Novar 1 Wind Farm Repowering

Chapter 3 – Site Description and Proposed Development

September 2026



3. Site Description and Proposed Development

3.1 Introduction

3.1.1 This chapter provides a description of the Proposed Development for the purposes of identifying and assessing likely significant effects. Information is provided on:

- The location and characteristics of the Site and surrounding area;
- The main elements of the Proposed Development, which includes the decommissioning of the existing Novar 1 Wind Farm and the construction, operation and decommissioning of the repowered new wind farm; and
- The main stages and timescales for the decommissioning of the existing Novar 1 Wind Farm and construction process for repowered wind farm.

3.1.2 This chapter is supported by the following technical appendices which are presented in **Volume 4: Technical Appendices** of the EIAR:

- Technical Appendix 3.1: Outline Decommissioning and Construction Environmental Management Plan (ODCEMP);
- Technical Appendix 3.2: Arboricultural Impact Assessment;
- Technical Appendix 3.3: Carbon Balance Assessment; and
- Technical Appendix 3.4: Grid Connection Environmental Appraisal.

3.1.3 Figures 3.1 - 3.14 are presented in **Volume 3a: Figures** of the EIAR and are referred to in the text as appropriate:

- Figure 3.1: Environmental Designations;
- Figure 3.2: Typical Turbine Elevation;
- Figure 3.3: Typical Turbine Foundation;
- Figure 3.4: Typical Turbine Hardstanding;
- Figure 3.5: Typical Existing Road Widening;
- Figure 3.6: Typical Track;
- Figure 3.7: Typical Watercourse Crossing Methods;
- Figure 3.8: Indicative Construction Compound 1;
- Figure 3.9: Indicative Construction Compound 2;
- Figure 3.10: Indicative Construction Compound 3;
- Figure 3.11: Indicative Substation Compound;
- Figure 3.12: Proposed Access Junction;
- Figure 3.13: Proposed Access Junction Visibility; and
- Figure 3.14: Typical Cable Trench.

3.1.4 **Figures 1.3a** and **1.3b (EIAR Volume 3a)** illustrate the proposed Site layout.

3.2 Site Description

3.2.1 The Site is illustrated on **Figure 1.1 (EIA Volume 3a)** and for the purposes of this description has been split into the following elements:

- 'Site' refers to everything within the red line application boundary;
- 'Turbine Array' refers to the main part of the Site on the ridgeline where the existing Novar 1 Wind Farm turbines are located and the proposed new turbines would be sited;

- 'Access Route' refers to the existing vehicular track within the Site which is used to access the Turbine Array and substation from the Main Vehicular Access Point;
- 'Main Vehicular Access Point' refers to the junction of the Access Route and the B817 and would be utilised during the decommissioning of the Novar 1 Wind Farm and the construction of the repowered wind farm;
- 'Secondary Vehicular Access Route' refers to the route within the Site between the existing substation and the Secondary Vehicular Access Point. This would be used during the operational phase of the Proposed Development;
- 'Secondary Vehicular Access Point' means the junction of the Secondary Vehicular Access Route and Boath Road (U1990); and
- 'Internal Tracks' refers to the routes between the Access Route and the proposed turbines.

3.2.2 The Site extends to 314.8 hectares (ha) and is located between Glen Glass and Strath Rusdale and comprises a combination of blanket bog; upland flushes, fens and swamps; wet heathland with cross-leaved heath; and mountain heaths and willow scrub.

3.2.3 The Site is situated along the ridgeline connecting Meall Mor, Meall an Tuirc, Bendeallt and Cnoc Gille Mo Bhrianaig with the elevation ranging from 625 m Above Ordnance Datum (AOD) to 310 m AOD, with the topography descending from the ridge in all directions to Loch Glass, Loch Moire and Strath Rusdale. The surrounding area includes the notable summits of Ben Wyvis (1,046 m AOD) and Beinn Dear (1,081 m AOD), with prominent hydrological features including the Cromarty Firth, Dornoch Firth, Loch Glass, Loch Morie, the River Averon and the River Glass.

3.2.4 Settlement around the Site includes small towns and villages with scattered rural dwellings. Key settlements include Dingwall, Evanton, Alness and Invergordon, with the nearest settlement to the Site being Evanton located along the B817 and 1 km to the south of the Main Vehicular Access Point. There are a number of individual residential properties within 3 km of the Site to the northeast around Boath and to the southwest within Glen Glass.

3.2.5 Most of the Site is located within an area identified in high-level mapping[1] as potentially nationally important peatland (Class 1 Peat) with areas of upland heath, acid grassland and blanket bog. Stage 1 and Stage 2 peat surveys indicate peat >1 m largely in the northern, central and southern areas of the Site. Extensive commercial forestry plantation is located to the west and south of the Site.

3.2.6 The Site is occupied by the Novar 1 Wind Farm which has been operational since 1997. It comprises 34 wind turbines providing an overall capacity of 17 Megawatts (MW). Each turbine has a hub height of 42 m, tip height of 62 m and rotor diameter of 38 m. In December 2019, a Section 42 application (19/05504/S42) to extend the operational life of the wind farm for an additional 10 years to 2031 was submitted to THC. This was approved in June 2025.

3.2.7 The Site is accessed off the B817 or along the B9176 and onto Boath Road (then onto the Secondary Vehicular Access Route) (see **Figure 1.3a (EIAR Volume 3a)**). The power output from the existing turbines is delivered by underground cables which are buried alongside the Internal Tracks and the Access Route to a substation located adjacent to the Secondary Vehicular Access Route.

3.2.8 The Site is located immediately adjacent to the Novar 2 Wind Farm, which has been operational since 2012. Novar 2 Wind Farm consists of 16 turbines with a generating capacity of 36.8 MW. Each turbine has a hub height of 71 m, tip height of a 106 m and rotor

[1] Carbon and Peatland 2016 Map. Available at: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map [Accessed November 2025].

diameter of 70 m. The location of the Novar 2 Wind Farm is presented on **Figure 1.2 (EIAR Volume 3a)**.

3.2.9 Coire na Cloiche, Beinn nan Oighrean and Beinn Tharsuinn Wind Farms are located between 6 and 10 km to the northeast of the Site. Other operational wind farms are located slightly further afield, such as Fairburn and Corriemoillie approximately 25 km southwest/west. There are other wind farm developments within the planning system either approved (with some under construction), in planning or at the EIA scoping stage (refer to **Figure 2.2 (EIAR Volume 3a)**).

Environmental Sensitivity of the Site and Surroundings

3.2.10 Part of the Novar Special Protection Area (SPA) is located within the Site. The Access Route crosses this environmental designation for approximately 3 km, along its western edge.

3.2.11 The key environmental designations within 5 km of the Site are illustrated on **Figure 3.1 (EIAR Volume 3a)** and summarised in Table 3.1.

Table 3.1: Key Environmental Designation within 5 km Study Area

Category	Key Environmental Designations
Landscape and Visual Amenity	• Ben Wyvis Special Landscape Area (SLA); and • Wild Land Area (WLA) 29: Rhiddoroch – Beinn Dearg – Ben Wyvis.
Cultural Heritage	• 30 designated heritage assets within 5 km of the Turbine Array, as shown on **Figure 6.2 (EIAR Volume 3a)**; and • Ardross Castle Garden and Designed Landscape (GDL).
Ecology	• Ben Wyvis Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI); • Allt nan Caorach SSSI; and • Cromarty Firth SSSI.
Ornithology	• Ben Wyvis Special Protection Area (SPA).

3.3 Proposed Development

Decommissioning of Novar 1 Wind Farm

3.3.1 The decommissioning of the existing Novar 1 Wind Farm includes the following key elements:

- Dismantling of existing turbines and removal from Site. The Applicant would strive to ensure that all of the 102 wind turbines blades are diverted from landfill and instead directed to re-use, repurposed, recycled or recovered management solutions. Whilst various factors may restrict the refurbishment and reuse of whole turbine units, the Applicant is committed to reviewing potential opportunities for refurbishment and reuse of turbine components. The turbine towers are expected to be cut into sections on Site and sent to an oversized steel recycling plant. High value copper from generator windings and cabling as well as cast iron from the gearbox housing would also be recycled at an appropriate facility;
- The wind turbine foundations would be removed to a minimum depth of 0.5 m and the rebar removed for recycling. Recovered concrete may be processed for suitable on-Site reuse subject to testing, specification compliance and the necessary environmental authorisations;
- Redundant sections of Internal Track would be excavated to an agreed depth below surface, targeting the recovery of clean, high-quality stone while leaving binding and

sub-base layers in situ to maintain the structural and hydrological integrity of the underlying ground;

- For the existing crane pads that are not required for the repowered wind farm, the aggregate would be removed down to an agreed depth and reused on Site where feasible. The land would then be backfilled with soil and sensitively restored to an agreed method statement. The final depth of excavation for tracks and crane pads would be determined closer to the decommissioning works informed by intrusive ground investigation, construction records where available, and an approved restoration design; and
- The existing substation and control building would be demolished and the components removed from the Site for reuse or recycling at an appropriate waste facility e.g. switchgear and transformers. The resulting aggregate could be retained on-Site to stabilise, grade, and level the footprint, serving immediately as the certified sub-base layer for the new repowered substation foundations.

3.3.2 The existing underground cabling (approximately 12-15 km) in those sections of Internal Track that would be upgraded would be removed, recovered and recycled for high-value aluminium and steel. For those sections of Internal Track that are not required for the repowered wind farm, the existing cables would be isolated, proven 'dead' by a Senior Authorised Person (SAP), capped and left in situ.

3.3.3 Further information is provided in **Technical Appendix 1.5: Outline Circular Decommissioning Strategy (EIAR Volume 4)**.

Construction of New Wind Farm

Access Route

3.3.4 The existing access route between the B817 and the Turbine Array is approximately 9 km in length and would be widened to accommodate the abnormal indivisible load (AIL) vehicles that are required to carry turbine blades and other large components to the Site. The existing width of Access Route is approximately 5 m and this would need to be widened by up to 10 m in some places to facilitate access by AIL vehicles. As the Access Route is partly located in forestry this would require works to existing trees including trimming of vegetation and some removal of trees. Veteran and ancient trees would be avoided.

3.3.5 The junction of the Access Route and the B817 would be widened by a maximum of 28 m to accommodate the AIL vehicles. This is illustrated on **Figure 3.12 (EIAR Volume 3a)**.

Wind Turbines and Turbine Layout

3.3.6 The locations of the proposed turbines and other infrastructure would be subject to micrositing. This process allows for minor changes in turbine or infrastructure locations to respond to possible variations in ground conditions across the Site, which would only be confirmed following detailed Site investigation work carried out prior to construction. This process also provides scope for further mitigation of localised potential environmental effects through avoidance of sensitive features. It is anticipated that the micrositing distance of 100 m would form a condition on any consent that is granted. Any repositioning would be carried out under the supervision of an Environmental Clerk of Works (EnvCoW) and an appropriately experienced and qualified engineer with the objective to optimise the development whilst avoiding or minimising any new or additional significant environmental effects.

3.3.7 For certain turbines the extent of permissible micrositing is constrained by aviation safeguarding requirements. In response, micrositing shall not be undertaken where a revised turbine location would result in a turbine becoming visible to the safeguarded radar system or otherwise invalidate the conclusions of the aviation assessment.

3.3.8 The coordinates of the proposed turbines are set out in Table 3.2.

Table 3.2: Turbine Locations

Turbine Number	Easting	Northing
1	253365	873288
2	253803	873120
3	254105	872773
4	254348	872337
5	254829	872262
6	255414	871851
7	255304	871123
8	255765	871651
9	256232	871572

3.3.9 The EIA has been undertaken on the assumption that a turbine with the following dimensions would be installed:

- Tip height: up to 180 m;
- Rotor diameter: approximately 162 m; and
- Hub height: approximately 99 m.

3.3.10 For some of the assessments such as noise, a specific turbine model has been used to represent the worst case for that assessment.

3.3.11 Wind turbines are available in a variety of colours, the most common being off white or light grey. The finish is normally semi-matt. It is anticipated that the final turbine details including the colour of the turbines would be submitted to The Highland Council (THC) in response to a condition on any consent that is granted.

Turbine Foundations and Hardstanding

3.3.12 Turbines are typically fixed to reinforced concrete foundations, approximately 25 m in diameter. The foundations would be formed in excavations approximately 3.5 m deep, depending upon ground conditions (**Figure 3.3, EIAR Volume 3a**).

3.3.13 Concrete for construction, including turbine foundations would be batched off-Site and transported to the Site by Heavy Goods Vehicles (HGV).

3.3.14 The turbines would be erected using mobile cranes. These require areas of hardstanding adjacent to the turbine locations, which can support the load of the cranes on their outriggers.

3.3.15 Areas of hardstanding would be approximately 205 m x 75 m and typically consist of short-term temporary and long-term temporary elements – see **Figure 3.4 in EIAR Volume 3a**. The long-term temporary areas of hardstanding would extend to approximately 49 m by 30 m and would be in place for the duration of wind farm operation i.e., 35 years. The short-term temporary areas of hardstanding would be required for laydown of turbine components and to accommodate a small support crane that would assist with the erection of the main crane. This land would be sensitively restored once the repowered wind farm has been constructed. Each area of hardstanding would also include a flat clearance area that is required for safe access for personnel and equipment.

Lighting

3.3.16 As the turbines would exceed 150 m height to tip, they will need to be lit in accordance with the requirements of Article 222 of the Civil Aviation Authority's (CAA) Air Navigation Order 2016 (ANO), in addition to meeting the lighting requirements of the Ministry of Defence (MOD).

3.3.17 Article 222 also provides for CAA approval of lighting schemes that differ from the specifications set out in the Article. A reduced lighting scheme for the Proposed Development, in which 4 of the 9 turbines (T1, T5, T7 and T9) are fitted with visible spectrum lighting, has been designed. The aim of the reduced lighting scheme is to mitigate potential effects on nighttime non-aviation visual receptors while maintaining aviation safety. The reduced lighting scheme has been agreed with the CAA. Further details of the proposed turbine lighting scheme and its rationale is provided in **Chapter 12: Aviation (EIAR Volume 2)**.

3.3.18 A lighting scheme for the construction phase will be agreed (by condition) at the detailed design stage and included in the Construction Environmental Management Plan (CEMP). Construction lighting would be designed to maintain health and safety standards whilst minimising impacts on the local environment.

Internal Tracks

3.3.19 The Proposed Development would require upgrading of approximately 19.5 km of existing Internal Tracks. The width of the upgraded Internal Tracks would be approximately 6 m. Typical existing Internal Track widening is illustrated on **Figure 3.5 (EIAR Volume 3a)**.

3.3.20 In addition, approximately 3 km of new Internal Track would be constructed. The required running width of the Internal Track would be typically a minimum of 6 m on straight sections, with 0.5 m wide shoulders on each side. Typical Internal Track details are presented on **Figure 3.6 (EIAR Volume 3a)**.

Electrical Cabling

3.3.21 Electrical connections from the wind turbines to the on-Site electrical substation and control building would be made via underground cables. All power and cabling on Site would be laid in trenches approximately 1.5 m wide (depending on the number of circuits in each trench) and approximately 1.5 m deep, located adjacent to the Access Route and the Internal Tracks, in the verge or close to the Internal Track which would allow for easy access to lay the cable. Typical cable trench detail is illustrated in **Figure 3.14 (EIAR Volume 3a)**.

Substation Compound

3.3.22 The existing substation compound would be demolished. Materials recovered from the demolition would be reused on-Site where feasible to build new Internal Tracks and to support the foundations for the new substation. The substation compound for the repowered wind farm would be built at the same location and would be approximately 60 m in length and 30 m in width **(Figure 3.11, EIAR Volume 3a).** The compound would include the substation (approximately 15 m in length, 15 m in width), control building (approximately 15 m in length, 15 m in width) and parking (approximately 15 m x 30 m). Security fencing would be installed along the perimeter of the compound.

3.3.23 The substation would feature lighting for safety and security reasons, which would be 'on demand' to minimise light pollution. The lighting would be motion or switch activated and would be positioned and designed to minimise light spill to the surrounding environment.

Grid Connection

3.3.24 The existing Novar 1 Wind Farm has an agreement to export up to 18.5 MW to the grid at Alness substation through a combination of overhead lines and underground cables. It is

anticipated that a new grid connection would be required to connect the Proposed Development to the grid. The new connection would be progressed by Scottish and Southern Electrical Networks (SSEN) who would be responsible for confirming the requirements and securing any necessary consents. An indicative underground route between the Site and a potential new substation close to the site of the existing substation has been proposed by SSEN based on a desktop review of technical and environmental constraints. Given the connection would be subject to further detailed survey and planning, the indicative route is subject to change.

Borrow Pit

3.3.25 The borrow pit assessment **(Technical Appendix 9.8, EIAR Volume 4)** has identified one suitable search area covering approximately 25,973 m^2 (see **Figure 1.3a and 1.3b**). The estimated amount of aggregate which could be won from this borrow pit has been calculated as 96,000 m^3, which is sufficient to support the construction of the repowered wind farm. This aggregate would be supplemented by the material that would be reused as part of the decommissioning of the existing Novar 1 Wind Farm.

3.3.26 It is anticipated that, upon completion, the borrow pit would be sensitively restored. This would involve the reworking of faces to stabilise them, partial infilling with Site-won material and landscaping with soils excavated during the construction process.

Earthworks

3.3.27 The terrain within the Site is undulating and the Proposed Development requires cut and fill earthworks to achieve the required gradients and engineering specification for the Access Route, Internal Tracks, areas of hardstanding and the substation.

3.3.28 Reasonable worst-case assumptions have been used for the earthworks, typically adopting 1:3 slopes for the majority of the route and steepening to 1:2 in localised areas. At the detailed design stage, it is anticipated that many earthworks, including cut and fill areas, can be steepened to reduce the footprint of the works. This would be confirmed following ground investigation (GI) works. To maximise the usability of Site-won material for fill and engineering material for tracks, reinforcement using geotextiles and other techniques would be considered.

3.3.29 Where geotechnical and soil conditions allow, embankments and cut slopes would be seeded with a suitable native species mix. Steeper cut slopes in rock would be left to revegetate naturally or left as bare rock habitat, where appropriate.

3.3.30 Where required, safety fencing would be installed at the top of steep cut or fill slopes, which would typically comprise timber post and rail fencing. Access would be required at the top and foot of cut and fill slopes for maintenance.

3.3.31 The earthworks design would be finalised at detailed design stage taking account of the final layout following micrositing, the choice of wind turbines and associated specifications for hardstandings and tracks, GI results and landowner requirements.

Watercourse Crossings

3.3.32 **Technical Appendix 9.2 (EIAR Volume 4)** contains details of the existing watercourse crossings and the proposed crossing type together with the relevant requirements in relation to the Environmental Authorisations (Scotland) Regulations 2018, as amended. The final crossing type would be identified as part of the detailed design of the Proposed Development prior to construction and in line with current best practice guidance.

Ecological Enhancements

3.3.33 The Outline Biodiversity Enhancement Management Plan (OBEMP) **(Appendix 7.4, EIAR Volume 4)** sets out proposed measures for habitat restoration and enhancement within the Site, including:

- Restoration and enhancement of 135.7 ha of peatland habitat within 5 years of commissioning of the repowered wind farm. This would allow for the achievement of the 1:10 lost:restored ratio as recommended by NatureScot. An additional 12 ha for peatland restoration may be available outwith the Site subject to the outcome of ongoing landowner engagement to achieve a further enhancement of 10% of the baseline; and
- Planting of 0.7 ha of native woodland within five years of the commissioning of the repowered wind farm. This would be located close to the Site at the northern fringe of the Novar SPA in an area of degraded Scots Pine woodland that is seasonally grazed.

Construction Compounds

3.3.34 Three short term temporary construction compounds would be required to enable the decommissioning of the existing Novar 1 Wind Farm and the construction of the repowered wind farm. The compounds would be located as shown on **Figure 1.3a (EIAR Volume 3a)**. The main elements included in each compound area would comprise:

- Temporary security fencing;
- Site offices and welfare facilities;
- Waste management facilities;
- Chemical and oil storage;
- Car parking;
- Site security; and
- Laydown and storage areas.

3.3.35 Compound 1 (100 m x 50 m) would be located off the Access Route close to the Main Vehicular Access Point. Compounds 2 (40 m x 75 m) and 3 (50 m x 50 m) would be located at the Turbine Array (see **Figure 1.3 (EIAR Volume 3a)**).

3.3.36 The indicative layout of each construction compound are shown in **Figures 3.8 – 3.10 (EIAR Volume 3a)**.

3.3.37 On completion of the construction of the repowered wind farm, the land within the compound areas would be sensitively restored.

Environmental Management

3.3.38 Technical Appendix 3.1: **Outline Decommissioning and Construction Environmental Management Plan (EIAR Volume 4)** ('Outline DCEMP') sets out a framework for how decommissioning and construction works would be managed to avoid or mitigate environmental impacts. The assessment in this EIAR has been undertaken on the assumption that these measures would be implemented, including compliance with both project wide and Site-specific environmental management procedures.

3.3.39 It is the intention that a condition of any consent that is granted would include the refinement and approval of the Outline DCEMP by the appointed Contractor to create a detailed DCEMP. The detailed DCEMP would then be a live document on-Site for use throughout the construction phase.

3.3.40 **Technical Appendix 9.6: Outline Peat Management Plan (EIAR Volume 4)** outlines the proposed working methods where the excavation of peat would be required and provides further details on potential volumes of peat excavated and the likely requirements for reinstatement. It details predicted volumes of peat that would be excavated for the Proposed

Development, the characteristics of the peat that would be excavated and how the excavated peat would be reused and managed.

3.3.41 **Technical Appendix 9.7: Peat Landslide Hazard and Risk Assessment (EIAR Volume 4)** provides technical information on the likely risk and hazards associated with peat instability, and the proposed standard mitigation and working methods that would be implemented during construction to seek to avoid adverse effects associated with peat instability. It would be used for the detailed design of earthworks, tracks and drainage and for the planning of construction works and methodologies.

3.3.42 A Site Waste Management Plan (SWMP) and Materials Management Plan (MMP) would be developed by the Main Contractor prior to construction, the latter in accordance with the CL:AIRE Definition of Waste: Code of Practice. This would outline details of the requirements for materials and waste management during construction. The MMP would be approved by a Qualified Person (QP) and formally registered with CL:AIRE, prior to commencement of excavations. Materials would be ordered and managed in such a way to minimise waste where possible. As components for turbines are manufactured away from Site, construction waste should be minimal.

3.3.43 All waste materials would be identified, classified, quantified and where practicable, appropriately segregated. Any material that cannot be reused or recycled would be disposed of appropriately. Waste would be recorded and transferred using a registered waste carrier to a licensed waste disposal facility or recycling centre. Packaging waste would be managed in accordance with The Producer Responsibility Obligations (Packaging and Packaging Waste) (Amendment) Regulations 2025.

3.3.44 In-line with The Waste (Scotland) Regulations 2012 construction workers on Site would be provided with facilities for separate collection of food waste, paper, glass, and metals, plastics and cartons. Following the construction phase only dry recyclables would be collected due to anticipated low volumes.

3.3.45 Site services would be provided with running water by tanker, grey water would be re-used where possible (for toilet flushing) and sewage water would be stored in a tank for off-Site disposal.

3.3.46 **Technical Appendix 3.1 (EIAR Volume 4)** provides a list of generic mitigation measures that would be included in the DCEMP and implemented during the decommissioning of the Novar 1 Wind Farm and the construction of the repowered wind farm. It would be a contractual requirement that the appointed contractor complies with the DCEMP.

Traffic Management

3.3.47 Vehicle movements associated with the construction phase would be managed through a Construction Traffic Management Plan (CTMP) which would include the following measures:

- Agree Abnormal Indivisible Load (AIL) route modifications and improvements with THC and Transport Scotland (TS). Works which would be required to facilitate turbine deliveries are outlined in the AIL Route Survey Report which is presented as **Annex B** within **Technical Appendix 10.1: Transport Assessment (EIAR Volume 4)**;
- Where possible, the detailed design process would minimise the volume of material to be imported to the Site to help reduce HGV numbers;
- A Staff Travel Plan, including transport modes to and from the Site (including pick up and drop off times);
- A Transport Management Plan for AIL deliveries;
- All material delivery lorries (dry materials) would be sheeted to reduce dust and stop spillage on public roads;

- Specific training and disciplinary measures would be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Wheel cleaning facilities may be established at the Site entrance, depending on the views of THC;
- Appropriate traffic management measures would be put in place on the B9176 and B817 and other local roads leading to the Site, to avoid conflict with general traffic, subject to the agreement of THC. Typical measures would include HGV turning and crossing signs and/or banksmen at the Site access and warning signs;
- Construction updates would be provided on the project website, and a newsletter would be distributed to residents within an agreed distance of the Site;
- Adoption of a voluntary reduced speed limits, for example on the B9176 and B817 at other locations to be agreed with THC;

3.3.48 All drivers would be required to attend an induction to include:

- A toolbox talk safety briefing;
- The need for appropriate care and speed control;
- A briefing on driver speed reduction agreements (to slow site traffic at sensitive locations through the villages); and
- Identification of the required access routes and the controls to ensure no departure from these routes.

Operation of Repowered Wind Farm

3.3.49 The expected operational life of the Proposed Development is 35 years from the date of commissioning.

3.3.50 A team of several staff would supervise the operation of the Proposed Development and would visit the Site to conduct routine maintenance. The frequency of these visits would depend on the model of turbine selected.

3.3.51 Wind turbines are designed to operate largely unattended. Each of the proposed wind turbines would be fitted with their own integral computer-based control system which would run automatically, and performance would be monitored remotely. If a fault is detected on any of the monitoring systems, the system would generate an alarm which would be sent to the maintenance operator and, in certain circumstances, the equipment would be automatically switched off.

3.3.52 Maintenance work during the operational life would involve a team of technicians visiting the Site regularly to undertake scheduled maintenance and operational checks to ensure the repowered wind farm is operating to maximise generation and to maintain its operational capacity and safety. Typical maintenance work would include the following:

- scheduled routine maintenance and servicing, usually conducted at least bi-annually, which would involve the undertaking of non-essential repairs on gearboxes and generators;
- high voltage (HV) and other electrical maintenance;
- blade inspections; and
- any necessary routine civil maintenance of tracks, drainage and buildings.

3.3.53 During operation, access to the Site for cars and light goods vehicles (LGVs) would be via the Secondary Vehicular Access Point.

Decommissioning of Repowered Wind Farm

3.3.54 At the end of its operational life the repowered wind farm would be decommissioned, which would involve above ground equipment being removed and the land restored using a similar method to what it proposed for the existing Novar 1 Wind Farm. Any alternative to this such as an extension to the life of the wind farm or repowering would require a new consent.

3.3.55 Decommissioning activities and sequence are envisaged to be broadly the reverse of the construction activities and would utilise similar equipment and personnel.

3.3.56 Activities would likely take place in a shorter overall duration compared to the construction phase (approximately 6 to 12 months). Wind turbines and electrical equipment would be removed and the hardstanding areas and substation restored/reinstated.

3.3.57 A Decommissioning Environmental Management Plan (DEMP) would perform a similar role to the DCEMP for the construction phase, setting out the mitigation measures that would be implemented to minimise adverse environmental effects. The expectation is that this would be prepared in response to a condition of any consent that is granted.

Decommissioning and Construction Phasing and Programme

Programme

3.3.58 Decommissioning and construction is anticipated to take up to 36 months to complete. This is longer than the industry recognised 18-24 months to construct a wind farm, as it reflects the logistical challenge of removing existing infrastructure from the Site whilst constructing a new wind farm. It is possible that some of the existing turbines may be in place whilst the repowered wind farm is being constructed. This would be for a temporary period and the potential effects of this have been considered in each of the assessments where appropriate.

Decommissioning of the existing Novar 1 Wind Farm

3.3.59 Decommissioning activities would be broken down into four main stages of work:

i. The Site preparation and set-up phase, including:
   - Site establishment, welfare, fencing, pre-decommissioning environmental surveys, mobilising all major plant and cranes;

ii. The wind turbines and electrical decommissioning phase, including:
   - Substation decommissioning, including isolating, draining, and removing hazardous liquids;
   - Turbine de-pollution;
   - Turbine dismantling, with main crane work;
   - Major component processing: cutting blades, towers and nacelles;

iii. The civil infrastructure material processing phase, including:
   - Foundation and crane pad partial removal;
   - Track/hardstanding partial removal;
   - On-Site crushing;

iv. The Site restoration and demobilisation phase, including:
   - Backfilling and re-profiling;
   - Final seeding and landscaping; and
   - Removal of all plant and demobilise from Site.

Construction

3.3.60 Construction by the appointed main contractor would begin following agreement of the detailed design and approval of any pre-commencement conditions with the appropriate consenting authority. Key construction activities would involve:

- Construction of the temporary construction compounds and laydown areas;
- Public road improvements such e.g. widening the Main Vehicular Access Point;
- Widening of the Access Route;
- Upgrade and construction of Internal Tracks;
- Construction of turbine foundations, areas of hardstanding and laydown areas;
- Installation of underground cabling connecting the new turbines to the on-Site substation;
- Laying of electricity and communications cables in trenches;
- Construction of substation and control building;
- Delivery, installation, testing and commissioning of wind turbines and ancillary equipment;
- Installation of external turbine transformers and switchgear in enclosed kiosks;
- Site reinstatement and restoration in accordance with the PMP; and
- Implementation of ecological enhancement and restoration measures included in the OBEMP.

3.3.61 The works are likely to follow the order as detailed above, however many activities would be undertaken concurrently to minimise the overall construction programme. Site restoration would be undertaken as soon as possible in affected areas to minimise disruption to land use. Where appropriate, measures to be delivered as part of the OBEMP would be implemented at the earliest practicable opportunity to maximise and expedite the potential for beneficial effects.

3.3.62 Further ground investigation surveys would be undertaken prior to the main construction works beginning on-Site to determine the specific quality of rock and the rock head depth underlying the locations for Site infrastructure. Initial site investigations have been limited to Phase 1 and Phase 2 Peat probing, and the findings of this work have informed the design of the layout of the Proposed Development including positioning and anticipated construction characteristics of the Access Route and Internal Tracks. The full Site investigation works required to inform detailed civil engineering design would take place post planning consent before the main construction period commences.

Hours of Work

3.3.63 The normal working hours would be as follows:

- Monday to Friday 07:00 to 19:00;
- Saturday 07:00 to 13:00; and
- no working on Sundays or public holidays without prior written approval from THC.

3.3.64 No works, with the exception of turbine delivery, the completion of turbine erection, concrete pours, or emergency work, would take place outside these hours. Other such out-of-hours works would be subject to prior approval from THC. The requirement for out-of-hours work could arise, for example, from delivery and unloading of abnormal loads or health and safety requirements, orto ensure optimal use is made of fair-weather windows for the erection of turbines and the erection and dismantling of cranes.

Health and Safety

3.3.65 All construction activities would be managed in accordance with the requirements of the Construction (Design and Management) Regulations 2015 and the Health and Safety at Work etc. Act 1974.

3.3.66 The Principal Contractor would hold responsibility for ensuring health and safety risks are known and understood by all members of staff on Site for each activity and procedure. These would be managed through Site induction and work package plans.

3.3.67 Risk assessments would be undertaken for all construction activities, including measures put in place to manage and mitigate the risks identified, to a level that is as low as reasonably practicable.

Carbon Emissions

3.3.68 A carbon balance assessment is provided in **Technical Appendix 3.3 (EIAR Volume 4)**. This utilises the project details as described above plus information from technical chapters including, for example, peat volumes, to calculate the net carbon balance for the Proposed Development.

3.3.69 The carbon balance assessment provides a calculation of the expected carbon savings during the construction and operation of the proposed repowered wind farm using the latest version of the Scottish Government's Carbon Calculator Tool. This remains the best available standardised tool for use in relation to net carbon saving calculations for wind farm developments across the UK.

3.3.70 The assessment has been undertaken in accordance with Scottish Government recommended methodology 'Calculating Carbon Savings from Wind Farms on Scottish Peatlands – A New Approach'[2] and presents the carbon emissions associated with ground conditions, access preparations, foundation excavations, materials used on-Site, the transportation of materials and components to Site, and any other carbon loss (e.g. through the degradation of peat/peaty soils).

3.3.71 Based on the Carbon Calculator it has been estimated that the wind farm component of the Proposed Development could save nearly 25,783 tonnes of carbon dioxide equivalent (tCO_2e) per year by displacing grid electricity based on the current average grid mix, and 65,258 tCO_2e per year, if considering fossil-fuel mix of electricity generation. The actual displacement of existing generation depends on the time of day and how the grid is balanced.

[2] Scottish Government (2008). Calculating Carbon Savings from Wind Farms on Scottish Peatlands – A New Approach'. Available at: https://www.gov.scot/publications/calculating-carbon-savings-wind-farms-scottish-peat-lands-new-approach/pages/13/. [Accessed 16th February 2025]