2. Proposed Development

2.1 Introduction

2.1.1 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.

2.2 Description of the Site

2.2.1 The Proposed Development is located approximately 13 km south-east of Ayr, 8.5 km south-west of Cumnock and 4.5 km north of Dalmellington, within the North Kyle Forest Estate (NKF) managed by Forestry and Land Scotland (FLS). The Proposed Development is located adjacent to the North Kyle Energy Project. The Site falls within the East Ayrshire Council (EAC) administrative area, Site centre at British National Grid (BNG) coordinates 248092 612583. **Figure 1.1** indicates the location of the Site.

2.2.2 The Site comprises an area of approximately 1,012 ha, and is situated within the NKF, which spans around 4,000 hectares. The NKF primarily features Sitka spruce and has experienced extensive opencast coal mining in recent decades. Many of the coal mines within the NKF have been abandoned, with the result that the land is scarred, derelict and unsafe in some locations.

2.2.3 Most of the Site is currently under forestry, some of which has been recently felled (2024). The Site is underlain by historical underground coal mine workings; consequently, there is residual mining infrastructure on the surface including a mine water reservoir or void which has become somewhat naturalised over time, referred to as the Coyle Water, and there are several mining access tracks that are used to access the Site.

2.2.4 The elevation of the Site varies from 245 m Above Ordnance Datum (AOD) in the north-west of the Site to 410 m AOD in the south of the Site.

2.2.5 The Site is 4.2 km north of the Galloway Dark Skies Park at the closest point.

2.2.6 There are a number of watercourses running through the Site including the Water of Coyle, Hawford Burn and the Drumbowsie Burn.

2.2.7 The environmental designations within 10 km of the Site, site-specific environmental constraints, and other wind farm developments within 45 km of the Site are discussed in **Chapter 3: Design Evolution and Alternatives**.

2.2.8 The Proposed Development is situated in a predominantly rural environment, surrounded by several villages and settlements. There are a number of residential

and commercial properties located along the A713 running north-south, approximately 5 km south-west of the Site through the villages of Waterside and Dalmellington. Additionally, the settlement of Rankinston is located approximately 1.7 km north-west of the Site.

2.2.9 Access to the Site will be gained via the North Kyle Energy Project. Two entrances are available from the highway networks; the Chalmerston Entrance off the A713 which is an existing mining track owned and used by Hargreaves Land Limited, or the Darntaggert Entrance off the B741 owned and used by FLS. It is expected that abnormal indivisible loads would enter site only by the Chalmerston access.

2.3 Description of the Proposed Development

Overview

2.3.1 The Proposed Development will have a maximum total capacity of 140 MW, comprised of the following:

- Up to 20 standalone, three bladed horizontal axis turbines up to 149.9 m tip height, each with a generating capacity of up to 5 MW each, totalling 100 MW generating capacity; and
- A battery energy storage system (BESS) of up to 40 MW capacity will also be included as part of the Proposed Development.

2.3.2 In addition to the turbines and BESS, the Proposed Development will include the following long-term ancillary infrastructure:

- turbine foundations;
- crane hardstands;
- a site entrance;
- internal and private access road network;
- watercourse crossings;
- transformers and underground cables; and
- an on-site substation / switchgear building.

2.3.3 Temporary infrastructure required for construction will include:

- three construction compounds;
- a construction compound for exclusive use by the Transmission Operator;
- crane assist pads;
- blade laydown supports;
- boom supports;
- laydown areas;
- a concrete batching plant; and
- potential excavations/borrow pit workings.

2.3.4 The Proposed Development will provide various enhancement measures, including:

- Biodiversity enhancements (see **Figure 6.14**, as well as **Chapter 6: Ecology Assessment** and **Technical Appendix 6.6**); and
- Potential Recreation and Access enhancements (see also the standalone Economic and Community Impact Report submitted in support of the Section 36 application).

Micrositing

2.3.5 The Applicant proposes a micrositing allowance of up to 100 m in all directions within the Site boundary in respect of each turbine and the associated infrastructure, 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. This is proposed because of experience gained at the adjacent North Kyle Energy Project site, where there were significant issues experienced with ground conditions, and there are likely to be similar conditions at the Proposed Development Site, for example as a result of previous mining that has been undertaken. The Applicant will identify a suitable micrositing location if required; and will avoid any unacceptable detrimental environmental effects resulting from the micrositing. This allowance would not encroach into identified hard constraint buffers.

2.3.6 The technical EIA assessments (presented in **Chapters 6** to **15**) have considered the potential for micrositing up to 100 m in any direction. During construction, the need for any micrositing would be assessed and agreed with the relevant personnel on site, e.g. Ecological Clerk of Works (ECoW) or Environmental Manager, as appropriate.

Operational Life

2.3.7 Consent is being sought for the Proposed Development for an operational life of 40 years from the date of commissioning of the wind turbines.

Wind Turbines

2.3.8 The Proposed Development will consist of up to 20 wind turbines, which will be up to 149.9 m tip height (refer to **Figure 2.1**). Where necessary for assessment purposes, a rotor blade diameter of 136 m has been used although the rotor blade diameter may vary (within the maximum turbine tip height) depending on turbine availability at the time of construction.

2.3.9 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 BNaG coordinates denoting where each of the wind turbines are proposed to be located are listed in **Table 2.1**.

2.3.10 **Table 2.1** provides the specific proposed wind turbine locations at the proposed Development. These wind turbine locations are shown on **Figure 1.2**.

Table 2.1: Proposed Development Turbine Locations

Turbine No.	Easting	Northing
T1	247271	614508
T2	247620	614131
T3	247194	613858
T4	247574	613707
T5	248136	613735
T6	248414	613503
T7	248756	613253
T8	248959	612926
T9	247210	613183
T10	247555	612926
T11	248064	612898
T12	248490	612661
T13	246865	612263
T14	247493	612386
T15	247756	612079
T16	246449	611969
T17	246677	611639
T18	247459	610783
T19	247556	611130
T20	247338	611513

2.3.11 Each of the wind turbines comprises the following components:

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

2.3.12 Each wind turbine will have a nacelle mounted on a tapered tubular steel, or steel and concrete hybrid tower. The concrete hybrid tower would comprise multiple high pressurised concrete sections with steel tube segments attached. The design of the tower will be subject to turbine manufacturer requirements. 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.

2.3.13 An elevation drawing of a typical turbine is illustrated in **Figure 2.1**. The wind 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.

2.3.14 The switchgear will be sited either within the tower or within external transformer housing a few metres away from the tower (see **Figure 2.2**), within the turbine's permanent hardstand area, as can be seen on **Figure 2.1**.

Turbine Lighting

2.3.15 It is not anticipated that the turbines will require visible aviation lighting, as the turbines are below 150 m in height. Should it be determined through ongoing consultation that aviation safety lighting may be required (e.g. by Glasgow Prestwick Airport), it is anticipated that this could be provided as infrared lighting and would therefore not require visible lighting. This is discussed in more detail in **Chapter 13: Aviation and Radar**.

Wind Turbine Foundations

2.3.16 Typical wind turbine foundations consist of steel reinforced concrete. **Figure 2.3** provides an illustration of a typical turbine foundation. Until detailed ground investigations have been undertaken, the exact size and depth of foundations required cannot be accurately defined. However, for the purposes of this EIA Report, typical dimensions have been assumed as described below.

2.3.17 Concrete bases would be located underground which would require prior excavation of ground. The amount of ground to be removed would depend on site-specific conditions at each turbine location. Peat, topsoil and other materials would be removed from the turbine foundation footprint area and stored so that it may be used later for reinstatement.

2.3.18 Concrete for the construction of the turbine foundations will be prepared on-site at a temporary concrete batching plant which will be located within one of the temporary construction compounds.

2.3.19 Turbine foundations will likely be circular, with a footprint of approximately 22 m diameter at subformation, and 12 m diameter finished pedestal.

2.3.20 The final foundation design will be specific to the Site conditions as verified during detailed pre-construction site investigations and will depend on the wind turbine supplier's specifications. 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.

Wind Turbine Hardstands

2.3.21 To enable the construction of the wind turbines, a crane hardstanding area would be required to accommodate assembly cranes and construction vehicles. This will comprise several crushed stone hardstand areas measuring approximately 3,470 m^2 in total per turbine. The likely crane hardstand arrangement is indicated in **Figure 2.4**. However, 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. Detailed construction

drawings with final dimensions will be available prior to the commencement of construction once the final turbine model has been selected.

2.3.22 Each turbine will have a permanent hardstand area of approximately 1,663 m^2 and temporary hardstand area of approximately 1,807 m^2– the locations of these are indicated on **Figure 2.4**. After turbine erection is completed, the temporary hardstand areas would be reinstated, however the permanent hardstand areas will remain in place for the life of the Proposed Development to facilitate operational maintenance.

Site Entrance and Access Track

2.3.23 As mentioned previously, access to the Site will be gained via the North Kyle Energy Project. Two entrances are available from the highway networks; the Chalmerston Entrance off the A713 which is an existing track that is suitable for abnormal indivisible loads (AILs) (±9.6 km long), or the Darntaggart Entrance off the B741 which is suitable for non-AIL construction traffic (±1.5 km from the public highway to the Proposed Development Site entrance). The use of the Darntaggart entrance would enable non-AIL construction traffic to avoid travelling through the nearby settlement of Dalmellington. The main access tracks through North Kyle Energy Project are shown on Figure 1.1.

2.3.24 Once construction traffic has travelled through North Kyle Energy Project, access to the Breezy Hill Energy Project Site will be gained via an existing mining track which is currently in use by the landowners to access the forestry within the Site boundary.

2.3.25 It is anticipated that approximately 12.3 km of new track will be required as part of the Proposed Development, while 16.8 km of existing tracks will be reused. Some of the existing tracks are legacy mining infrastructure, and were originally constructed to accommodate very large mining vehicles and may require very little upgrade works (possibly limited to resurfacing).

2.3.26 The layout of the proposed tracks is shown on **Figure 1.2**. A drawing of a typical track structure is provided in **Figure 2.7**. **Figure 2.6** shows how existing roads will be upgraded. Turning heads of sufficient size to accommodate articulated vehicles have been provided for at several locations.

2.3.27 Generally, the tracks will be unpaved (stone surface) and will be 6 m wide with swales on either side for track drainage.

Watercourse Crossings

2.3.28 It is anticipated that 15 watercourse crossings will be required to enable access to the turbines at the Proposed Development. Of these, 13 are existing, and 2 will be new.

2.3.29 **Figure 2.8** provides a drawing of a typical watercourse crossings which may be installed as part of the Proposed Development. More detailed information on the proposed watercourse crossings is provided in **Technical Appendix 8.5**: Watercourse Crossing Schedule.

Construction Compounds

2.3.30 Three temporary construction compounds will be required during construction, the proposed locations of which are shown on **Figure 1.2**. Indicative layouts of Construction Compounds 1, 2 and 3 are provided in **Figures 2.9**, **2.10** and **2.11**. Construction Compounds 1 and 2 would have a footprint area of 15,000 m^2 each (100 m x 150 m), while Construction Compound 3 would be smaller, with a footprint area of 2,500 m^2 (50 m x 50 m).

2.3.31 A fourth construction compound will be provided for exclusive use by the Transmission Operator. The footprint of the construction compound would be 50 m x100 m, a total of 5,000 m^2.

2.3.32 The construction compounds were sited taking numerous environmental constraints and technical requirements into consideration (refer to **Chapter 3: Design Evolution and Alternatives**). Prior to commencing construction work, a detailed appraisal of the area will be undertaken, including the applicable ecological checks and trial pits and /or boreholes to confirm the nature of the sub-strata.

2.3.33 The detailed locations, sizes 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.

2.3.34 The main construction site office and compound will comprise temporary cabins to be used for the site offices, the monitoring of incoming vehicles and welfare facilities for site staff including toilets; parking for construction staff visitors and construction vehicles; secure storage for tools and small parts; a receiving area for incoming vehicles; and security fencing around the compound.

2.3.35 The compounds will include storage areas for the various components, fuels and materials required for construction. The major structural components of the turbines would be delivered directly to Site. Temporary lay-down areas will be provided for parking and unloading vehicles.

2.3.36 There will be sealed bunded areas within the construction compounds where fuel and oil storage tanks will be situated, to prevent potential contamination. In accordance with SEPA guidance the bunded area will be situated a minimum of 50 m from any watercourse to reduce the risk of pollution entering the watercourse.

2.3.37 Temporary downward lighting may be required at the temporary construction compound and at work areas during working hours for health and safety of personnel. It is not anticipated that lighting will be required outside of working hours. The lighting would be directional in accordance with Institute of Lighting Professionals (ILP) guidance and mounted on the individual portacabins.

2.3.38 The construction compound and lay down areas would be constructed by first stripping the topsoil/peat, which would be managed in accordance with the Peat Management Plan (**Technical Appendix 8.2**). Care will be taken to maintain separate stockpiles for turf and the different soil/peat types to prevent mixing during storage. A geotextile would then be placed on the sub-stratum, which would be overlain by a working surface of stone.

2.3.39 Reinstatement would involve removing the stone and underlying geotextile before carefully ripping the exposed substrate and replacing the excavated soil/peat.

Substation and Control Buildings

2.3.40 The Proposed Development includes a substation compound which will accommodate a substation building and an operation control building. The compound footprint area will be approximately 6,700 m^2. It will be constructed of compacted stone on a suitable formation stratum, including reinforced concreate foundations for the buildings and ancillary equipment. The substation compound would contain several step-up transformers, associated switchgear, telecommunications mast and ancillary equipment suitable for a transmission connection to the electricity grid system. The wind farm control building required at the substation compound would accommodate metering equipment, switchgear, the central computer system and electrical control panels. In addition to the control building, a welfare building will be installed for all personnel. **Figure 2.13** presents a typical layout of the proposed substation compound. This is indicative and the design and layout are subject to change once the expected point of connection is known.

2.3.41 Lighting will be kept to a minimum and will be limited to working areas only and will comply with health and safety requirements. Lighting will be down lit and linked to timers and movement sensors so that light pollution is kept to a minimum.

Battery Energy Storage System

2.3.42 A BESS with capacity of up to approximately 40 MW will be located adjacent to the substation and control building (refer to **Figure 1.2**). The BESS compound area will be approximately 156 m by 100 m (15,600 m^2), with the BESS control building and battery units having a maximum height of 3.6 m. An indicative layout for the energy storage facility is shown in **Figure 2.12**.

2.3.43 The BESS compound has been designed with two access points and a 10 m stand-off area between the battery units and surrounding forestry, for fire safety reasons.

Cables

2.3.44 The wind turbines envisaged for use on the Proposed Development would initially generate electricity at 690 – 1,000 V. This needs to be stepped up to the on-site distribution voltage of 33 kV via a transformer. Each wind turbine will be connected to the substation compound via underground electrical cables.

2.3.45 Cable trenches will accommodate these electrical cables, including communication cables and the earthing cable network. **Figure 2.5** presents the typical cable trench cross section that shall be adopted across the Site. Where cables need to cross access tracks or hardstands, they will be routed through ducts.

2.3.46 The layout of the cable trenches within the Site would generally run adjacent to the access tracks where possible. The route would be marked above ground with clearly identified posts, spaced at suitable intervals along the length.

Borrow Pits

2.3.47 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 the construction of access tracks, hardstand areas and compound construction. A borrow pit is an on-site area where material is excavated for use at another on-site location.

2.3.48 Borrow pits will also be investigated to determine the suitability of stone for use as concrete aggregate, removing the need to import to the batching plant from off site.

2.3.49 Three potential borrow pit search areas have been identified on-site, as indicated in **Figure 1.2**. These have been identified based on the anticipated availability and accessibility of aggregate material required for the construction of the tracks, hardstands and construction compounds, and also to avoid environmentally sensitive areas such as deeper peat, higher value habitat areas, watercourses, sites of archaeological and cultural heritage sensitivity, etc., as far as practicable. 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 excavated.

2.3.50 The total estimated quantity of stone required is estimated to be achieved from an area of approximately 195,168 m^3. This quantity of stone would likely require at least three borrow pits of approximately 60 m x 60 m, although the size of the borrow pits could be larger or smaller within the borrow pit search areas depending on ground conditions..

2.3.51 A Borrow Pit Management Plan will be agreed with the Scottish Environment Protection Agency (SEPA) and EAC prior to the commencement of construction. An outline Borrow Pit Management Plan is included in **Technical Appendix 8.4**.

Grid Connection

2.3.52 The grid connection does not form part of the application for the Proposed Development. Any required consent for the grid connection would typically be sought by the Transmission Operator (TO) for this area of grid network. The TO will be responsible for the consenting, construction and operation and maintenance of the grid connection. For information, the proposed point of connection for the Proposed Development into the electricity grid system is at the substation compound. The Proposed Development would most likely be connected into the Clawfin collector which will connect into the New Cumnock North Substation.

2.3.53 Should further detailed studies determine that a grid connection to another transmission entry point prove more suitable, the TO will advise the Applicant in due course. Any final grid connection route and associated consents would be the responsibility of the TO and this route would require further studies and would be subject to a separate consenting process and EIA if required.

Proposed Environmental, Recreational and Access Enhancements

Biodiversity Enhancement

2.3.54 A Biodiversity Enhancement and Management Plan (BEMP) will be implemented during the life of the project which will offer opportunities for interrelated environmental enhancements at the Site with respect to peat, biodiversity and forestry. An Outline BEMP is attached as **Technical Appendix 6.6** and is discussed in more detail in Section 6.8 of **Chapter 6: Ecology**.

2.3.55 The BEMP will aim to achieve significant biodiversity enhancement at the Site, in line with objectives outlined in NPF4 Policy 3. Specific biodiversity enhancement proposals and their locations will be developed through discussions with the Applicant, landowner, and relevant technical specialists in order to enhance, create and connect habitats of biodiversity value. Based on the existing knowledge of the Site, biodiversity enhancement measures for the Proposed Development may include, but not be limited to, options such as forest-to-bog restoration and broadleaf woodland planting.

Recreational Access Enhancement

2.3.56 Once the Proposed Development is operational, the wind farm tracks will be opened to the public to increase access to the countryside. Recreation and access benefits are also discussed in the Socio-Economic and Community Benefit Impact Report submitted as part of the application for Section 36 consent, alongside this EIA Report.

2.3.57 Parts of the Site will continue to be used for farming and forestry operations during the operational phase of the Proposed Development, and as such, responsible access will be promoted throughout the Site.

Potential Visitors Centre / Hub

2.3.58 The Applicant is funding an investigation into the feasibility and design of a visitor centre/hub in conjunction with the landowner, local community council representatives and the local planning authority.

2.3.59 The design of the community benefit package has been discussed and refined to allow the first ten years of benefit monies to be made available at the project's financial close to fund the visitor centre/hub in the vicinity of the Coyle Water.

2.3.60 For the avoidance of doubt, the Visitors' Centre would be subject to a separate planning application.

2.4 Health and Safety during Construction, Operation and Decommissioning

2.4.1 The construction site would be managed and operated in accordance with Health and Safety and Work etc. Act 1974 and comply with relevant Health and Safety Regulations, including:

- The Management of Health and Safety at Work Regulations 1999;
- Electricity Safety, Quality and Continuity Regulations 2002; and
- Construction (Design and Management) (CDM) Regulations 2015.

2.4.2 In awarding any civil, electrical or other contracts for the construction of the Proposed Development the appointed contractor is obligated by law to follow the CDM Regulations implemented by the Health and Safety Executive (HSE). These are based on standard procedures that are adapted to take account of all site specific requirements. The CDM Regulations require due consideration is given to construction workers and the public, with risk assessments and method statements created to cover all risks identified including access rights across the site.

2.4.3 The Applicant will appoint a Principal Designer to ensure all the CDM Regulations are correctly implemented, and to compile a Health and Safety File, which would be used in the operational phase of the Proposed Development. Additionally, a representative from the Applicant would be at the Proposed Development during the construction period. This person would be empowered to halt any or all construction works if they believe correct health and safety procedures are not being adhered to. Similar procedures for site workers, visitors and civilians must be drawn up for the operational phase. The HSE can investigate safety aspects of the Proposed Development and visit at any time if there are any concerns.

Public Safety During Construction

2.4.4 Throughout the construction phase of the Proposed Development, the relevant statutory requirements would be adhered to. All potentially hazardous areas would be fenced off and all unattended machinery will be stored in the temporary construction compound or immobilised to prevent unauthorised use. In addition, signage will be placed at each possible entrance to the Site and in areas where there may be further danger, for example around open borrow pits.

2.4.5 Site security and access during the construction period would be governed under Health and Safety at Work Act 1974 and associated legislation.

2.4.6 Prior to construction of the Proposed Development, an Outdoor Access Management Plan (OAMP) will be prepared in consultation with EAC. 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.

2.4.7 Throughout construction, measures to manage diversion routes would be agreed with the relevant authorities. The diversion routes would be clearly marked and for safety reasons would direct the user away from any areas of construction. It is proposed that further details would be provided in an OAMP post consent.

2.4.8 Although members of the public have the right to roam land in Scotland under the Land Reform (Scotland) Act 2003 there will be restricted access around the Proposed Development during the construction phase for health and safety purposes.

2.5 Construction

Construction Programme

2.5.1 The Proposed Development will be constructed over a period of approximately 18 to 24 months and is anticipated to commence in 2026. Construction would include the principal activities listed within the indicative construction programme as provided in **Table 2.2** below.

Table 2.2 Indicative Construction Programme

Month	Mobili-sation	Site Entrance & Access Tracks	Crane Hardstands	Turbine Foundations	Substation	Cable Installation	Turbine Deliveries	Turbine Erection	Testing, Commis-sioning & Energisation	Demobilisation & Operational Take Over
1										
2										
3										
4										
5										
6										
7										
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Construction Activities

2.5.2 The construction of the Proposed Development will involve the following:

- Establishing access tracks, laydown areas and construction compounds;
- Felling of areas of forestry alongside the access tracks and in select strategic locations within the main site (felling areas identified in **Chapter 9: Forestry**);
- Opening of borrow pit(s) within borrow pit search areas to win aggregate for track and hardstand construction;
- Construction of permanent new on-site tracks required to access the wind turbine positions. These would be used by civil engineering plant and construction equipment;
- Upgrading of existing tracks where required;
- Construction of a secure site compound and storage area for the Site office facilities and storage of materials and components;
- Installation of hardstands and outrigger pads for the support of the cranes that will be used to erect the wind turbines;
- Construction of the foundations for the support of the wind turbine structures;
- Wind turbine delivery, assembly and erection;
- Installation of transformers in separate housing alongside each wind turbine;
- Installation of high-voltage electrical cabling, communication cabling and earthing;
- Installation of Supervisory Control and Data Acquisition (SCADA) system;
- Construction of the substation and control buildings;
- Commissioning of site mechanical and electrical equipment; and
- Reinstatement and landscaping, removal of temporary site offices, reseeding verges and areas around turbine bases.

Construction Materials

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

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

2.5.4 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 hardstand areas will be constructed.

Traffic and Transportation

2.5.5 A detailed Transport Assessment has been undertaken which provides details regarding transport and access to the Site (refer to **Chapter 11: Traffic and Transport**).

2.5.6 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 AILs 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.

2.5.7 The Applicant will ensure that the vehicles will be routed as agreed with EAC, 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.

Construction Hours

2.5.8 Normal construction hours will be between 07:00 and 19:00 Monday to Friday and 07:00 and 13:00 on Saturdays and bank holidays. 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 AIL deliveries (which are controlled by Police Scotland) and the lifting of the turbine components, may occur outside the specified hours stated. Any construction outwith these hours will be in line with the noise limits as assessed in **Chapter 12: Noise** and advance warning of any works outwith the agreed working hours will be provided to EAC and local residents.

Construction Workforce

2.5.9 A detailed construction workforce schedule, i.e. employee number through the construction programme and likely shift patterns, would not be known until the contract for building the Proposed Development has been granted. However, the maximum number of staff likely to be on-site at any one time would be 150.

Local Supply Chain

2.5.10 The Applicant is committed to ensuring that, wherever reasonably practicable, local contractors and employees are used in all aspects of wind farm development. The major opportunities arise during the construction phase when suitably qualified local firms are invited to bid for different aspects of construction, such as foundation laying and electrical works.

2.5.11 Construction materials are normally sourced locally (i.e. within the county) and local transport and plant hire companies used wherever possible.

2.5.12 Expenditure in the local economy during the development, construction and operation of wind farms varies from project to project due to various factors including project size, project duration, and the availability of local suppliers.

2.5.13 The Breezy Hill Wind Farm, if consented, could generate the following during the development and construction phase:

- £11.5 million Gross Value Added (GVA) and support c.160 years of employment in East Ayrshire; and
- £38.2 million GVA and c.560 years of employment across Scotland.

2.5.14 For further detail on expected socio-economic impacts of the Proposed Development, refer to the Socio-Economic Impact Assessment of Breezy Hill Energy Project Report, a standalone report submitted alongside this EIA Report as part of the application for Section 36 consent.

Environmental Management

Construction Environmental Management Plan

2.5.15 A Construction Environmental Management Plan (CEMP) will be developed prior to the commencement of construction and will be a live document that is kept up to date and implemented throughout the construction phase. The CEMP will set out the general principles of the environmental management that is to be implemented during construction, as well as the site-specific mitigation measures set out within this EIA Report, along with any conditions of consent and environmental regulatory requirements. The CEMP will be developed in accordance with 'Good Practice During Wind Farm Construction' (NatureScot, 2024) and will take other applicable guidance into account (e.g. SEPA Guidance WAT-75). The CEMP will be expanded upon and developed in more detail by the contractor responsible for undertaking the construction works prior to the commencement of construction.

2.5.16 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);
- 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).

2.5.17 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 8.2**);
- Biodiversity Enhancement Management Plan (BEMP) (refer to an outline plan in **Technical Appendix 6.6**); and
- Any agreed mitigation plan(s), e.g. a Written Scheme of Investigation (WSI) for management of potential direct impacts on cultural heritage assets and potential archaeological finds.

2.5.18 The contractor and/or Applicant shall consult with EAC, 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.

2.5.19 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.

2.5.20 Specific requirements of the CEMP for each of the environmental topics assessed within the EIA are provided in the relevant EIA Report chapters and a summary of mitigation commitments is included in **Chapter 15: Schedule of Commitments**.

Pollution Prevention

2.5.21 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.

2.5.22 As with any wind farm 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 8: Geology, Hydrology, Hydrogeology and Peat** for further details).

Pre-Construction Surveys

2.5.23 Detailed surveys have informed the design process of the Proposed Development. However, certain design elements are dependent on wind turbine model and

manufacturer, therefore detailed construction details will be decided once the final wind turbine model has been confirmed.

2.5.24 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.

2.5.25 The Applicant will engage an Ecological Clerk of Works (ECoW) onsite during the construction phase. The ECoW will be responsible for pre-construction surveys and will monitor the construction process on site to provide advice in relation to ecological and ornithological matters, and to ensure that the measures within the CEMP relating to ecology and ornithology are followed.

2.6 Operation and Maintenance

2.6.1 The lifetime of the Proposed Development is envisaged to be 40 years from the final commissioning to commencement of decommissioning.

2.6.2 The Proposed Development would be maintained throughout its operational life by a service team. The service team would comprise 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, the BESS and buildings.

2.6.3 The battery units in the BESS will likely require replacing after 10 to 15 years.

Public Safety During Operation

2.6.4 Wind farms have a proven track record for safety. A very small number of wind turbines have been known to suffer mechanical damage through lightning strikes or mechanical failure. Experience on operational wind farms has shown that allowing the public to access an operating wind farm does not lead to a compromise with respect to safety issues.

2.6.5 Companies supplying products and services to the wind energy industry operate to a series of international, European and British standards. A set of product standards for wind energy equipment has been developed by the International Electrotechnical Commission - IEC 16400. There are a number of British Standards that correspond to it, for example; BS EN 61400-1 ed3.0: 2005 “Wind turbines – Part 1: Design requirements”.

2.6.6 The Applicant will commit to installing turbines and components that meet BS EN 61400-1 ed3.0.

2.6.7 Public access to the Site after construction has been completed would be returned. Appropriate warning, directional and identification signs for the purposes of health and safety would be installed on the turbines, transformers and at the substation and BESS compounds. Access to these would be restricted to wind farm personnel. At all times, these facilities will be locked. Additionally, safety and/or directional

signs will be placed at strategic points across the site, particularly on the public routes to inform members of the public that they are entering a wind farm, to make them aware of potential hazards and provide direction for emergency services should the need arise. Appropriate warning signs would be installed concerning restricted areas such as transformers, switchgear, metering systems and the substation compound. All on-site electrical cables will be buried with relevant signage. Any signage would be agreed with the relevant authorities prior to installation. It is proposed that further details would be provided in an Outdoor Access Management Plan post consent.

2.6.8 No resulting safety risks are expected as a result of public access to the Proposed Development.

BESS Fire Risk Management

2.6.9 The BESS will be equipped with a fire water tank to enable firefighting should any of the batteries or other equipment catch fire during operation. The BESS compound will also have a drainage capture facility (sump or attenuation dam) which would capture any water used for fire fighting and would not allow the fire fighting water to enter the receiving environment.

2.6.10 A secondary access has been provided for in the design of the BESS, the intention of which is to enable firefighters to access the site without passing through smoke and vapour clouds, should this be necessary. The surrounding trees will be kept at least 10 m from the battery units throughout the life of the Proposed Development to reduce the risk of fire spread.

Turbine Monitoring and Control

2.6.11 Wind turbine models being considered for the Site would operate automatically and have sensors to detect any instabilities or unsafe operation during high wind speeds. Should sensors placed within the nacelle and tower of the turbine detect any other malfunction in operation or should wind speeds increase over maximum operational thresholds, the brakes would be automatically applied in order to rapidly shut the turbine down.

Meteorological Effects

2.6.12 Blade icing in Scotland is likely to be a rare occurrence, therefore icing conditions are expected to be benign. The design of the Proposed Development has taken into account the possibility of ice throw occurring and turbines have been sited in locations to ensure that the rotor blades do not oversail any public roads to minimise the risk from ice fall. To further minimise the risk, public notices will be displayed at new and existing access points to the site, alerting members of the public and staff accessing the site of the possible risk of ice throw under certain weather conditions.

2.6.13 If the cause of the shutdown was high wind speeds, then the wind turbine would automatically begin operation once the average wind speed reduced to within operational levels. Under other causes of shutdown, e.g. through malfunction, the wind turbine would remain shut down and in a safe condition (i.e. commonly with

the blades orientated 90° to the wind direction) until restarted by wind farm personnel following satisfactory investigation. This procedure ensures safe operation of turbines to protect members of the public walking, cycling or riding past turbines during the operational phase. In addition, the vibrometers in the nacelles would detect rotor imbalance in blades caused by icing and the turbine's control and monitoring system would shut the turbines down under these conditions. The wind turbines are also equipped with lightning protection equipment so that strikes would be conducted from the nacelle down the tower into the earth.

Turbine Servicing and Repair

2.6.14 Turbine manufacturers have specific maintenance requirements; however, it is anticipated that turbine maintenance activities will include 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.

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

2.6.16 Health and safety implications of turbine servicing and repair will be controlled in a similar way to the construction phase.

Operational Workforce

2.6.17 A team of several staff including engineer fitters would supervise the operation of the wind turbine installation and would visit the Proposed Development to conduct routine maintenance. The frequency of these visits would depend on the manufacturer's requirements.

2.6.18 During its operations and maintenance, each year the Project could generate:

- £0.9 million GVA and support c.7 jobs in East Ayrshire; and
- £2.1 million GVA and c.22 jobs across Scotland.

Operation Environmental Management Plan (OEMP)

2.6.19 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 EAC, SEPA, NatureScot and HES where relevant.

2.7 Decommissioning

2.7.1 At the end of the Proposed Development's operational lifespan of 40 years, it will be decommissioned, unless further consent is sought for life extension or repowering. 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.

2.7.2 Prior to decommissioning, a Decommissioning and Restoration Plan (DRP) will be produced to reflect the legislation, policy and best practice in place at the time, and will be agreed with the relevant statutory authorities.

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

2.7.4 It is anticipated that certain components of the wind turbines will be dismantled and removed from site for reuse, recycling and/or disposal 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 wind turbines *in situ* on decommissioning. This is in line with current best practice and 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.

2.7.5 The BESS will be decommissioned and dismantled at the end of life of the Proposed Development. The components will be removed from Site for reuse, recycling and / or disposal as required by waste management regulations at that time. The remaining footprint of the cleared BESS area would be reinstated either to pre-construction conditions, or as agreed with the landowner and consenting authority.

2.8 Climate Change and Carbon Considerations

2.8.1 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.

2.8.2 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 and fabrication processes and lost through site preparation. The Carbon Calculator (see **Technical Appendix 2.1**) was used to determine the overall contribution of the Proposed Development to a reduction in carbon emissions.

2.8.3 Taking into consideration the carbon emissions of the production, transportation and construction of the various wind farm components and anticipated environmental effects of the construction, operation and decommissioning of the Proposed Development, it is expected that savings of over 2.2 million tonnes of CO_2 over the project lifespan compared to equivalent generation from fossil fuels.

2.9 Community Benefit

2.9.1 This section presents a brief summary of the proposed community benefits that would be implemented should the Proposed Development gain consent. Further information on the Proposed Development's socio-economics impacts can be found in the Socio-Economic Impact Assessment Report, submitted alongside this EIA Report.

Annual Community Funding

2.9.2 £5,000 per installed MW per year will be allocated to the 9CCG (a group representing nine local community councils) throughout the 40-year life span of the Proposed Development, index-linked to preserve long-term value. However, as described previously, the first ten years' of community benefit funding would be pulled forward to fund the visitors' centre, assuming the required consent is obtained.

Land Restoration and Access

2.9.3 Building on Forestry and Land Scotland's (FLS's) North Kyle Forest Masterplan[1], the Proposed Development will support rewilding, public access and sustainable land use, with new walking and cycling paths.

Visitors' Centre

2.9.4 The Applicant is funding the investigation into the feasibility and design of a visitor centre/hub in conjunction with the Landowner, local community council representatives and the local planning authority (LPA).

2.9.5 The design of the community benefit package has been discussed and refined to allow the first ten years' benefit monies to be made available at the project's financial close to fund the visitor centre/hub in the vicinity of the Coyle Water.

2.9.6 The intentions of the Applicant in this regard, and the potential community and recreational access benefits were presented at the public consultation events that were held in 2024 and are available on the project website[2].

2.9.7 The Visitors' Centre would be subject to a separate planning application.

[1] https://forestryandland.gov.scot/north-kyle-masterplan

[2] https://www.brockwellenergy.com/projects/breezy-hill-energy/