Chapter 3 Project Description

Contents

3 Project Description

3.1 Introduction

3.1.1 This chapter provides a description of the Proposed Development site and its geographical context. It presents a description of the Proposed Development for which consent is being sought, for the purposes of informing the identification and assessment of likely significant environmental effects. This includes details of the proposed infrastructure components, as well as outline information on proposed construction methods and programme, the operation of the Proposed Development, and the approach to decommissioning.

3.2 Site Status and Context

Background and Site Description

3.2.1 The Proposed Development is located approximately 4 km south of Gorebridge and 9.5 km south-east of Penicuik within the northern edge of the Moorfoot Hills in the Midlothian Council (MC) Area (refer to **Figure 1.1**). The village settlements of North Middleton and Temple lie approximately 3 km to the north-east and north-west of the site respectively. The site lies on land between Gladhouse Reservoir and Whitelaw Cleugh, and the approximate site centre is at British National Grid (BNG) 333932 654430.

3.2.2 The site comprises an area of approximately 853 hectares (ha). The site is set within a mixed landscape of undulating farmland, fragmented moorland and forestry which is populated sparsely by settlements. The elevation on site varies in topography from 270 m Above Ordnance Datum (AOD) along the northern boundary to 490 m AOD near at the summit of Mauldslie Hill. The elevation generally decreases towards the north-west (refer to **Figure 1.2**).

3.2.3 A number of tributaries to the Black Burn, Latch Burn, and Middleton North Burn intersect the site and there is a small area of Ancient Woodland overlapping the northern boundary. The site is primarily agricultural, predominately used for livestock farming.

3.2.4 Broad Law Quarry is located within the southern area of the site boundary and is currently in use as a rocket engine testing facility.

3.2.5 There are no residential properties (either existing or for which there is a live planning permission) within the Proposed Development's site boundary. The nearest financially involved property is within approximately 140 m of

the site boundary to the north, however there is considerably greater distance between nearby properties and the proposed turbines, with the nearest property approximately 1 km from any proposed turbines. Edinburgh, the nearest city to the site, lies around 13 km to the north-west of the site.

Environmental Designations

3.2.6 **Figure 3.1** shows sites with environmental designations within 10 km of the Proposed Development. A brief summary of these is provided below, with full descriptions provided in the relevant technical chapters of the Environmental Impact Assessment (EIA) Report.

3.2.7 There are two small areas of Ancient Woodland that overlap the site, notably Cockmoor wood, which overlaps the northern boundary. There are no other environmental designations within the site boundary.

3.2.8 The following designations are situated outwith the site boundary but within 5 km (distances below from the site boundary to the designation at its nearest point):

- Moorfoot Hills Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI) & Royal Society for the Protection of Birds (RSPB) Important Bird Area (IBA) (~145 m south)
- Gladhouse Reservoir SSSI, Special Protection Area (SPA), Ramsar & IBA (~700 m north-west)
- Two further SACs: River Tweed SAC (~1.1 km south) and Peeswit Moss SAC and SSSI (~2.7 km north-west)
- Two further SSSIs: Dundreich Plateau SSSI (~4 km south-west) and Crichton Glen SSSI (~4.2 km north-east)
- Four Conservation Areas: Borthwick & Crichton (~2.2 km north-east), Temple & Arniston (~3 km north), Carrington (~4.7 km north) and Gorebridge (~4.8 km north)
- Arniston Garden and Designed Landscape (GDL) (~3.6 km north)
- A number of areas of Ancient Woodland, including a small area adjacent to the eastern boundary of the site
- Nine Scheduled Monuments
- 163 Listed Buildings – 17 Category A, 52 Category B and 94 Category C

3.2.9 Additionally, the following designations are situated between 5 and 10 km from the site boundary:

- Fala Flow SSSI, SPA, Ramsar & IBA (~6.3 km north-east)

- Three Further SSSIs: Black Burn SSSI (~9 km north-west), Roslin Glen (~9 km north-west), Keith Water SSSI (10 km north-east)
- Keith Water Geological Conservation Review Site (GCR) (~10 km north-east)
- Thirteen Conservation Areas: Newlandrig (~5.9 km north), Dalhousie & Cockpen (~7.1 km north), Newtongrange (~7.3 km north), Pathhead & Ford (~7.7 km north), Dewartown (~7.7 km north), Howgate (~7.7 km north-west) Edgehead (~8.3 km north), Newbattle (~8.6 km north), Fala Dam (~8.7 km north-east), Fala (~8.9 km north-east), Roslin (~9 km north-west), Eddleston (~9.5 km south-west), Penicuik (~9.5 km north-west)
- Six GDLs: Portmore (~6 km south-west), Newbattle Abbey (~8.4 km north), Oxenfoord Castle (~8.8 km north-east), Roslin Glen and Hawthornden Castle (~9 km north-west), Prestonhall (~9.2 km north-east) and Penicuik (~9.6 km north-west)
- Battle of Roslin Inventoried Battlefield (~9.5 km north-west)
- Two Country Parks: Vogrie (~6.4 km north) and Roslin Glen (~9.2 km north-west)
- A number of areas of Ancient Woodland
- 55 Scheduled Monuments
- 339 Listed Buildings

Cumulative Developments

3.2.10 **Figure 6.28** shows the locations of other relevant onshore wind farm developments, including those that are operational, under construction, consented, in planning, or in scoping within 10 km of the Proposed Development at the time of assessment (September 2023). Potential cumulative effects with these developments have been assessed throughout the EIA Report, where there is sufficient information.

3.2.11 Further detailed discussion on the approach to cumulative assessment is presented in each technical chapter as relevant.

3.3 Description of the Proposed Development

Overview

3.3.1 The final Proposed Development layout is illustrated in **Figure 1.3** and would comprise 18 wind turbines with an indicative installed capacity of approximately 108 MW. In addition to the turbines, associated infrastructure will include:

- site access;
- site tracks;
- crane hardstandings;
- on-site substation and control building;
- energy storage facility;
- underground cabling;
- laydown area;
- potential concrete batching plant;
- potential excavations/borrow pit workings; and
- a temporary construction compound and temporary enabling works compound.

Micrositing

3.3.2 Whilst the location of the infrastructure described above has been determined through an iterative environmental based design process, there is the potential for these exact locations to be altered through micro-siting allowances prior to construction. A micro-siting allowance of up to 50 m in all directions is being sought in respect of each turbine and its associated infrastructure in order to address any potential difficulties which may arise in the event that pre-construction surveys identify unsuitable ground conditions or environmental constraints that could be avoided by relocation. No micro-siting will be undertaken that results in an increase in the significance of adverse effects. It is proposed that the micro-siting of all infrastructure will be subject to an appropriately worded planning condition.

3.3.3 The assessments within this EIA Report have included the considerations of this 50 m micro-siting and it does not alter the conclusions formed as to worst case effects.

Turbines and Turbine Foundations

3.3.4 The Proposed Development will comprise 18 turbines up to 180 m tip height when vertical (refer to **Figure 1.3**). The indicative combined generation capacity of the turbines is anticipated to be 108 MW.

3.3.5 The proposed locations of the wind turbines have been defined to enable the EIA to fully assess the Proposed Development for which permission is being sought. The BNG coordinates denoting where each of the wind turbines are proposed to be located are listed in **Table 3.1**.

Table 3.1 Wind Turbine Coordinates

Turbine	X- coordinate	Y-coordinate
T1	332373	652918
T2	332205	653468
T3	331970	653859
T4	332926	653190
T5	333071	653937
T6	333364	653586
T7	332784	654287
T8	333680	654148
T9	333296	654627
T10	333992	653817
T11	334246	654297
T12	333970	654732
T13	334697	654797
T14	334467	655447
T15	335122	655203
T16	334907	655992
T17	335349	655780
T18	335667	655453

3.3.6 Each of the turbines comprises the following components:

- three blades;
- tower;
- nacelle;
- hub; and
- transformer and switchgear.

3.3.7 Each wind turbine will have a nacelle mounted on a tapered tubular steel tower. The nacelle will contain the gearbox or direct drive, the generator, the transformer and other associated equipment. The hub, and rotor assembly, including three blades, will be attached to the nacelle.

3.3.8 An elevation drawing of a typical turbine is illustrated in **Figure 3.2.** The turbines will be of a typical modern, three-blade, horizontal axis design in semi-matt white or light grey with no external advertising or lettering except for statutory notices. The specific wind turbine manufacturer and model has not yet been selected as this will be subject to a tendering exercise and will be confirmed post consent. For the purposes of the EIA, a candidate turbine model has been identified to define the parameters used in the various technical assessments. The candidate turbine is the Vestas

V150, with rotor diameter of 150 m and a hub height of 105 m. The rotor diameter and hub height of the final selected turbine may differ from these values, however the turbine tip height will not exceed 180 m. Given this committed maximum tip height, and the range of turbine models likely to be available and suitable for the local wind conditions, there is considered to be negligible potential for the significance of environmental effects to be different than as assessed based on the candidate turbine model. It is anticipated that confirmation of the final selected turbine dimensions will be required by a suitably worded planning condition.

3.3.9 The switchgear will be sited either within the base of each tower or externally sited, on the ground inside its own enclosure, a few metres away from the tower. For the purpose of the EIA it has been assumed that the switchgear will be contained within each tower base.

3.3.10 Typical wind turbine foundations consist of steel reinforced concrete. They are expected to comprise either gravity type or piled type foundations. Until detailed ground investigations have been undertaken, the exact size and depth of foundations required cannot be determined. Therefore, for the purposes of this EIA Report, the following dimensions have been used:

- a round reinforced concrete slab approximately 542 m^3; and
- depth of the foundations will vary between approximately 2.5 m and 3.5 m.

3.3.11 An illustration of a typical wind turbine foundation is provided in **Figure 3.3a and Figure 3.3b**. The final foundation design will be specific to the site conditions as verified during detailed pre-construction site investigations. In the unlikely event that ground conditions are unsuitable for the standard foundation design as described above, an alternative foundation design may be required, although it is not expected that this would materially affect the conclusions of the EIA.

Crane Hardstandings

3.3.12 To enable the construction of the turbines, a crane hardstanding area and turning area at each turbine location will be required to accommodate assembly cranes and construction vehicles. This will comprise a crushed stone hardstanding area measuring approximately 1,925 m^2. The actual dimensions will be subject to the specifications required by the selected turbine manufacturer and crane operator and following detailed site investigations prior to construction commencing.

3.3.13 The crane hardstandings will remain in place during the lifetime of the Proposed Development to facilitate maintenance work.

3.3.14 Indicative crane hardstandings are illustrated in **Figure 3.4.** Detailed construction drawings with final dimensions will be provided prior to commencement once the final turbine model has been selected.

Site Access Tracks and Site Traffic

3.3.15 The proposed site access point is a newly constructed junction on the B7007, entering the site from the north-east. An indicative drawing of the Abnormal Indivisible Load (AIL) access junction and an indicative AIL delivery route are shown in **Figure 3.6** and **Figure 3.7.**

3.3.16 The Proposed Development will include approximately 17 km of new access tracks. All new access tracks have been designed to avoid sensitive environmental receptors and the need to float tracks over peat. They will be formed largely of locally sourced stone and from the on-site borrow pits (see 'Borrow Pits' section below) and will have a typical running width of 5 m plus drainage provision in verges. A typical access track arrangement is detailed in **Figure 3.5** and typical drainage details are provided in **Figures 3.8a-c.**

3.3.17 A Transport Assessment (**Technical Appendix 11.1**) has been undertaken in support of the application for the Proposed Development and this provides detail on access routes to the site for construction vehicles and provides an estimate of trip generation during construction. The Transport Assessment includes a review of the proposed route, construction traffic impacts, and an abnormal load route review. Traffic and transport effects are discussed further in **Chapter 11: Traffic and Transport**.

3.3.18 Prior to construction, any required improvements to public roads will be undertaken and appropriate highway safety measures will be agreed with MC and Transport Scotland, with necessary signage or traffic control measures implemented throughout the construction phase on the agreed basis.

Watercourse Crossings

3.3.19 The tracks providing access to the proposed turbines and other infrastructure will need to cross surface watercourses at several locations. Watercourse crossings have been avoided in the design of the access track layout as far as possible, however there will be eleven new watercourse crossings within the site (coordinates provided in **Table 3.2**).

3.3.20 **Table 3.2** below summarises the new watercourse crossings that will be required, and these are shown on **Figure 10.1**. Further details of the water crossings are included in **Technical Appendix 10.3** and discussed within **Chapter 10: Geology, Hydrology & Hydrogeology**.

3.3.21 An indicative drawing for a typical watercourse crossing is provided in **Figure 3.9**. It is proposed that the final detailed design for all water crossings, will be addressed through an appropriately worded condition and in accordance with the requirements of the *Water Environment (Controlled Activities) (Scotland) Regulations 2011* (CAR).

Table 3.2 Proposed Watercourse Crossing ID, Location, and Type

ID	Easting	Northing	Proposed Crossing Type
WX1	332439	653273	Culvert
WX2	332801	653401	Culvert
WX3	332973	653551	Culvert
WX4	333035	653876	Culvert
WX5	333568	654184	Culvert
WX6	333993	654155	Not Surveyed
WX7	334090	654487	Culvert
WX8	334323	654360	Culvert
WX9	334402	654944	Culvert
WX10	334946	655136	Culvert
WX11	335192	655899	Culvert

Construction Compounds

3.3.22 A temporary construction compound and a temporary enabling works compound will be required during construction. The locations of these compounds are shown in **Figure 1.3,** and an indicative layout of a typical construction compound is provided in **Figure 3.14** and an indicative layout of a typical enabling works compound in **Figure 3.15**. The temporary enabling works compound will comprise an area of approximately 900 m^2, and the temporary construction compound will comprise an area of approximately 3,600 m^2.

3.3.23 The compound areas will house temporary portable cabin structures to be used as the main site office and welfare facilities, including toilets, clothes drying and kitchen, with the provision for sealed waste storage and removal. Adequate parking will be provided for cars and light vehicles.

3.3.24 They will also be used for the storage and assembly of wind turbine components, containerised storage for tools and small parts, and storage for cables, oil and fuel as required. Access to the main site with mandatory signing in and out procedures will be located at the entrance to the temporary enabling works compound.

3.3.25 The proposed locations of the compounds are on firm ground and avoid habitats of highest sensitivity. Prior to commencing construction work, a detailed appraisal of the areas will be required, including an assessment by the project ecologist and also trial pits and /or boreholes to confirm the nature of the sub-strata.

3.3.26 The detailed location, size and engineering properties of the construction compounds will be confirmed prior to the start of construction, after the turbine supplier and model have been confirmed.

3.3.27 On completion of construction works, it is proposed that the temporary construction compound will be repurposed to form part of the energy storage facility. All other temporary structures will be removed, and areas restored.

Substation, Energy Storage & Cabling

3.3.28 The electrical power produced by the individual turbines will be fed to an onsite substation and energy storage facility via underground cables. The locations of the proposed substation and energy storage facility are shown on **Figure 1.3**.

3.3.29 The design of the substation and control room building is relatively flexible and where appropriate may be clad in local materials to match in with the surroundings. Technology continues to develop in the field of energy storage, therefore the design of that element of the compound is proposed to be secured by an appropriately worded planning condition.

3.3.30 The wind farm array cables on site will be laid in trenches, typically approximately 0.5 m deep and 1 m wide, laid on a sand bed and backfilled using suitably graded material. The trenches will also carry earthing and communication cables for the operation of the Proposed Development. Cabling will mainly be located adjacent to the access tracks within the wind farm itself. An indicative cable trench is shown in **Figure 3.13**.

3.3.31 The substation compound will be approximately 6,314 m^2 and will be constructed of compacted stone bearing directly on a suitable formation strata, including reinforced concrete foundations for the buildings and ancillary equipment. The substation compound would contain 33kV/132kV

step-up transformers, associated switchgear, telecommunications mast and ancillary equipment suitable for a transmission connection to the electricity grid system. The control building would accommodate metering equipment, switchgear, the central computer system and electrical control panels. It is anticipated that the Transmission Operator (TO) will also require their own control building. In addition to the control buildings a welfare building will be installed for all personnel. An indicative substation layout and elevation drawing are provided in **Figure 3.10a) and Figure 3.10b).**

3.3.32 The telecommunications mast is expected to be up to 10 m tall. A typical elevation of the telecommunications mast is presented in **Figure 3.11**.

3.3.33 A separate energy storage facility with battery capacity with an installed capacity of around 50 MW will be located adjacent to the control building. The energy storage facility will comprise a total area of approximately 8,325 m^2. An indicative layout and elevation for the energy storage facility are shown in **Figures 3.12a and 3.12b.**

3.3.34 Details of the final design of all components of the substation and energy storage compound are proposed to be secured through an appropriately worded condition.

Borrow Pits

3.3.35 To minimise the volume of imported material brought onto the site and any associated environmental impact, borrow pits may be used to source stone for access track and compound construction. A borrow pit is an area where material has been excavated for use at another location.

3.3.36 Two borrow pit search areas have been identified within the Proposed Development boundary; these are shown on **Figure 1.3**. As described in **Chapter 2: Site Selection and Design Evolution**, these areas were identified to have suitable bedrock geology (based on British Geological Survey mapping), shallow peat depth and suitable topography, and were sited to minimise visual impacts. These borrow pit search areas are shown as the maximum potential area of borrow pit extraction, but it is not anticipated that these areas would be fully exploited. An indicative borrow pit arrangement is shown in greater detail in **Figure 3.16**.

3.3.37 Detailed site investigations prior to construction will be carried out to further confirm the rock type, rock characteristics and suitability, as well potential volumes to be extracted from the search area. The final borrow pit(s) identified during the geotechnical evaluation will be defined within the Construction Environmental Management Plan (CEMP) (refer to

Technical Appendix 3.1). The pollution control measures to be implemented during usage of the borrow pit(s) and its reinstatement will also be covered within this document.

3.3.38 The borrow pits will require the use of plant to both win and crush the resulting rock to the required grading. It is anticipated that rock will be extracted by breakers and other relevant methods that may be required. Noise associated with stone extraction is discussed further in **Chapter 12: Acoustic Assessment.**

3.3.39 Environmental considerations have influenced the location of the borrow pit search areas to minimise the effect on ecology, hydrology and landscape, and to allow successful reinstatement measures to be put in place as appropriate. Following excavation, the borrow pit(s) will be restored and reinstated to agreed profiles.

3.3.40 A Borrow Pit Management Plan will be agreed with Scottish Environment Protection Agency (SEPA) and MC prior to the commencement of construction. An outline Borrow Pit Management Plan is included in **Technical Appendix 3.2**.

3.3.41 If an on-site batching plant is required, it would be situated within a borrow pit or at another secure location which would be agreed in advance with SEPA and Scottish Water prior to construction. **Figure 3.17** presents a typical batching plant layout.

3.3.42 The batching plant equipment will include:

- concrete and aggregate storage bins;
- concrete batching equipment;
- wash out facilities;
- testing facilities;
- water supply; and
- waste storage area.

3.3.43 It is anticipated that a borehole would be sunk to provide a reliable water supply for the batching plant. Any borehole would be subject to suitable yields being available, which will be determined through future detailed ground investigation. Any borehole would require suitable authorisation from SEPA under CAR.

3.4 Grid Connection

3.4.1 An agreement is in place between the Applicant and Scottish Power Transmission, the Transmission Operator (TO), for the connection of the Proposed Development into the electricity network.

3.4.2 The proposed point of connection for the Proposed Development is at the on-site substation compound. The Proposed Development would then be connected at Gala North Substation, a new substation to be constructed approximately 21 km to the south-east of the site.

3.4.3 The connection would be comprised of buried 132kV cables and/or OHL. The exact arrangement of this grid connection is subject to detailed design by the TO.

3.4.4 The final grid connection route and associated consents will be subject to a separate consenting process and EIA if required and would be the responsibility of the TO.

3.5 Construction

3.5.1 The Proposed Development will be constructed over a period of approximately 24 months and anticipated to commence in 2027 Construction would include the principal activities listed within the indicative construction programme as provided in **Table 3.3** below.

Table 3.3 Indicative Construction Programme

Task	Year 1 (quarters)				Year 2 (quarters)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Mobilisation								
Access & Site Tracks								
Crane Hardstanding								
Foundations								
On-site Cabling								
Substation civils works								
Substation construction								
Turbine Delivery								
Turbine Erection								

Task	Year 1 (quarters)				Year 2 (quarters)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Commissioning & Testing								
Site Reinstatement								

3.5.2 Normal construction hours will be between 07:00 and 19:00 Monday to Friday and 07:00 and 13:00 on Saturdays. These times have been chosen to minimise disturbance to local residents. It must, however, be noted that out of necessity due to weather conditions and health and safety requirements, some generally quiet activities, for example abnormal load deliveries (which are controlled by Police Scotland) and the lifting of the turbine components, may occur outside the specified hours stated. Any construction out with these hours will be in line with the noise limits as assessed in **Chapter 12** and advance warning of any works outwith the agreed working hours will be provided to MC and local residents.

Construction Materials

3.5.3 The main materials likely to be required for the construction of the access tracks, turbine and substation foundations, and hardstanding areas, are as follows:

- crushed stone
- geotextile;
- cement;
- sand;
- concrete;
- steel reinforcement; and
- electrical cable.

3.5.4 The construction areas will be subject to excavations, initially by stripping back the soil from the area to be excavated. This soil will typically be stored separately either in a mound adjacent to the excavation area for backfill, if required, or stored at a designated area on-site for further use or reinstatement of temporary works areas. The handling of soils will be undertaken in accordance with best practice techniques, with particular consideration given to appropriate handling and storage of peat soils (refer to the outline Peat Management Plan presented in **Technical Appendix 10.2**).

3.5.5 For the purposes of the transport assessment, it has been assumed that concrete will be batched on-site at a dedicated concrete batching area

within the construction compound, and materials will be delivered to site on a spread programme.

3.5.6 Should surface water run-off or groundwater enter excavations during construction of the turbine foundations, appropriate pumping measures away from watercourses will be implemented to ensure the works are safely carried out and the excavation is sufficiently dry to allow concrete placement. Once the concrete is cast, the excavated material will be used for backfill and compacted to the required design density. Once this backfill is completed, the crane hardstanding areas will be constructed.

3.5.7 The turbines will be erected using a large mobile crane or crawler crane, positioned on the hardstanding adjacent to the turbine base. A smaller tail crane will be positioned adjacent to the delivery position of the turbine components. The two cranes will lift the tower sections and blades into their assembly positions, and the main crane will lift the tower sections, nacelle and blades into their operational positions.

3.5.8 As soon as practical, once installation is complete, the immediate construction area will be restored to its original profile, although the crane hardstandings will be retained for future maintenance. The soils will be replaced and reseeded where appropriate and as advised by an on-site Environmental Clerk of Works (ECoW). Any surplus soils will be used to restore track edges after construction. This progressive reinstatement has been found to assist with re-establishment of the local habitats as it minimises the time soils are in storage.

3.6 Environmental Management

Pollution Prevention and Health & Safety

3.6.1 Prior to commencement of construction, a pollution prevention strategy, contained within the CEMP, will be agreed with the SEPA to ensure that appropriate measures are put in place to protect watercourses and the surrounding environment. Further details regarding the contents of the CEMP are provided in the next section of this chapter.

3.6.2 As with any development, during the construction stage there are potential risks to the quality of the water environment in water bodies, watercourses and local drains. The occurrence of incidents which result in adverse impacts to the water environment mostly arise from poor site practice; therefore, careful attention will be paid to the appropriate guidance and

policies to reduce the potential for these to occur (refer to **Chapter 10: Geology, Hydrology & Hydrogeology** for further details).

3.6.3 Any fuel or oil held on-site will only be of an amount sufficient for the plant required. This will be stored in a bunded area within the temporary construction compound. Further details of site-specific storage and management of fuel and oil and protection of the water environment during construction is presented in **Chapter 10.**

3.6.4 High standards of health and safety will be established and maintained. At all times, all activities will be undertaken in a manner compliant with applicable health and safety legislation and relevant good practice as defined under applicable statutory approved codes of practice and guidance.

Construction Environmental Management Plan

3.6.5 As part of the construction contract, to ensure that all mitigation measures as set out within this EIA Report are carried out on site, the contractor responsible for undertaking the construction works shall produce and adhere to a CEMP. The CEMP shall be developed in accordance with 'Good Practice During Wind Farm Construction' (Scottish Government et al., 2019).

3.6.6 The CEMP shall describe how the Applicant will ensure suitable management of the following environmental issues during construction of the Proposed Development:

- noise and vibration;
- dust and air pollution;
- surface and ground water;
- ecology (including protection of habitats and species);
- agriculture (including protection of livestock and land);
- cultural heritage;
- waste (construction and domestic);
- pollution incidence response (for both land and water); and
- site operations (including maintenance of the construction compound, working hours and safety of the public).

3.6.7 The CEMP is anticipated to include or cross-reference to, the following documentation:

- Construction Methodology Statements (CMSs);
- Construction Traffic Management Plan (CTMP);
- Pollution Prevention Plan (PPP);
- Site Waste Management Plan (SWMP);

- Drainage Management Plan (DMP);
- Peat Management Plan (PMP) (refer to an outline plan in **Technical Appendix 10.2**); and
- Biodiversity Enhancement Management Plan (BEMP) (refer to an outline plan in **Technical Appendix 8.6**).

3.6.8 The contractor and/or Applicant shall consult with MC, SEPA, NatureScot and Historic Environment Scotland (HES) on relevant aspects of the CEMP. The contractor shall amend and improve the CEMP as required throughout the construction and decommissioning period.

3.6.9 The CEMP shall contain details of all environmental mitigation required during construction and details on how the contractor will implement and monitor this mitigation. The CEMP will also contain details on how the contractor will liaise with the public and landowners and how queries or complaints will be responded to.

3.6.10 Specific requirements of the CEMP for each of the environmental topics assessed within the EIA are provided in the relevant EIA Report chapters and an outline CEMP is provided in **Technical Appendix 3.1.**

Traffic & Transportation

3.6.11 A detailed Transport Assessment has been undertaken which provides details regarding transport and access to the site (refer to **Chapter 11**).

3.6.12 Traffic associated with the construction and maintenance of the Proposed Development falls into two main categories, namely Abnormal Indivisible Loads (AIL) and Construction / Maintenance Loads. The abnormal loads are those that will require an escort, either by private contractor or by police escort. Construction / maintenance loads are those that do not require any special escort or permissions and are only influenced by normal traffic regulations.

3.6.13 The Applicant will ensure that the vehicles will be routed as agreed with MC, Transport Scotland and Police Scotland, to minimise disruption and disturbance to local residents and road users. Further details regarding transport and access can be found in **Chapter 11** of this EIA Report.

Pre-Construction Surveys

3.6.14 Detailed surveys have informed the design process of the Proposed Development. However, certain design elements are dependent on turbine model and manufacturer, therefore detailed construction details will be decided once the final turbine model has been confirmed.

3.6.15 Pre-construction surveys will be undertaken to update the ecological and ornithological baseline and to perform detailed geotechnical ground surveys, further details of these are provided in the relevant technical chapters.

3.6.16 The Applicant will engage an ECoW onsite during the construction phase. The ECoW be responsible for pre-construction surveys and will monitor the construction process on site to provide advice and ensure that the measures within the CEMP are followed.

3.7 Public Access

3.7.1 Public Right of Way (PRoW) LM173 and Scottish Hill Track 39: Leadburn to Heriot (HT43) cross the south-western boundary of the site, approximately 250 m from the closest proposed turbine location and outwith all proposed infrastructure and access requirements. PRoW BE1 is located immediately adjacent to the south-western boundary, providing a link to LM173.

3.7.2 Prior to construction of the Proposed Development, an Outdoor Access Management Plan (OAMP) will be prepared in consultation with MC. It will detail the maintenance of safe public access routes within and around the site during construction and long-term public access during operation of the Proposed Development.

3.8 Operation and Maintenance

3.8.1 The lifetime of the Proposed Development is envisaged to be 50 years from the final commissioning to commencement of decommissioning.

3.8.2 The Proposed Development would be maintained throughout its operational life by a service team. The service team would comprise of operation management, operations technicians and support functions undertaking the scheduled and unscheduled maintenance throughout the year. 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 civil maintenance of tracks, drainage and buildings. Turbine maintenance includes the following:

- Civil maintenance of tracks and drainage;
- Scheduled routine maintenance and servicing;
- Unplanned maintenance or call outs;
- High Voltage (HV) and electrical maintenance; and

- Blade inspections.

3.8.3 In the unlikely event that a major turbine component requires replacement, vehicles will use the new access tracks and crane pads, which will be retained during the operational phase to allow access.

3.8.4 Health and safety will be controlled as set out in the construction phase.

Operation Environmental Management Plan (OEMP)

3.8.5 The Applicant will implement an Operation Environmental Management Plan (OEMP). Similar to the CEMP, the OEMP will set out the mitigation measures described in the EIA Report, and how the Applicant will manage and monitor environmental effects throughout the operation of the Proposed Development. The OEMP will also be developed in consultation with MC, SEPA, NatureScot and HES where relevant.

Aviation Lighting

3.8.6 As structures over 150 m high there is a statutory requirement for aviation lighting on the Proposed Development. Proposed lighting has been agreed with the Civil Aviation Authority (CAA) and Ministry of Defence (MOD), but will need final approval again with the CAA, prior to construction.

3.8.7 The specification of the lighting is provided below and detailed in full in **Chapter 14: Aviation, Radar and Other Assessments**.

3.9 Decommissioning

3.9.1 At the end of the Proposed Development's operational lifespan of 50 years, it will be decommissioned, unless further consent is sought for life extension or repowering. It is expected that decommissioning will take approximately 12 months. The environmental effects of decommissioning are considered to be similar to those during construction, excluding the loss of habitat which will have already occurred under construction.

3.9.2 Prior to decommissioning, a Decommissioning Environmental Management Plan (DEMP) will be produced to reflect then current legislation, policy and best practice, and will be agreed with the relevant statutory authorities.

3.9.3 The site access route used for construction of the Proposed Development is anticipated to also be used for decommissioning.

3.9.4 It is anticipated that certain components of the turbines will be dismantled and removed from site for disposal and/or recycling as appropriate and in accordance with regulations in place at the time. It is proposed to leave the buried portion of the foundations of the turbines in situ on decommissioning.

This is considered to have less impact on the hydrological system which will have established itself during the lifetime of the wind farm, than complete removal of the foundations.

3.10 Climate Change and Carbon Considerations

3.10.1 Increasing atmospheric concentrations of greenhouse gases (GHGs), including carbon dioxide (CO_2) - also referred to as carbon emissions - are resulting in climate change. A major contributor to this increase in GHG emissions is the burning of fossil fuels. With concern growing over climate change, reducing its cause is of utmost importance. The replacement of traditional fossil fuel power generation with renewable energy sources provides high potential for the reduction of GHG emissions. This is reflected in UK and Scottish Government climate change and renewable energy policy and commitments. The relevant aspects of such policies are summarised in **Chapter 5: Statutory and Policy Framework**.

Energy Generation

3.10.2 Whilst the Proposed Development will reduce carbon emissions by replacing the need to burn fossil fuels for power, carbon emissions will result from the component manufacturing, transportation and installation processes associated with the Proposed Development. There is also the potential for carbon fixers and sinks to be lost through the clearing of vegetation during construction. There must, therefore, be a sufficient balance between the carbon reduction associated with renewable energy development and that which is produced through construction/ fabrication processes and lost through site preparation (see Carbon Calculator in **Chapter 14**).

3.10.3 The combined electrical output capacity from the wind turbine generators within the Proposed Development is currently estimated to be approximately 108 MW, with the exact capacity depending on the model and type of turbine selected. Based on the Proposed Development's location and estimated capacity factor, the annual indicative total electricity output for the site would be an estimated 411,544 megawatt-hours (MWh), per annum.[1]

3.10.4 Based on the average electricity consumption per UK household in 2021 of 3.295 MWh/year (BEIS, 2021) and assuming generation of 411,544 MWh annually, the Proposed Development would generate enough power to

[1] *Calculated from 108 x 8760 (number of hours per year) x 0.435 (Expected onshore wind load factor for the Proposed Development).*

supply approximately 124,899 average Scottish households.[2] Although future wind yields cannot be guaranteed, if the Proposed Development continued to generate, on average, at this load factor over its proposed 50 year lifespan, it is expected that a total of approximately 20,577 GWh of renewable energy could be generated.

3.11 Community Benefit

3.11.1 Based on a total installed capacity of 108 MW and a community benefit contribution of £5,000 per MW of installed capacity, the proposed Development could generate up to £540,000 per annum to support local groups and projects in the areas surrounding the site. The Applicant is also willing to explore the possibility of enabling the local community to purchase a share in the project, in line with Scottish Government aspirations on community ownership. Further information on the Proposed Development's socio-economics benefits can be found in **Chapter 13: Socioeconomics, Recreation and Tourism.**

3.12 Summary

3.12.1 This Chapter has provided a description of the site and the surrounding area, alongside details of the Proposed Development and a summary of the associated infrastructure. A description of the likely activities to occur during the construction, operation and decommissioning phases is also provided.

[2] *Based on average annual Scottish household electricity consumption of 3.295 MWh, from BEIS Subnational Electricity and Gas Consumption Statistics, Regional and Local Authority, Great Britain, 2021 (UK Government, December 2022)*

3.13 References

Scottish Government, Scottish Renewables, Scottish Natural Heritage, Scottish Environment Protection Agency, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science, and AEECoW (2019). Good Practice during Wind Farm Construction (4th Edition). Available at: https://www.nature.scot/guidance-good-practice-during-wind-farmconstruction

BEIS - Department for Business, Energy and Industrial Strategy (2021). Digest of United Kingdom Energy Statistics 2021. Available at: https://www.gov.uk/government/statistics/renewablesources-of-energy-chapter-6-digest-of-united-kingdom-energy-statistics-dukes

Scottish Government (2011). Water Environment (Controlled Activities) (Scotland) Regulations 2011. Available at: http://www.legislation.gov.uk/ssi/2011/209/contents/made

Scottish Government's Control of Woodland Removal Policy (2009). Available at: https://forestry.gov.scot/support-regulations/control-of-woodland-removal