Commissioning																	X	X
Reinstatement / Restoration																X	X	X

Cumulative Wind Farm Construction

3.31 The consented Ben Sca Wind Farm and Extension will be located directly to the north west of the Proposed Development. It is anticipated that the consented access track for Ben Sca Wind Farm would be used to access the site and therefore would need to be constructed prior to the Proposed Development being built. There is a possibility that the construction periods could overlap once the access tracks are in place.

3.32 The consented Glen Ullinish Wind Farm will be located approximately 3km to the south of the proposed turbines. Glen Ullinish II Wind Farm has been scoped with the Scottish Government Energy Consents Unit and comprises a much larger development which, if consented, would replace the already consented Glen Ullinish Wind Farm. Access to these sites is anticipated to be from the south, as proposed in the consented Glen Ullinish planning application, rather than from the A850.

3.33 There are two other proposed wind farm developments (both at scoping stage 31 May 2023[3]) in the vicinity of the Proposed Development (Ben Aketil Repowering Wind Farm and Waternish Wind Farm) which, if consented, may also use the A850 as their main haulage routes for construction.

3.34 Edinbane Repowering Wind Farm (also at scoping stage at 31 May 2023) would be located directly to the east of the Proposed Development (replacing the existing Edinbane Wind Farm) and may also use the A850 for access, however access options for this project also include access from the south.

3.35 There is a possibility that all these projects could be undergoing construction at approximately the same time as the Proposed Development. It is acknowledged that this would have a potentially detrimental effect on traffic from the port at Kyle of Lochalsh and that coordination between developers and contractors would be required to mitigate these effects. Mitigation measures for this eventuality would be contained within the Construction Traffic Management Plan (CTMP), expected to be agreed with THC and Transport Scotland prior to the commencement of construction. A Framework CTMP is provided in **Technical Appendix 12.2**.

[3] The cumulative dataset was agreed with THC at 31 January 2023, however, the status of relevant projects was monitored and was still relevant at 31 May 2023 when the assessment was undertaken.

Construction Employment

3.36 The number of people employed during the construction period would vary depending on the stage of construction and the activities ongoing on site. 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 39 construction staff, at a point where the civils and electrical balance of plant 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

3.37 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 also the lifting of the turbine components, may occur outside the specified hours stated. These activities would not be undertaken without prior consultation with THC. 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 traffic management plan as set out in **Chapter 12: Site Access, Traffic and Transport**.

Construction Environmental Management Plan

3.38 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

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

- set up of staff welfare facilities;
- formation of the construction compound area;
- felling of woodland for habitat management;
- establishment of borrow pits; and
- establishment of internal tracks or upgrading of existing tracks.

Construction Compound

3.40 A construction compound (opposite the substation compound at NGR 133405, 847515[4] **Figure 3.1a-b**) would be required for the duration of the construction phase and would be retained for the lifetime of the project. Future use of this area for other technologies is being considered e.g. battery storage; but does not form part of this application.

3.41 The construction compound would have a footprint of up to 100m x 80m (8,000m^2) and would be likely to contain the following during construction:

- 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.

3.42 **Figure 3.10** illustrates a typical construction compound although the layout may differ depending on site topography and contractor requirements. Crane hardstanding areas, along with the construction compound, would be used for laydown during construction.

Tree Clearance

3.43 The Proposed Development would require 77.75ha of conifer forest to be cleared to facilitate the wider habitat restoration objectives and biodiversity net gain. No wind turbines and associated infrastructure would be located within forestry or require tree clearance.

3.44 The trees are generally of poor to very poor quality and do not currently contain merchantable timber. The consultant's report discusses tree clearance methodologies and whole tree harvesting is considered to be the most appropriate option for this. Due to the risk of soil erosion associated with stump removal on peaty soils on elevated sites, tree stumps in areas to be cleared and maintained as tree free would remain in-situ and allowed to degrade naturally. There should be little or no brash if whole tree harvesting is employed. Only areas required for the physical construction footprint of the Proposed Development would have stumps removed and has been assumed as follows:

- 10m radii of hardstanding areas around turbine bases (brash and stumps);
- 6m wide road construction corridor (within the 13m tree free road corridor) (brash and

[4] Centre point

stumps);

- areas of temporary construction compounds, substations and control buildings (brash and stumps); and
- borrow pits (brash and stumps).

3.45 Whole tree harvesting addresses the issue of the disposal of non-forest residues in line with SEPA's 'Waste Hierarchy' and their published guidance, 'Trees Cleared to Facilitate Development of Afforested Land' (SEPA, 2014). It is recommended that material generated as part of the clearance could be sold to existing biomass markets or used onsite in a number of constructive ways, as is the case of brash and stumps in the construction of floating roads if deemed to be suitable. On this basis there would be no requirement for mulching or spreading of material across the site.

Borrow Pits

3.46 Four borrow pit search areas have been identified onsite, which could provide up to approximately 141,500m^3 of aggregate to construct the Proposed Development. Quarrying all of these borrow pits would provide a greater volume of rock than would be needed for the construction of the Proposed Development, but would allow for the current uncertainty of the quality of the rock at these locations. A proportion of aggregate for track formations and subbases is assumed to be sourced from the proposed four onsite borrow pits with all higher grade aggregate assumed to be sourced offsite. Between 20-40% of the aggregate required on site would be required to be a higher quality and grade, which the material from the borrow pits may not provide. It is the aim of the Applicant to source as much of the rock as possible from onsite, as this would minimise the need to transport large quantities of aggregate across the Isle of Skye. The current preference would be for borrow pit number 4 (**Figure 3.11d**) to be used first, then borrow pit number 1 (**Figure 3.11a**), then borrow pit 2 (**Figure 3.11b**) if additional rock required and finally borrow pit 3 (**Figure 3.11c**).

3.47 It is likely that only some of the four borrow pits would be required, however for the purposes of the assessment all four borrow pits are assessed.

Access Tracks

3.48 Up to 13.5km of onsite access tracks would be required to provide access to the wind turbines, substation, construction compound and met mast (**Figure 3.1a-b**). Up to 9.4km of new track would be created and 2.3km of consented track and 1.8km of existing track would be used. There are two potential routing options for the proposed new track as shown on **Figure 3.1a-b** (the brown track would be required for all options and is included in the calculations below):

- Option A (shown in cyan): the track would be routed from the link between proposed turbines 1 and 2 southwards to proposed turbine 3; and a second link (A1 shown in green; or A2 shown in dark purple) would connect proposed turbines 2 and 4. Depending upon the orientation of the crane hardstanding and laydown area for proposed turbine 4, options A1 or A2 would be used:
    - Option A + A1 would require a total of 8.8km of new track;
    - Option A + A2 would require a total of 9.0km of new track;

- Option B (shown in pink): the track would be routed from the proposed construction compound south eastwards towards proposed turbine 4, passing to the north of proposed turbine 3 with a short spur to it. Option B would require a total of 9.4km of new track.

3.49 Tracks would be unpaved, constructed of a graded local stone and would comply with the turbine supplier requirements, typically with a running width of 5m in straight sections, increasing at bends, passing places and junctions to accommodate the safe passing of traffic including the turbine delivery vehicles, construction traffic and traffic anticipated due to the operation of Ben Aketil existing turbines and Ben Sca Wind Farm. The track corridor would include suitable earthworks (including cutting slopes and embankments), drainage and cabling electrical infrastructure. Additionally, nine turning heads would be constructed. Subject to further analysis and assessment following technical surveys, the detailed design will aim to maximise the use of stone extracted from the identified borrow pits for the Proposed Development.

3.50 Site access tracks require suitable drainage designed to control and dissipate the flow of surface water along and under them to allow self-drainage. The drainage system would accommodate the design storm water runoff and the maximum expected axle loads for the construction and the maintenance traffic. Subject to detailed design, run-off from the access tracks would be shed via a crossfall into track side ditches and settlement lagoons / ponds to attenuate flows and remove sediments before discharging to land. Where practical, interceptor (cut-off) ditches would be formed on the upslope side of the track to collect and divert clean water away from the access tracks. Cross drains would be installed at regular intervals to prevent flooding / surcharging of trackside drainage and maintain hydraulic pathways. As far as possible, these would coincide with naturally occurring drainage channels. Existing drainage infrastructure would be utilised where possible.

3.51 **Figure 3.5** 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**.

3.52 Site visits including extensive phase 1 and 2 peat probing surveys have confirmed the presence of peat, of variable condition and depth across the site area. This information will be used to optimise the design together with further ground investigation works. Where possible the turbines and tracks have been positioned to avoid areas of deepest peat. The use of floating track will be assessed once the intrusive ground investigation is concluded during the detailed construction design phase, taking into account the extensive peat probing undertaken as part of this EIA. The use of floating tracks will be limited by the natural gradient of the site slopes being greater than 5% over much of the site. The track construction would be mainly characterised by cut and fill or by a cut operation where there is a slope. Where the peat layer is more than 1m in depth and where there is a side slope the peat would be removed to an appropriate horizon.

3.53 Following construction, the tracks would be retained permanently throughout the full operational life of the Proposed Development to provide access for maintenance, repairs and decommissioning activities. Where appropriate, peat and soil from excavations on site would be utilised for reinstatement along both sides of the track verges and allowed to regenerate naturally as per relevant guidance from SEPA on reuse of excavated peat and the minimisation of waste in accordance with the Peat Management Plan (PMP) (an outline of which is provided in **Technical Appendix 10.2**).

Watercourse Crossings

3.54 Watercourse crossings have been avoided in the design and therefore no new watercourse crossings would be required.

Lighting

3.55 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 site boundary).

Materials Sourcing and Waste Management

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

3.57 A Site Waste Management Plan and Peat Management Plan would be developed for implementation during construction, as discussed in the outline CEMP (**Technical Appendix 3.1**) and Peat Management Plan (**Technical Appendix 10.2**). Thes documents outline the materials requirements, peat excavation and reuse and waste generation during construction and how the Applicant intends to consider the management of these aspects.

3.58 Concrete would be batched onsite at the construction compound for which water would be required. There may be potential to use water mains on the A850, or alternatively a location for a borehole would be required to be found onsite.

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

3.60 Where the borrow pits are deemed insufficient for certain construction operations, it may be necessary to import materials to the site. The amount of materials to be imported would be determined following further assessment of the construction strategy and detailed ground investigation works. It is likely that between 20-40% of the aggregate required on site would be required to be a higher quality and grade, which the material from the borrow pits may not provide. Two different assumptions for the number of possible vehicle movements, assuming different amounts of imported aggregate has been presented in **Chapter 12: Site Access, Traffic and Transport.**

Wind Turbine Layout

3.61 The Proposed Development is for up to 10, three-bladed horizontal axis wind turbines. The proposed turbine locations are shown on **Figure 3.1a-b** and the coordinates for each are provided in **Table 3-3**.

Table 3-2
Turbine Coordinates and Specifications

Turbine No.	Easting	Northing	AOD (m)
T1	134159	847610	219
T2	134533	847431	187
T3	133956	846826	243
T4	134468	846720	199
T5	133436	846328	237
T6	133926	846404	215
T7	134321	846155	171
T8	133367	845915	204
T9	133779	845866	193
T10	134266	845744	158

Wind Turbines and Transformers

3.62 A range of wind turbine models may be suitable for the Proposed Development, and the final choice of turbine model would be selected through a competitive procurement process. An example of an indicative turbine model is shown on **Figure 3.3,** provided to illustrate a similar turbine to that proposed.

3.63 Based upon a maximum blade tip height of 149.9m, it is anticipated that the installed nominal capacity of each wind turbine would be approximately 4.5MW. The Proposed Development would therefore provide a total installed capacity of approximately 45MW.

3.64 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 THC.

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

Foundations and Crane Hardstandings

3.66 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.

3.67 The proposed wind turbines would typically have gravity foundations laid using reinforced concrete and would have a diameter of up to 25m. Depth of the excavation would depend on the need to reach suitable ground. Excavations would be on average approximately 3m deep. A typical turbine foundation design is shown on **Figure 3.4**. The sides would be graded back, from the foundation and battered to ensure that they remain stable during construction.

3.68 The turbines would be erected using mobile cranes or similar technically capable cranes brought on to the site for the construction phase. A crane hardstanding would be built adjacent to each wind turbine and is likely to have a footprint of approximately 36m x 22m and would be approximately 1m in depth, comprising:

- a main crane area – 22m (L) x 22m (W); and
- an auxiliary crane area – 14m (L) x 22m (W).

3.69 Additional blade, nacelle and tower storage areas would also be required and are likely to comprise:

- a tower storage area – 36m (L) x 20m (W) adjacent to the crane hardstanding;
- a nacelle storage area – 22m (L) x 6m (W) adjacent to the crane hardstanding; and
- a blade storage area – 74m (L) x 15m (W) on the opposite side of the track to the crane hardstanding.

3.70 The actual crane hardstanding design and layout would be determined prior to construction through the detailed design process according to the turbine supplier specifications, the preferred erection method and the lifting studies. An indicative crane hardstanding design including the various adjacent laydown areas is shown on **Figure 3.6**.

3.71 The crane hardstanding areas would then remain in situ for the duration of the operational phase of the Proposed Development in order to enable maintenance activities to take place.

3.72 Soils that are excavated during construction would be set aside for backfilling the batter areas around 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 and Electrical Cabling

3.73 The Proposed Development would be connected to the electricity network via an onsite substation building measuring approximately 15m x 25m and located within the substation compound (approximately 30m x 35m) at NGR 133350, 847485. 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 3.8**.

3.74 The main control building would be single storey, built on a pre-cast concrete base and would measure approximately 15m x 25m and 5m high. It is proposed that the buildings would have a rendered finish; the final external finishes would be agreed with THC. A typical control building elevation is shown on **Figure 3.9**.

3.75 Underground power cables would run along the side of the access tracks in trenches from each of the turbines to the substation control building. Typical cable trench arrangements are shown on **Figure 3.7**.

Site Restoration Post Construction

3.76 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.

3.77 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

3.78 The Proposed Development would have an operational life of up to 40 years from first commissioning (export to the electrical grid).

Electricity Generation

3.79 The proposed turbines would start to generate electricity at wind speeds of around 2.5m/s (4.5mph). Electricity output would increase as the wind speeds increase up to a maximum of around 15m/s (33.5mph), when the wind turbines would reach their maximum capacity. The turbines would continue to operate at maximum capacity up to wind speeds of around 25m/s (55.9mph). Above 25m/s the turbines would operate at a reduced output under a storm-control mode up to a wind speed of 34m/s (76mph).

3.80 The Proposed Development would produce an average of approximately 167,140 Mega Watt hours (MWh) of electricity annually (which corresponds to a capacity factor of 42.4%). This equates to the power consumed by approximately 47,600 average UK households[5], which would be well above the energy requirements of the 13,143 homes on the Isle of Skye[6].

Maintenance

3.81 The proposed wind farm would largely be controlled and managed remotely, however there would

[5] Calculated using the most recent statistics from the Department of Business, Energy and Industrial Strategy (BEIS) showing that annual UK average domestic household consumption is 3,509kWh (RenewableUK, December 2022).

[6] Taken from estimated 2017 data, source: Skye and Lochalsh Population and demography, Paper 1 of a population needs assessment for Skye and Lochalsh NHS Highland April 2019.

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.

3.82 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 assessment of tracks, drainage and buildings for required maintenance. Turbine maintenance includes the following:

- annual civil assessment of tracks and drainage and subsequent maintenance identified as part of the assessment;
- scheduled routine maintenance and servicing;
- unplanned maintenance or call outs;
- HV and electrical maintenance as appropriate; and
- blade inspections.

Access Tracks

3.83 The Proposed Development would further enhance the link routes proposed for Ben Sca Wind Farm by providing additional wind farm access tracks within the site that could be used for informal recreation, increasing the opportunity for walking and cycling in the local area. The Proposed Development would be connected via the consented Ben Sca Wind Farm tracks to the Ben Aketil Wind Farm tracks. A potential link path connecting to the existing tracks associated with the Edinbane Wind Farm is shown on **Figure 14.2.1** and discussed further in the Preliminary Access Management Plan (**Technical Appendix 14.2**).

Habitat Management Plan

3.84 As part of the Proposed Development an area of approximately 77.75ha would be targeted for peatland restoration in order to compensate for habitat loss and provide biodiversity net gain in line with NPF4 Policy 3(b).

3.85 The peatland restoration would be implemented by clearing stunted conifer plantation forestry and ditch blocking to restore the original pre-forestry conditions, enabling the development of peatland habitats (blanket bog) as part of a Habitat Management Plan. As detailed in **Chapter 8,** studies have shown that the methods proposed to promote restoration (ditch blocking) are considered to have a high likelihood of success, initially in terms of restoring the water table, and in time the reversion of the area to blanket bog. An outline HMP is provided in **Technical Appendix 8.5**.

Community Benefit and Shared Ownership

3.86 The Proposed Development is being brought forward with the opportunity for community shared ownership. The preferred model for shared ownership in the project is through revenue (profit)

sharing. Discussions have progressed with representative community groups on Skye, specifically regarding the opportunity for the communities investing in the consented Ben Sca Wind Farm. The community of interest and reasons for selection of the area for the shared ownership opportunity is illustrated in the **PAC Report**, accompanying the application. An 'Agreement of Intent' has been developed with the local Community Trusts to formalise the intention to work together towards implementing a shared ownership scheme for the consented Ben Sca project. Local Energy Scotland has been providing independent advice and support to communities interested in the shared ownership opportunity. It is proposed that the community shared ownership opportunity which is developed for Ben Sca will be adapted as appropriate for the Proposed Development at Balmeanach. Further details of the consultation effort associated with and response from communities is provided in the **PAC Report** accompanying the application. Discussion relating to the shared ownership offering is also provided in the **Planning Statement**.

3.87 In addition to the shared ownership opportunity, should the Proposed Development gain consent, a Community Benefit Fund would be made available to the community of interest illustrated within the **PAC Report**. 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 £9 million over the 40 year life of the wind farm.

3.88 Consultation with the local community has highlighted concern over the relatively high cost of electricity on Skye, despite several wind farms now in operation. The Applicant is proposing to offer, as part of its Community Benefit package, a contribution to electricity bills to residents within a distance of the turbines to be agreed in consultation with the communities, over the 40 year life of the wind farm. Part of this offer also looks to entice properties and communities to increase their energy efficiency and reduce their carbon emissions by offering a capitalised lump sum to enable this.

DECOMMISSIONING PHASE

3.89 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 and approved to extend the operational period or to repower the site. The decommissioning period would be expected to take up to one year.

3.90 The ultimate decommissioning protocol would be agreed with THC 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). Financial provision for the decommissioning would be provided. It is anticipated that the DRP would be the subject of a planning condition.

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

3.92 **Table 3-4** 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 3-3
Decommissioning Requirements for Infrastructure

Element	Decommissioning Requirement
Turbines and Met Mast	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 and Met Mast 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	It is considered most environmentally friendly to allow the crane hardstandings to remain in situ and not disturb the ground further at the end of the projects life, allowing natural revegetation of the areas. 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 hardstanding areas could then be used by the landowner.
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.
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 in agreement with the grid operator and either reused, recycled or disposed of appropriately. Oils or lubricants from the compound would be removed and disposed of appropriately. If agreed, the control building, and related infrastructure, would then be demolished and all materials would be reused, recycled or disposed of appropriately.
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.

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