

Preliminary Environmental Information Report

Calderdale Energy Park

21 April 2026

Volume 1, Chapter 4 : The Proposed Development

PINS Reference: EN0110023

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations
2009 – Reg 5 (2) (a).



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4 The Proposed Development

4.1 Overview of the Proposed Development

4.1.2 The Proposed Development comprises the construction, operation and maintenance and decommissioning of an up to 34 turbine wind farm and associated infrastructure. The Applicant is in the process of securing a connection with the National Energy System Operator (NESO) or Northern Power Grid (NPG), which will allow the export of approximately 240 MW of electricity from the Proposed Development to the Bradford West Substation.

4.1.3 The Proposed Development will involve the installation, operation and maintenance and decommissioning of the following components:

Turbine Area

- Up to 34 wind turbines, with associated foundations, turning heads, crane hardstandings and external transformer units. The gross electrical output capacity of the wind turbines will be over 100MW; and
- Associated infrastructure, which is anticipated to include onsite substation and infrastructure, internal access tracks and watercourse crossing infrastructure (e.g. bridge and culvert crossings), a meteorological mast, underground internal electrical cable arrays, borrow pits, temporary construction compounds, a temporary onsite concrete batching plant, drainage and landscaping, lighting, CCTV and fencing and enclosures.

Access Routes

- Provision of the Western Access Route and Eastern Access Route, including external site access junctions and highway works to deliver access from the existing road network to the Turbine Area.

Bradford West Cable Corridor

- Export Cable to connect the onsite substation to the Bradford West Substation.

4.1.4 In addition, onsite environmental mitigation and enhancement are proposed and potential offsite ecological mitigation and compensation measures are also being considered (subject to discussions with Natural England) as is open space replacement land (subject to discussions with relevant stakeholders such as Natural England and the Local Planning Authorities (LPAs)).

4.1.5 A description of the construction, operation and maintenance and decommissioning phases of the Proposed Development (including the components outlined above),

at this stage, is provided below. At this stage, this Chapter contains a draft description, with additional detail based on further baseline data collection, design refinement and compensation / mitigation development to be provided in the Development Consent Order (DCO) Application and the Environmental Statement (ES).

4.2 Rochdale Envelope

- 4.2.1 The development of the design of the Proposed Development has been an iterative process, based on preliminary environmental assessments, engineering design work and engagement stakeholders and consultees (further details are provided in **Chapter 5: Alternatives and Design Evolution**).
- 4.2.2 PINS Advice Note Nine on the 'Rochdale Envelope'¹ provides guidance for handling applications for development consent under the Planning Act 2008. It recognises that during the early stages of scheme design, certain aspects may remain subject to change. A DCO application should, therefore, ensure that it contains a level of detail that enables a proper assessment of the environmental effects to be made. The extent of flexibility needed depends on the design progress when the detailed application is made.
- 4.2.3 To accommodate this, technical assessments can define an 'envelope' within which the project will unfold, featuring parameters, so that an assessment of the reasonable worst-case scenario can be undertaken. The parameters should be as realistic as possible to determine likely significant effects as accurately as possible.
- 4.2.4 It is the Applicant's intention to seek flexibility in the design and layout of the Proposed Development, by considering reasonable 'worst case' scenarios to determine likely significant effects. This involves specifying 'worst case' parameter ranges, including details of the maximum, and where relevant the minimum, size (footprint, width and height relative to above ordnance datum (AOD)) and locations of the different elements of the Proposed Development. Therefore, a 'Rochdale Envelope' approach is and will continue to be employed in the Environmental Impact Assessment (EIA) process.
- 4.2.5 The full EIA, which will be reported on in the Environmental Statement (ES) and submitted as a part of the DCO Application will assess the Proposed Development based on further refined parameters which will be secured in the DCO Application documents.
- 4.2.6 In addition to the use of the Rochdale Envelope approach, a **Draft Commitments Register** is provided in **Appendix 4-1** that summarises the committed impact avoidance, mitigation/compensation and enhancement measures for the Proposed Development as known at this preliminary stage. The register is a live document

that will continue to be updated throughout the EIA process, with a final version provided with the ES.

4.3 The Proposed Development

4.3.1 A summary of the key elements of the Proposed Development at this preliminary stage is provided below.

Permanent Infrastructure

Turbines, Foundations, Turning Heads and Crane Hardstandings

4.3.2 Up to 34 wind turbines are proposed, with 32 at a maximum tip height of 200m, and two at a maximum tip height of up to 150m, with varying ground level/foundation heights. A candidate turbine has not yet been confirmed and, at this stage, three candidate turbine models from different suppliers for both 200m tip and 150m tip turbines, are being considered. Each technical aspect has selected the worst-case parameter for each candidate turbine for that aspect / effect (in line with the Rochdale Envelope approach).

4.3.3 The indicative turbine locations identified at this stage, and used for the preliminary assessments presented in this PEIR, are provided in **Table 4-1**. These locations are subject to further refinement following the results of further surveys and assessment and details will be provided in the ES.

Table 4-1: Turbine Foundation and Tip Height

Turbine Number	Easting	Northing	Top of Foundation Height AoD (m)	Tip Height (m)
T01	394796.0000	435048.0000	417.480m	200
T02	394026.9595	433609.2926	390.789m	200
T03	394479.7354	434487.2619	400.505m	200
T04	395011.4323	434247.2319	374.165m	200
T05	395694.0000	434379.0000	433.350m	200
T06	394003.4803	434940.7756	442.352m	200
T07	394365.0000	435255.0000	432.910m	200
T08	394901.8412	435636.2685	450.906m	200
T09	395277.4527	435215.7818	455.021m	200
T10	395691.3394	435352.0821	455.070m	200

Turbine Number	Easting	Northing	Top of Foundation Height AoD (m)	Tip Height (m)
T11	396095.0000	435357.0000	436.280m	200
T12	396326.0000	434925.0000	395.180m	200
T13	396234.0000	434512.0000	401.790m	200
T14	395224.0136	434684.2894	406.644m	200
T15	395184.0000	433926.0000	401.160m	200
T16	394765.0000	433542.0000	342.560m	200
T17	395528.0000	433664.0000	392.320m	200
T18	395090.0000	433238.0000	361.730m	200
T19	397052.6954	434973.2615	394.070m	200
T20	397413.4875	434872.6743	428.111m	150
T21	397513.8209	434518.8958	429.190m	150
T22	397385.0369	433899.9662	365.443m	200
T23	395982.0000	434034.0000	392.060m	200
T24	398225.0000	432450.0000	411.805m	200
T25	397300.0000	433173.0000	394.688m	200
T26	397225.0000	432509.0000	415.658m	200
T27	397505.6146	432924.3086	417.563m	200
T28	398449.3375	434066.8357	435.365m	200
T29	399461.0000	434318.0000	433.560m	200
T30	399886.3747	434115.7866	431.588m	200
T31	396325.0000	432476.0000	363.287m	200
T32	396121.0000	432852.0000	320.597m	200
T33	396692.8051	433224.5257	355.070m	200
T34	398318.4264	432096.2879	400.812m	200

4.3.4 The foundations for the wind turbines are currently based on a reinforced concrete gravity base design. The foundations will be formed on suitable load bearing strata. The depth of the foundations will be confirmed following intrusive ground

investigation work post-consent, though they are likely to be a minimum of 4m deep. Intrusive advance ground investigation work will inform the ground conditions and the final design, including any ground improvement work required to achieve the load bearing stiffness required.

- 4.3.5 Unloaded turning heads are proposed at most turbine locations to allow for the vehicles transporting turbine blades and other components to turn around post-delivery. At this stage, one location, the turning head is required to be 'loaded'. A "loaded" turning head is a longer turning head used to allow a blade delivery vehicle to carry out a turning manoeuvre and enter the crane hardstand in the correct direction to deliver the blade components. Further details on turning heads will be provided in the ES.
- 4.3.6 As part of the consideration for the onsite construction of the foundation and ground solutions, potential impacts resulting from the concrete batching process (including the abstraction of water and discharge of wastewater, increase in vehicle movements, materials required and the carbon emissions), will be assessed in the ES. Further details of water supply requirements and sources will be provided in the ES, with options such as delivery by tanker under consideration.
- 4.3.7 As all of the turbines will be at or exceed 150m, there is a potential requirement for them to be fitted with visible aviation lighting. The Applicant will discuss opportunities for a reduced lighting scheme with the Civil Aviation Authority (CAA) to mitigate the environmental effects of the lighting (e.g. in terms of impacts on ecological species and night-time landscape and visual effects). The design of the lighting will also be informed by discussions with the relevant consultees, including local authorities, ecological consultees (such as Natural England) and the Ministry of Defence (MoD).
- 4.3.8 The siting of wind turbines and infrastructure has been, and will continue to be, influenced by a number of parameters, such as wind conditions, distance between the individual turbines, accessibility, noise emissions, topple distance, peat, and other environmental considerations, as well as engineering and design considerations.
- 4.3.9 During construction, crane hardstandings will be required to store components and erect / dismantle the wind turbines. At this stage, the footprints of the main crane hardstandings and associated infrastructure (auxiliary crane pads, blade and nacelle component storage areas) are anticipated to be up to approximately 5,000m². These are likely to be constructed with imported stone aggregate. Refer to **Figure 4-1** which shows the indicative worst-case sizing for hardstandings.
- 4.3.10 The crane operating heights are assumed not to exceed the maximum turbine tip height included within **Table 4-1**.

- 4.3.11 Where practicable, surplus material removed from the installation of this infrastructure will be reused locally onsite for track embankment construction and for reinstatement works following construction. Further details regarding onsite reinstatement will be provided in the ES. Any excess peat will be retained onsite, for example, within temporary peat storage areas. Peat cut/fill volumes and the overall balance are subject to ongoing surveys and assessment and the finalisation of the infrastructure layout. Peat reinstatement and storage solutions will be presented in the ES.
- 4.3.12 The main crane hardstandings will be left in-situ following the erection of the wind turbines to allow for maintenance and replacement of parts as necessary during the operational lifetime of the Proposed Development.

Onsite Substation

- 4.3.13 A dedicated onsite substation will comprise electrical infrastructure, including transformers, switchgear, control building(s) and metering equipment to facilitate the export of electricity. A small import requirement will be necessary at times to maintain the health of the electrical infrastructure and wind turbines and it is expected that, this stage, this will be from the Bradford West Substation. The proposed location of the onsite substation is in the south of the turbine. The onsite substation has been proposed in a location outside of the SSSI designation.
- 4.3.14 The indicative size of the onsite substation platform is approximately 26,400m² (220m x 120m). The maximum height of the onsite substation building is proposed to be approximately 14m above ground level/foundation level. The final height and dimensions of the onsite substation building and associated infrastructure will be confirmed in the ES and may be dependent upon which electrical operator (transmission or distribution) the Proposed Development connects up to. The Applicant plans to 'sink' (i.e. the lower the existing ground levels) the onsite substation site into the landscape to help screen and mitigate potential noise and landscape and visual effects associated with the size and operation of the onsite substation. Landscaped bunds are proposed to surround the onsite substation to 'screen' the onsite substation from the surrounding landscape.
- 4.3.15 Lightning masts up to approximately 20m above ground level may be required, which will be determined by a lightning protection study to be undertaken at the detailed design stage, following grant of the DCO. For the purposes of assessment, it will be assumed that these will be required.
- 4.3.16 The onsite substation compound will not be permanently lit and will be designed in accordance with health and safety requirements. External lighting will be mounted on columns of up to a maximum of 10m high. Task specific lighting will be used in the case of emergency works. Passive infra-red controlled lighting with provision

for manual switching will be used where access is required outside of daylight hours.

- 4.3.17 Within the onsite substation compound, there will be electrical switchgear and control building(s), which will have a proposed maximum footprint of approximately 1,800m² and a proposed maximum height of approximately 14m above ground level/foundation level. Foundations will likely consist of reinforced concrete slabs, pads or rafts of up to 0.5m deep and within the building there will be pits or trenches that can be as deep as up to 1.5m deep. Internal lighting within the control building(s) will be designed and operated to minimise light spillage.
- 4.3.18 The final design of the onsite substation will be the subject of a DCO Requirement. This will ensure the control buildings are appropriately finished. Security fencing will be located around the substation compound, and this fencing will be a proposed maximum height of between 2.4m and 3.0m above ground level.
- 4.3.19 Further details of the onsite substation will be provided in the ES.

Other Buildings in Onsite Substation Site Compound

- 4.3.20 The Proposed Development will include a permanent office, storeroom, protection and Supervisory Control and Data Acquisition (SCADA) room, DNO control room, metering room, 33kV switch rooms, battery room, messrooms and welfare facilities. These will be located in one or more buildings which will have a proposed maximum height of approximately 7-10m above ground level/foundation level and a maximum footprint of up to approximately 1,500m². These buildings will form part of the onsite substation site compound.
- 4.3.21 The buildings will be used for the operation and maintenance of the Proposed Development. During operation, these buildings will typically be attended by asset managers and wind turbine technicians, high voltage (HV) infrastructure operatives and other maintenance contractors will attend periodically.
- 4.3.22 Further details of the other buildings in the onsite substation will be provided in the ES.

Onsite Cabling

- 4.3.23 Onsite cabling will transfer electrical energy and control signalling between the wind turbines and the onsite substation. The internal cabling array layout is being considered, which will be refined further and the final option(s) will be set out in the ES.
- 4.3.24 At this stage, the parameters for the onsite cabling are as follows:

- Wind turbines will be arranged in arrays, with each array connected to the onsite substation using underground cables, with each cable circuit connecting several wind turbines together in an array;
- The routing of these underground cables is expected to predominantly follow the onsite access track verges;
- Cabling will be underground and laid in trenches at depths of cover normally 0.9m – 1.5m depth and will be of a varying width depending on the number of circuits. The cables will be bedded and covered with sand and backfilled with the excavated material; and
- If required, ducting will be used for the cables. Where required at water crossings, trenchless techniques (such as Horizontal Directional Drilling (HDD)) will be used.

Fencing and Security

- 4.3.25 It is not proposed to fence around the wind turbines. Security (palisade) fencing will be installed around the onsite substation compound.
- 4.3.26 CCTV towers will be installed within the Proposed Development; on towers in the onsite substation compound and at access points and above doors on wind turbine towers, up to a maximum height of 5m above ground level. CCTV will operate at all times. Infrared lighting, which is not visible in the dark, will activate only when natural light levels are low.
- 4.3.27 Further details of the fencing and security arrangements will be provided in the ES.

Meteorological Mast

- 4.3.28 The erection of one meteorological mast will be required (with associated data collection and monitoring equipment). The meteorological mast may be temporary or permanent infrastructure. The mast will be used to collect accurate, up-to-date wind speed data. The mast would be up to 120m in height above ground level/foundation level and will include foundations of an area up to 225m² (15mx15m) and ground anchors and guy ropes to secure the structure (which would be fenced).
- 4.3.29 The location of the mast is still being determined and therefore this infrastructure will be considered as part of the ES and assessed as permanent infrastructure.

Temporary Infrastructure

Construction Compounds

- 4.3.30 As part of the establishment of the Proposed Development, temporary construction compounds will be installed. The construction compounds will have an approximate area of 5,000m², though the overall size of each compound is likely to vary dependent on construction requirements. The proposed locations of the construction compounds are shown in **Figure 4-1**. Each construction compound will be fenced off.
- 4.3.31 The construction compounds will contain the following:
- Portacabins for site office, staff welfare facilities and site security;
 - Areas for waste storage and removal;
 - Storage areas (for chemicals and soils);
 - Hardstanding and parking for project related vehicles; and
 - Containerised storage for tools and spare equipment.
- 4.3.32 The storage areas will contain secure containers for the storage of any hazardous materials such as chemicals, hydrocarbons, solvents, and paints required for construction activities. All materials will be stored according to the Control of Substances Hazardous to Health (COSHH) Regulations 2002¹.
- 4.3.33 The construction compounds will require power and water supplies. Power will be supplied using low noise, double banded generators. It is anticipated that potable water supplies will be transported to the Turbine Area, though further options will be considered. Further details will be provided in the ES.
- 4.3.34 Appropriate bunding arrangements will be employed in all areas where fuel and oil storage tanks will be situated to prevent the release of contamination. The fuel storage areas will be above ground with secondary containment, in accordance with good practice guidance from NetRegs, such as the Guidance for Pollution Prevention (GPPs) (albeit these have been withdrawn for England)², and regulatory guidance from the UK Government (GOV.UK), such as Oil Storage for Businesses

¹ Control of Substances Hazardous to Health (COSHH) Regulations 2002. Available at: [The Control of Substances Hazardous to Health Regulations 2002](#) [Accessed November 2025].

² Available at: <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/>.

(for Above Ground Oil Storage Tanks)³ and Pollution Prevention for Businesses⁴. The fuel storage areas will be situated a minimum of 50m from watercourses, where practicable. Any contaminated run-off within the sealed bund will be removed to a licensed waste management facility.

- 4.3.35 Surface water drainage at the construction compounds will discharge via an appropriately designed oil separator. Foul drainage will discharge to a septic or foul tank and will be removed offsite for disposal at a wastewater treatment plant.
- 4.3.36 There is a potential for in-situ soils to become degraded where they are subject to compaction from vehicle and foot traffic and for excavated soils to suffer further degradation should they be stored inappropriately, making them unusable for reuse and other purposes. Therefore, excavated sub-soils and top-soils will be stored separately for the duration of construction of the Proposed Development. Excavated materials will be stockpiled adjacent to the area disturbed to facilitate reinstatement with the locally sourced material. This will also help to minimise the double handling of material, particularly peat, which could otherwise affect its potential for suitable reuse. This will be controlled via the Outline Soils Management Plan (oSMP).
- 4.3.37 The construction compounds will be removed following completion of the construction works and the area reinstated, with subsoil and topsoil / peat replaced in the order that they were excavated.
- 4.3.38 Further details on the construction compounds will be provided in the ES.

Borrow Pits

- 4.3.39 The Proposed Development will require imported quarried stone to construct the running surface and structural base for hardstandings, compounds and new access tracks, site internal access tracks as well as to improve the existing tracks. Material from proposed onsite borrow pits will be used to form the sub-grade of onsite tracks and hardstand areas. The utilisation of onsite borrow pits will assist in reducing the potential environmental and transport network effects associated with transporting imported aggregate to the Turbine Area. The location of the proposed borrow pits is shown in **Figure 4-Error! Reference source not found.1**.
- 4.3.40 Further information on the borrow pits and identification of aggregate requirements for the Proposed Development will be presented in the ES.

³ Environment Agency and DEFRA (2023) Guidance: Oil storage regulations for businesses. Available at: <https://www.gov.uk/guidance/storing-oil-at-a-home-or-business>. Accessed January 2026.

⁴ DEFRA and Environment Agency (2024) Pollution Prevention for Businesses. Available: <https://www.gov.uk/guidance/pollution-prevention-for-businesses>. Accessed January 2026.

- 4.3.41 Following completion of excavation within each borrow pit, a suitable restoration profile will be adopted. Further details of the restoration of borrow pits will be provided in the ES.

Batching Plant

- 4.3.42 It is assumed that concrete will be batched onsite utilising one batching plant. The proposed location of the batching plant is shown in **Figure 4-1**.
- 4.3.43 Further details of the batching plant will be provided in the ES.

Site Access

- 4.3.44 New internal site access tracks are required to enable construction and subsequent operation and maintenance and decommissioning of the Proposed Development. This will include new cut track, new floating track and re-use of existing tracks. Further information on the anticipated design and extents of these types of tracks will be provided in the ES.
- 4.3.45** Construction access to the Turbine Area is proposed to be taken from the west and east, with the locations and extents of the Access Routes shown in **Figure 3-3** and **Figure 3-4**. These Access Routes will provide access for Heavy Goods Vehicles (HGV), delivery vehicles, general construction traffic, construction workforce and Abnormal Indivisible Loads (AIL) traffic associated with the delivery of wind turbine components. The Access Routes will also be utilised for traffic associated with the construction of the Export Cable, where these spatially overlap/are in proximity. The design of the accesses will be further refined as the design evolves. More detail is provided in **Chapter 14: Transport and Access**.
- 4.3.46 Consideration of AIL access has been undertaken and is ongoing, including detailed swept path analyses for the main constraint points on the route from the proposed Port of Entry using the nearest suitable trunk road junction through to the PEIR Boundary to demonstrate that wind turbines, cranes and all other infrastructure required for the Proposed Development can be delivered. The swept path analysis will also identify any temporary and permanent road works and existing highway improvements which may be necessary and any additional temporary oversailing rights that might be required to facilitate the delivery of wind turbine components.
- 4.3.47 A Route Survey Report describing the access route and road modifications for the AIL delivery traffic during construction, to the Turbine Area, including from a geometry, and road safety design perspective, to facilitate safe transportation will be submitted as part of the DCO Application. At this stage, it is anticipated that highway works on the wider highway network will be required to facilitate the movement of construction vehicles, including AILs. Potential highway works include

the temporary removal and reinstatement of road furniture and roadside walls to facilitate AIL movements and temporary and permanent widening of existing highways within the highway corridor.

- 4.3.48 Further details on routing and required works will be set out as part of the ES.
- 4.3.49 As part of the Access Routes, a new junction and access road is proposed for AIL and construction vehicles off the A6068 to mitigate potential impacts on School Lane in Laneshawbridge. Further highway works are proposed on Lancashire Moor Road and Two Laws Road to facilitate AIL movements. This may include further section(s) of an offline access road to facilitate the movement of AIL through pinch points and minimise impacts on residential properties and other features along Lancashire Moor Road. Alternatively, there would be works to the existing route, with works to listed walls (see **Chapter 13: Historic Environment**). Further details will be provided in the ES.
- 4.3.50 A new junction and access road is proposed off the A6033 to provide access to the Turbine Area. Two other temporary junctions are proposed off the A6033, south of The Wagon & Horses Inn in Oxenhope and off Hill House Edge Lane adjacent to an existing telecommunications tower.
- 4.3.51 Other works, such as widening may also be required along existing sections of the highway (e.g. on Nab Water Lane / Cold Edge Road) to facilitate safe passing places for construction vehicles and other road users.
- 4.3.52 Further details on proposed highway works will be provided in the ES.

Watercourse Crossings

- 4.3.53 The proposed internal site access tracks and cabling as part of the Proposed Development will require watercourse crossings. The type of crossing will be determined following further hydraulic assessment, and in consultation with the Environment Agency and the Lead Local Flood Authority. At this stage, the types of crossings are anticipated to include:
- Closed pipe culvert;
 - Bottomless arch culvert; and
 - Bridge structure.
- 4.3.54 An initial inventory of watercrossings is provided in **Appendix 10-5**. Further details of the watercourse crossings will be presented in the ES.

Site Infrastructure Drainage Management

- 4.3.55 Receptors identified within the Proposed Development area, which have the potential to be affected by site drainage, include surface water and groundwater features as well as Groundwater Dependent Terrestrial Ecosystems (GWDTEs).
- 4.3.56 During construction, interceptor drains will be installed to collect surface water flows before they reach the construction working areas. These flows will be transferred around the construction working areas and under the internal site access tracks as necessary. Once diverted, the flows will discharge into appropriate filtration measures, such as silt traps, settlement ponds and silt fences, whichever combination is most applicable. Once through the filtration measures, the water will discharge overground, and either be absorbed or will find its way to the nearest watercourse.
- 4.3.57 All new internal site access tracks will have swales with catch pits on either side and cross drains as required. Rainwater falling on the internal site access tracks will be picked up by the swales and discharged via regular breakouts through silt fencing to the natural ground. Surface water from the internal site access tracks will avoid being discharged directly into the watercourses. At sensitive locations, such as turbine foundations and crane pads and adjacent to watercourses, flows will discharge to settlement ponds before being transferred back to ground. New connections to existing land drains and watercourses will be avoided.
- 4.3.58 A drainage strategy report will be appended to the ES, providing greater detail on the design of the infrastructure drainage management system.

Export Cable and Grid Connection

- 4.3.59 The Export Cable is anticipated to run from the Proposed Development to the Point of Connection at the Bradford West Substation. The Export Cable between the Proposed Development and the Point of Connection will be underground, except for where it joins at the Point of Connection. However, this is and will continue to be reviewed against technical and stakeholder requirements. The current route of the Export Cable, the Bradford West Cable Corridor, is shown in **Figure 3-1**.
- 4.3.60 The works within the Bradford West Substation (i.e. the creation of a new bay) will be undertaken by a third party and therefore do not form part of the Proposed Development.
- 4.3.61 Access to the Bradford West Cable Corridor will be provided from the Access Routes, as noted above. However, further access points may be required along the Bradford West Cable Corridor. Access for the construction and maintenance of the export cables will be provided in the ES.

- 4.3.62 A Mid-Point Switching Station may be required by the connection provider along the Bradford West Cable Corridor. At this stage, it is envisaged that the Mid-Point Switching Station would be approximately 20m by 35m and would consist of two 132kV AIS disconnecter earth switches with associated cable sealing end structures, and a small control building or kiosk. The perimeter of the Mid-Point Switching Station would consist of a 2.4m high palisade fence. Further details will be provided in the ES on the Mid-Point Switching Station.
- 4.3.63 The proposed parameters for the buried cable installation along the Bradford West Cable Corridor include:
- Typical burial depth of 1.2m (with a depth of 0.95m to the top of the cable);
 - Typical single circuit trench width of 0.91m;
 - Typical twin circuit trench widths of 1.91m; and
 - Typical diameter / width of the cable duct of 150mm.
- 4.3.64 Where two single circuit trenches are used along the route, they may be separated by a distance of approximately 8m with a haul road in between during construction. It is expected that individual cable lengths will be between 350m and 1000m. The cable lengths will need to be joined at underground joint bays. The exact number, design and location of the joint bays will be determined as the design progresses towards the ES. Joint bay locations may be at HDD entry and exit points or where required due to limitations in cable drum sizing. Where practicable, joint bays will be located near to field boundaries for ease of future access and to minimise disruption.
- 4.3.65 The three HV joints of each circuit will be installed in a single joint bay and may include optical fibre joint boxes and cross-bonding link boxes. Cross-bonding of the cable may be required in order to minimise the electrical losses due to induced currents. The cross-bonding boxes will be located underground at joint bays and may need to be accessible for future maintenance. Typical dimensions for a cross-bonding box are 1.3m x 1.3m x 1m. A single joint bay will typically be 8m long, 3m wide and 2m deep.
- 4.3.66 The Applicant will confirm any requirements for maintenance and/or testing of the export cable with the connection provider. If maintenance and inspection pits are required for the export cable, these would be provided using a pit with access at ground level and protected by a timber rail and post fence or similar. Any requirement for maintenance and/or testing pits will be confirmed within the ES.

Trenchless Techniques

- 4.3.67 Where Special Engineering Difficulties (SEDs) are identified within the Turbine Area or along the Bradford West Cable Corridor, HDD or other similar trenchless techniques may be required to install cable ducts.
- 4.3.68 The length and depth of such trenchless works will be dependent on the SED and the results of ground investigations. Ducts installed by trenchless methods will generally be of larger diameter than those used for conventionally excavated sections.
- 4.3.69 No specific locations have yet been identified as requiring trenchless methods within the Turbine Area. There are a number of locations where trenchless methods may be required along the Bradford West Cable Corridor. Ground investigations and consultation will further inform these locations. Further details will be provided in the ES.
- 4.3.70 The size and the weight of the HDD equipment will vary with the drill length and other factors, such as soil conditions and the features to be crossed. The entry and exit points will be determined with regard to the requirements of the export cable and drill bend radii.
- 4.3.71 Subject to detailed design and installation conditions, it may be necessary to introduce appropriate fill material into the cable ducts. Where it is necessary, the ducts will be appropriately sealed.
- 4.3.72 HDD requires that an entry point secure compound is established to accommodate the drilling rig and other equipment. A typical size for the entry point compound is approximately 40m x 40m. The compound will typically include the drilling rig, a control cabin (including welfare facilities, a generator, drilling mud pumps, storage containers, a drilling mud recycling unit) and ancillary plant and equipment. The HDD exit point area will typically be 15m x 20m.
- 4.3.73 The methodology would include drilling of a pilot hole from the entry point toward the exit point, reaming (to make the hole larger), pulling a duct through the reamed hole, then pulling the export cable through the ducting either at that time or at a later stage.

Public Access

- 4.3.74 There are a number of Public Rights of Way that traverse or lie in the vicinity of the Turbine Area. The Turbine Area is also located within an area of open space land. Health, safety and security requirements will make it necessary to manage the use of these routes and areas where they cross / come in proximity to the construction working areas. A series of measures to reduce the effects of the Proposed

Development on Public Rights of Way will be implemented, although it is anticipated that path closures / diversions will be required. Further details will be provided in the ES.

Onsite and Offsite Biodiversity and Moorland Mitigation / Compensation and Enhancements

- 4.3.75 Onsite biodiversity and moorland mitigation opportunities within the Turbine Area are currently under review, in consultation with Natural England. Further details on onsite biodiversity and moorland mitigation and enhancements will be provided in the ES. During the operation of the Proposed Development, it is anticipated that current shooting activities will cease (and this has formed an assumption for the assessment of ornithological effects in **Chapter 9: Ornithology**), however further details on this will be provided in the ES.
- 4.3.76 Potential offsite mitigation and compensation measures to compensate for the loss of habitats are under review. Such offsite mitigation and compensation areas will be determined in consultation with Natural England. Further details on offsite biodiversity mitigation and compensation and the management and monitoring strategies for these areas will be provided in the ES.
- 4.3.77 A stand-alone HRA will be submitted within the DCO Application.

Common Land and Open Space

- 4.3.78 While the Turbine Area includes areas of Common Land, only a temporary internal site access track will be located within the Common Land and as no rights are affected, no replacement / compensation for Common Land is required. All permanent infrastructure is located outside the Common Land.
- 4.3.79 The majority of the Turbine Area is located within Open Access Land, as designated by Natural England. Beyond the secured areas (i.e. the turbine foundations and onsite substation areas), it is the Applicant's aim that the Turbine Area will still be publicly accessible during operation of the Proposed Development.
- 4.3.80 Replacement land for loss of open space will be required as a result of the construction of the Proposed Development. Consultation will be undertaken with relevant stakeholders regarding the proposed location of the replacement land. An exercise to understand the extent of the open space within the footprint of the Proposed Development that is no longer accessible and therefore what potential replacement land is required, is currently ongoing. The outcomes of this consultation on the potential replacement land and the land itself, will be reported in full within the ES.

4.4 Programme and Activities

Construction

4.4.1 Subject to obtaining development consent, it is anticipated that the construction phase will last approximately 30 months, with an anticipated earliest construction onsite date of Quarter 4, 2029. Further construction details will be provided as part of the DCO Application and in the ES.

4.4.2 Construction activities will include, but are not limited to:

- Construction of fencing and security measures;
- Enabling works, including highway improvement works and creation of accesses;
- Set up of temporary construction compounds (including offices and welfare and storage facilities) and batching plant;
- Preparation of peat receptor sites;
- Targeted site clearance and implementation of protective measures (where required);
- Establishment of site borrow pits, earthworks and excavations;
- Works for drainage systems, crossings and water management;
- Construction and formation of internal site access tracks;
- Excavated peatland to be translocated to suitable receptor sites during groundworks;
- Foundation installation;
- Construction of crane hardstanding, substation compound and associated infrastructure;
- Installation of internal electrical cables and substation equipment;
- Installation of export cable;
- Erection of the wind turbines;
- Infrastructure commissioning and testing;
- Removal of construction compounds, site reinstatement works (e.g. crane hardstandings) alongside site finishes; and

- Landscaping and habitat enhancements.

- 4.4.3 No demolition of buildings is proposed. The permanent or temporary removal and reinstatement of walls (e.g. listed walls on Lancashire Moor Road, see **Chapter 13: Historic Environment**) and fencing, particularly along the Access Routes, may be required to facilitate AIL movements for the Proposed Development. Further details will be provided in the ES. Further details will be provided in the ES.
- 4.4.4 Construction working hours will be 07:00 to 18:00 Monday to Friday and 08:00 to 14:00 Saturday, with no working on Sundays or Public / Bank Holidays. Exceptions to these working hours may arise, for example, it is likely that some AILs are delivered and offloaded out of hours, and that intensive activities like HDD for cabling and concrete pouring for turbine foundations also occur out of hours. There may also be a requirement to erect turbines over a 24-hour period. Further details will be provided in the ES.
- 4.4.5 An outline Construction Environmental Management Plan (oCEMP) for the Proposed Development will be submitted with the ES. A final CEMP will be prepared following the grant of the DCO and in accordance with the oCEMP. The final CEMP will be prepared by the appointed contractor for the works post-consent to satisfy the requirements of the oCEMP.
- 4.4.6 At a post-consent stage, additional data will be available, such as the results from the detailed ground investigation(s). Furthermore, the engineering contractor and the turbine supplier will have been selected, enabling more detailed preparation of individual method statements. Therefore, the final CEMP will set out in detail the individual items of work associated with the construction of the Proposed Development to ensure that works are undertaken in a safe and environmentally sensitive manner.

Operation and Maintenance

- 4.4.7 It is anticipated that the Proposed Development will become operational in 2032, depending on the grid connection, and remain in operation for approximately 35 years.
- 4.4.8 During the operational phase of the Proposed Development, onsite activities will include routine servicing and maintenance of plant and equipment. Other maintenance works will include management of internal site access tracks and vegetation as well as the Access Routes.
- 4.4.9 Further details on operational and maintenance activities will be provided in the ES.

Decommissioning

- 4.4.10 After a period of approximately 35 years of operation, decommissioning will commence.
- 4.4.11 This is anticipated to include the following activities:
- Dismantling and removal of wind turbines;
 - Demolition and removal of the substation compound, including dismantling and removal of electrical infrastructure; and
 - Removal of other above-ground infrastructure, with the exception of turbine foundations, hardstandings and access tracks which are anticipated to remain in-situ. Underground elements such as cabling is also likely to remain in situ.
- 4.4.12 Where infrastructure is removed, the land will be reinstated to its original baseline conditions, where practicable. Any biodiversity enhancement or compensation measures will be left in place.
- 4.4.13 A Decommissioning Environmental Management Plan (DEMP) will be submitted for approval to the relevant planning authority(s) prior to any decommissioning works commencing. Equipment will be removed over a period of time, typically over 24 months. Above ground infrastructure will be dismantled and recycled or disposed of in accordance with best practice policy and requirements at that time.
- 4.4.14 Further details on the decommissioning phase will be provided in the ES.

4.5 Environmental Management

- 4.5.1 As part of the DCO Application, a suite of outline management plans listed in **Table 4-2** will be submitted. These will secure the Applicant's commitments and the environmental measures and additional mitigation identified to be implemented during the construction, operation and maintenance and decommissioning phases of the Proposed Development.
- 4.5.2 The production of detailed versions of these outline control documents would be secured via the requirements of the draft DCO. Note that this is a draft list and further details on the management plans prepared will be provided in the ES. This will include consideration of working / liaison / steering groups for certain aspects where relevant.

Table 4-2: Draft List of Management Plans

Title	Description
Construction Phase	
Outline Construction Environmental Management Plan (oCEMP) (see draft oCEMP in Appendix 4-2)	The oCEMP will set out the effective, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the construction phase of the Proposed Development. This will set out measures to reduce adverse impacts from construction activities, so far as is practicable.
Outline Construction Traffic Management Plan (oCTMP) (draft provided in Appendix 14-2)	<p>The purpose of the oCTMP is to propose how construction traffic will be safely managed. This will include:</p> <ul style="list-style-type: none"> • Planning and routing of construction vehicles; • Access arrangements to the Proposed Development; • Details of the vehicle holding area(s); • Details of AIL delivery schedules; • Coordination with the relevant highways' authorities and police; • Details of any diversion, disruption or other abnormal use of the public highway during construction works; and • Communications plan for delivering information. <p>The oCTMP will also include an Onsite Access Management Plan to manage impacts on onsite users of PRow during construction.</p>
Outline Peat Management Plan (oPMP) (see a draft in Appendix 10-3)	The oPMP will set out how peat will be managed during the construction phase of the Proposed Development. The oPMP will be discussed and agreed with the Environment Agency and Natural England and will include details on how peat will be identified, handled, and managed. It will provide a framework for minimising peat disturbance, reducing adverse impacts and ensuring regulatory compliance.
Outline Soils Management Plan (oSMP)	This will manage any potential impacts to the soil (and agricultural land) during and on completion of the construction of the export cable in the Bradford West Cable Corridor and the Access Routes. The oSMP will identify those areas within the Proposed Development which may be more susceptible to damage. It will set out details of when soil handling should be avoided (for example when it is wet or after periods of heavy rainfall or high winds) and it will advise on when soils are

Title	Description
	<p>suitable for being handled or trafficked. The oSMP will also detail measures for soil management and follow the principles of best practice to maintain the physical properties of the soil, with the aim of restoring the land to its pre-construction condition following temporary construction use and at the end of the lifetime of the Proposed Development.</p>
<p>Outline Employment Skills and Supply Chain Management Plan (oESSMP)</p>	<p>The oESSCMP sets out measures to maximise opportunities to promote economic benefits in relation to skills, supply chains, and employment in the local region, which is required to deliver the Proposed Development.</p>
<p>Outline Site Waste Management Plan (oSWMP)</p>	<p>This will set out the standard good practice measures that will be implemented by the appointed contractor to manage waste generated by the construction of the Proposed Development. This document may form an appendices of the oCEMP.</p>
<p>Outline Public Rights of Way Management Plan (oPROWMP)</p>	<p>This management plan will outline how PRow will be managed for the Proposed Development. This is to ensure that PRow are suitably considered and are able to operate, in terms of both user safety and accessibility, during the construction of the Proposed Development.</p>
<p>A Written Scheme of Investigation (WSI)</p>	<p>The WSI will outline the methodology for archaeological work, with the primary purpose to ensure that archaeological remains are identified, recorded and potentially preserved or mitigated appropriately during development.</p>
<p>Archaeological Mitigation Strategy</p>	<p>This strategy will outline how to mitigate effects on buried archaeological remains that cannot be avoided by a programme of archaeological investigation.</p>
<p>Operational and Maintenance Phase</p>	
<p>Outline Operational Environmental Management Plan (oOEMP)</p>	<p>This will set out measures to manage environmental impacts during the operational phase of the development, ensuring compliance with environmental regulations, best practices, and planning requirements. The final plan will also include (but not be limited to) measures to manage the following elements:</p> <ul style="list-style-type: none"> • Environmental management; • Soils and waste management; and • Health and safety measures.

Title	Description
Outline Landscape and Ecology Management Plan (oLEMP)	This will set out the short and long-term measures and practices that will be implemented to establish, monitor, and manage landscape and ecology mitigation and enhancement measures embedded in the design of the Proposed Development. The oLEMP will include the location, extent and type of habitat creation, timeframe for establishment as well as ongoing maintenance and monitoring requirements.
Outline Peat Management Plan (oPMP)	This will manage any potential impacts to the peat during operation of the Proposed Development. This content is likely to be provided as an extension of the construction stage oPMP, rather than a separate plan.
Outline Employment Skills and Supply Chain Management Plan (oESSCMP)	The oESSCMP sets out measures to maximise opportunities to promote economic benefits in relation with skills, supply chains, and employment in the local region, which is required to deliver the entirety of the Proposed Development. This content is likely to be provided as an extension of the construction stage oESSCMP, rather than a separate plan.
Outline Public Rights of Way Management Plan (oPROWMP)	This oPROWMP will outline how PRoW and open access land will be managed for the Proposed Development during the operational phase. This content is likely to be provided as an extension of the construction stage oPROWMP, as required.
Reduced Lighting Scheme	A reduced lighting scheme will be considered in consultation with the CAA, landscape and ecological consultees such as Natural England, to mitigate the environmental effects of lighting.
Decommissioning Phase	
Outline Decommissioning Management Plan (oDMP)	<p>This will set out the principal decommissioning activities and the measures that will be implemented, so far as is practical, to reduce adverse impacts on amenity, traffic or the environment in the surrounding area. It will also set out the monitoring and auditing activities designed to ensure that such mitigation measures are carried out, and that they are effective. The final plan will also include (but not be limited to) measures to manage the following elements:</p> <ul style="list-style-type: none"> • Transport and access; • Peat and soils; • Waste;

