

Chapter 2: Design Iteration and Description of Proposed Varied Development

2.1. INTRODUCTION.....	1
2.2. DESIGN EVOLUTION.....	1
2.3. DESCRIPTION OF THE PROPOSED VARIED DEVELOPMENT	6
2.4. PROPOSED VARIED DEVELOPMENT COMPONENTS	9
2.5. ASSOCIATED DEVELOPMENT COMPONENTS	15
2.6. INDICATIVE CONSTRUCTION PROGRAMME.....	17
2.7. ENVIRONMENTAL MANAGEMENT DURING CONSTRUCTION	19

Tables

TABLE 2.1: COMPARISON OF THE DESCRIPTION OF DEVELOPMENT BETWEEN THE CONSENTED DEVELOPMENT AND PROPOSED VARIED DEVELOPMENT	4
TABLE 2.2: PROPOSED VARIED DEVELOPMENT & EIAR SUPPORTING FIGURES	7
TABLE 2.3: TURBINE PARAMETERS ASSUMED FOR THE PURPOSES OF ASSESSMENT WITHIN THIS EIA REPORT	9
TABLE 2.4: WTG GRID REFERENCES	10
TABLE 2.5: INDICATIVE CONSTRUCTION PROGRAMME.....	18

Figures

- Figure 2.1: Indicative Turbine Geometry
- Figure 2.2: Indicative WTG Foundation
- Figure 2.3: Indicative Access Track Details
- Figure 2.4: Typical Crane Hardstanding
- Figure 2.5: Indicative Mast Elevations
- Figure 2.6: Construction Compound – Indicative Layout
- Figure 2.7a: Indicative Substation Plan
- Figure 2.7b: Indicative Substation Elevations
- Figure 2.8: Indicative Lidar
- Figure 2.9: Consented Development
- Figure 2.10: Scoping Layout
- Figure 2.11: Proposed Varied Development
- Figure 2.12a-2.12p: T01-T16 Design Review

2.1. Introduction

- 2.1.1. This chapter describes the key elements of the Proposed Varied Development, sets out the iterative design process undertaken, and describes the technical and environmental rationale for proposed changes to the Consented Development.

2.2. Design Evolution

- 2.2.1. The design of the Consented Development was developed and refined through a rigorous iterative process, as set out in the 2018 EIA Report and informed by consultation with technical teams. The design process took account of the site's constraints and opportunities, with key considerations including minimising effects on sensitive habitats, avoiding areas of deeper peat, addressing ornithological sensitivities, and reducing landscape and visual effects where possible. The layout and technology selection were subject to repeated review through a series of design workshops before being finalised immediately prior to submission of the Section 36 ('S.36') application in September 2018.
- 2.2.2. The decision by the Scottish Ministers in 2019 to grant the S.36 consent and deemed planning permission for the Consented Development has established the suitability of the site for a large-scale wind farm.
- 2.2.3. In early 2025, the Applicant paused the project in order to reassess its deliverability in light of evolving market conditions and advances in wind turbine technology since the original consent was granted. The review concluded that increasing the wind turbine generator ('WTG') tip height would enable the project to proceed while making a materially greater contribution to Scotland's renewable energy and net zero ambitions, thereby enhancing the project's long-term viability and deliverability. A design review was therefore undertaken to develop an optimised layout having regard to the engineering and environmental constraints of the site.

Approach to turbine positioning

- 2.2.4. The Consented Development comprises 16 WTGs at a maximum tip height of 149.9 metres. The Proposed Varied Development seeks to increase the height of the WTGs to a maximum tip height of 200 metres, alongside associated changes to ancillary infrastructure.
- 2.2.5. Taller turbines require greater clearance to satisfy topple distance requirements in relation to buildings and other turbines and, where consented positions would not have provided sufficient clearance, repositioning has been necessary. Of the 16 WTGs, 6 remain at their consented positions, 4 are

proposed to move within the 50-metre micrositing allowance established under the S.36 consent, and 6 are proposed to move beyond that allowance.

- 2.2.6. Beyond topple distance, two further site-specific factors have influenced individual turbine positions:
- Updated ecological survey work carried out since the grant of the original consent identified a badger sett in proximity to one WTG location. This WTG has been repositioned to provide adequate separation and avoid disturbance to the sett; and
 - One WTG has been repositioned so that it sits more than 1 kilometre from the nearest residential property, in order to reduce potential impacts on residents from noise, shadow flicker, and visual amenity.
- 2.2.7. All repositioning decisions have been assessed against the full range of environmental constraints and guided throughout by a commitment to avoiding and reducing environmental impacts wherever practicable, consistent with the mitigation hierarchy.

Approach to access track layout and peat avoidance

- 2.2.8. Avoiding and minimising peatland disturbance has been a key consideration from the outset of the design review, with the Applicant focussing on avoiding incursion into areas of deeper peat. For example, the Consented Development permitted an access track running through the centre of the wind farm. This track served as the main internal route, providing access to turbines 15 and 16 and to the northern part of the Site. As part of the design review, this track was subject to detailed review against updated peat depth survey data.
- 2.2.9. The review found that the central spine track would cross significant areas of deep peat, and that constructing it would have required extensive excavation, leading to direct loss of peat and, crucially, disrupting the hydrological connectivity of the central peat body. The Applicant has therefore redesigned the access track layout to route around the central peat area, maintaining access to all turbines while avoiding the deep peat at the centre of the Site and retaining it as a single, functioning hydrological unit
- 2.2.10. Other sections of track have been realigned to steer infrastructure away from areas of environmental sensitivity, including concentrations of deeper peat and ecologically sensitive ground. Turning heads have also been incorporated into the revised track layout at appropriate locations. These allow construction and maintenance vehicles to turn without the need for extended looped tracks or

additional passing places, limiting the length of new track that would otherwise have been required.

- 2.2.11. Where areas of deeper peat cannot be avoided entirely through layout design, floating access tracks have been specified as the construction method to minimise direct peat excavation and habitat loss. Of the approximately 8.6 km of new access track proposed for the Proposed Varied Development, approximately 0.9 km (10.5%) will be constructed as floating track.
- 2.2.12. A further measure to limit the extent of new track construction is the planned re-use of existing access tracks built as part of the Tangy I and Tangy II Wind Farms. The Proposed Varied Development will make use of approximately 3.5 km of these existing tracks, reducing the need for new construction across that length.
- 2.2.13. Taken together, the re-use of existing infrastructure and the use of floating track construction mean that new access track for the Proposed Varied Development is limited to approximately 8.6 km of the 12.1 km total track network.
- 2.2.14. Overall, the Proposed Varied Development will result in approximately 2% greater peat excavation volumes than the Consented Development. This marginal increase reflects the larger infrastructure associated with the taller turbines, including longer access tracks and larger hardstandings. Importantly, it also results from a deliberate design decision to avoid fragmenting the central peat body, thereby retaining it as a single functioning hydrological unit. While seeking to minimise peatland impacts wherever possible, the design also prioritises the ecological and hydrological integrity of the peatland. Notwithstanding this marginal increase, the package of measures described above and within **Volume 2 Chapter 8: Geology, Soils and Peat** demonstrates a clear application of the mitigation hierarchy by avoiding impacts on the most sensitive and hydrologically connected peat through design, minimising disturbance elsewhere through track realignment, floating track construction and the re-use of existing infrastructure.
- 2.2.15. The implications of the revised design for peat and the wider carbon balance are addressed in full in **Volume 2 Chapter 8: Geology, Soils and Peat**, which confirms that the Proposed Varied Development remains strongly beneficial in carbon terms.

Approach to hardstandings and peat avoidance

- 2.2.16. All 16 turbine hardstandings have also been reviewed in detail as part of the design iteration process. Where it has been possible to avoid peat altogether through rotation or repositioning of a hardstanding, this has been done. Where

full avoidance was not achievable, hardstandings have been adjusted to locate them in shallower areas of peat to reduce the depth of disturbance.

- 2.2.17. The hardstands proposed for the Proposed Varied Development are larger than those provided for in the existing consent. Consented hardstands were sized at approximately 1800m² per turbine with the proposed hardstandings now sized at up to 2126m² per turbine.
- 2.2.18. The consented dimensions were based on the best information available at the time of the original application and accurately reflected nominal construction requirements as understood at that stage. However, following detailed engagement with turbine suppliers active on projects under construction within the Applicant's wider onshore wind portfolio, it became clear that hardstandings of the consented dimensions would be insufficient to accommodate the actual construction requirements of modern turbines operating at the consented tip height of 149.9 metres. This is not attributable to any deficiency in the original application but reflects the more detailed construction methodology information that has become available since 2018 through delivery of comparable projects. Therefore, a variation to the consented hardstands would have been required in order to construct the Consented Development.
- 2.2.19. A summary of the proposed variations is outlined in the table below.

Table 2.1: Comparison of the Description of Development between the Consented Development and Proposed Varied Development

S.36 Consent (Annex 1 Description of Development)	S.36C Proposed Variations	Details of Change
16 turbines each with a maximum blade tip height of up to 149.9m	16 turbines each with a maximum blade tip height of up to 200m	Increase in turbine tip height by up to 50.1m but no change to number of turbines.
Hardstanding area at each turbine base with an approximate area of 1800m ² .	Hardstanding area at each turbine base with an approximate area of 2126m ²	Each hardstanding would increase by approximately 326 m ² to accommodate the proposed candidate turbine model.
Three permanent meteorological masts and associated hardstand areas	Three permanent meteorological masts and associated hardstand areas (new locations)	No change to the number of masts; new locations are proposed. See Figure 1.4: Consented and Proposed Varied Layouts.
Up to four borrow pits	Up to four borrow pits	No change
Up to two site substations	One site substation (new location)	Removal of one substation and relocation of the

S.36 Consent (Annex 1 Description of Development)	S.36C Proposed Variations	Details of Change
		remaining substation to the north west of the Site, reducing environmental effects and enabling a more efficient grid connection route.
One operations control building with parking and welfare facilities	Operations and control functions integrated within the substation building	The standalone operations control building has been removed from the design; its functions will be integrated within the relocated substation building.
A total of 11km of onsite access tracks with associated watercourse crossings	A total of 12.1km of onsite access tracks with associated watercourse crossings and five turning heads	Increase of up to 1.1 km of onsite access tracks, reflecting the rerouting of the consented central spine track around the central area of deep peat. The turning heads allow vehicles to turn without the need for extended looped tracks or additional passing places.
Onsite underground cabling	Onsite underground cabling	No change
Temporary construction compound and laydown areas	Temporary construction compound and laydown areas	No change
Temporary meteorological masts	Temporary meteorological masts	No change
Temporary telecoms infrastructure	Temporary telecoms infrastructure	No change
Forest removal and subsequent replanting	Forest removal and subsequent replanting	No change to the extent of forestry removal; the replanting proposals have been updated to account for changes to the required bat buffer set back distances.
Dismantling of existing turbines and associated reinstatement	Dismantling of existing turbines and associated reinstatement	No change

- 2.2.20. Summary explanations of how engineering and environmental constraints have informed the current optimal proposed varied design at each turbine location are presented on **Figures 2.12a-2.12p: T01-T16 Design Review**.
- 2.2.21. Throughout this EIA Report, it is demonstrated that all available information (including that contained in the previous EIA Report's, through Planning Condition discharge documents, and through further environmental survey undertaken), has been considered during the relevant assessments. Documents which have been submitted to satisfy conditions and have supported the impact assessments for the Proposed Varied Development have been included in **Technical Appendices 3.7a-d and are listed as follows:**
- 3.7a Construction Environment Management Plan**
 - 3.7b Breeding Bird Protection Plan**
 - 3.7c Decommissioning Method Statement Tangy I & II**
 - 3.7d Tangy IV Compensatory Planting Scheme**
- 2.2.22. The layout of the Proposed Varied Development presents the current optimised design for the required height of turbines. As with the Consented Development layout, the Proposed Varied Development layout has been informed through detailed engineering assessment work and consideration of all available environmental survey data and constraints as described above.

2.3. Description of the Proposed Varied Development

- 2.3.1. The Proposed Varied Development would comprise the following key components:
- 16 Wind Turbine Generators ('WTGs') of up to 200m tip height;
 - Hardstanding area at each turbine base with an approximate area of 2126m²;
 - Three permanent meteorological masts and associated hardstand areas;
 - One site substation and operations control building with parking and welfare facilities;
 - A total of 12.1km of onsite access tracks with associated watercourse crossings;
 - Onsite underground cabling;
 - Temporary construction compound and laydown areas;
 - Temporary meteorological masts;
 - Temporary telecoms infrastructure;
 - Forest removal and subsequent replanting;

- Decommissioning and removal of existing operational turbines and associated reinstatement;
- Up to four borrow pits; and
- Any other associated ancillary works required.

2.3.2. The location of these elements for the Proposed Varied Development are shown in **Figure 1.3 - Proposed Varied Development Layout**.

2.3.3. The locations of the proposed WTGs and associated infrastructure may be subject to micrositing, both during the Detailed Design phase (to maximise efficiency of material balance and to minimise disruption to Peat), and during Construction (due to unforeseen technical issues, such as encountering of Geological Faults within excavations). The Applicant seeks to retain the micrositing allowance as per Planning Condition Nine stated in the S.36 Decision Letter for the Consented Development.

2.3.4. In addition to the permanent components, the construction phase would comprise the following temporary facilities:

- Site compound areas, including welfare facilities, site cabins, storage and parking;
- Batching plant facilities for temporary concrete batching plants

2.3.5. This Chapter is supported by the figures presented in **Table 2.2:**

Table 2.2: Proposed Varied Development & EIAR Supporting Figures

Figure Title	Information Source	Comment
Figure 2.1: Indicative Turbine Geometry	New Information	Presents indicative dimensions of likely candidate turbine.
Figure 2.2: Indicative WTG Foundation	New Information	Presents indicative dimensions of likely foundation requirements to suit proposed 200m tip height turbines.
Figure 2.3: Indicative Access Track Details	2018 EIA Report	Presents typical Access Track Cross Section for Cut and Floating Track, and typical passing place details.
Figure 2.4: Typical Crane Hardstanding	New Information	This presents a typical crane hardstand layout for indicative purposes only.
Figures 2.5: Indicative Mast Elevations	2018 EIA Report	Presents typical Met Mast Plan and Elevation.

Figure Title	Information Source	Comment
Figure 2.6: Construction Compound - Indicative Layout	2018 EIA Report	Presents indicative layout for the temporary Construction Compound
Figure 2.7a: Indicative Substation Plan	Deemed Planning Condition 28 – Design of sub-station and ancillary development	Presents an indicative sub-station layout design.
Figure 2.7b: Indicative Substation Elevations	Deemed Planning Condition 28 – Design of sub-station and ancillary development	Presents indicative diagrams showing the front, side, and rear elevations of the substation compound.
Figure 2.8: Indicative LiDAR	New Information	Presents typical LiDAR unit plan and elevation (and associated foundation / compound details)
Figure 2.9: Consented Development	New Information	Presents the layout of the Consented Development as per existing S.36 consent granted in 2019.
Figure 2.10: Scoping Layout	New Information	Presents the initial layout of Proposed Varied Development at the time of EIA Scoping in July 2025.
Figure 2.11: Final Proposed Varied Development	New Information	Presents the final Proposed Varied Development site layout on which this S.36C application is based
Figure 2.12a-2.12p: T01-T16 Design Review	New information	Presents summary of design iteration and rationale for the proposed varied development at each WTG location.

2.4. Proposed Varied Development Components

- 2.4.1. The following sections detail how the components and installation of the Proposed Varied Development differ from the Consented Development.

Wind Turbine Generators ('WTGs')

WTG Specification

- 2.4.2. The Proposed Varied Development comprises 16 three-bladed horizontal axis WTGs. The WTGs are automatically controlled to ensure each turbine faces directly into the wind. As a result of this, the orientation of the WTGs would alter with changes in wind direction.
- 2.4.3. The final choice of turbine will be dependent on economics and available technology at the time of construction but would have a maximum blade tip height of up to 200m. **Figure 2.1: Indicative Turbine Geometry** shows indicative dimensions for the proposed turbine envelope.

Table 2.3: Turbine Parameters Assumed for the Purposes of Assessment within this EIA Report

Details	Consented	Proposed Varied
Rotor diameter (nominal) (m)	130	150
Blade length (nominal) (m)	65	75
Hub height (nominal) (m)	91.5m	125
Tip height (max) (m)	149.9	200
Indicative total power output (MW)	80	96
Candidate turbine model	To be confirmed at detailed design stage	To be confirmed at detailed design stage

2.4.4. **Table 2.4** below provides the Grid Reference numbers for the Proposed Varied Development turbine locations vs the Consented Development turbine locations.

Table 2.4: WTG Grid References

WTG No.	Grid Reference	Northing	Easting	WTG No.	Grid Reference	Northing	Easting
T01	Consented	628150	167315	T09	Consented	629820	168130
	Proposed	628135	167221		Proposed	629820	168130
T02	Consented	628240	167860	T10	Consented	629740	168650
	Proposed	628232	167852		Proposed	629727	168693
T03	Consented	628558	167392	T11	Consented	629495	169185
	Proposed	628558	167392		Proposed	629483	169208
T04	Consented	628427	168349	T12	Consented	628979	169000
	Proposed	628383	168420		Proposed	629037	169002
T05	Consented	628597	168850	T13	Consented	628908	168475
	Proposed	628597	168850		Proposed	628906	168407
T06	Consented	628996	167456	T14	Consented	628835	167951
	Proposed	628983	167409		Proposed	628835	167951
T07	Consented	629424	167517	T15	Consented	629307	168040
	Proposed	629457	167411		Proposed	629307	168040
T08	Consented	629887	167555	T16	Consented	629327	168573
	Proposed	629887	167555		Proposed	629317	168498

- 2.4.5. The WTGs would generate electricity in wind speeds between approximately 3m/s and 25m/s (7mph to 56mph). At wind speeds greater than this the WTGs would reduce production output and eventually shut down for self-protection.
- 2.4.6. The turbine towers would be of tapering tubular rolled steel plate construction. The blades would be made from fibre-reinforced epoxy. The finish of the WTGs is proposed to be semi-matt pale grey colour.
- 2.4.7. A transformer and switchgear would be required for each turbine, which would be located within the structure of each turbine.
- 2.4.8. Aviation lighting on the WTGs is proposed as per the scheme approved by the Civil Aviation Authority ('CAA') and which Highlands and Islands Airports Limited ('HIAL') has confirmed is acceptable (Refer to **Chapter 15: Aviation and Radar**).

WTG Bases - Foundations

- 2.4.9. Dependent on the ground conditions at each wind turbine location, a piled or gravity foundation would be used to support the wind turbines. Details of the typical turbine base foundations can be seen in **Figure 2.2: Indicative WTG Foundation**. The new foundations require approximately 650m³ of concrete and 85 tonnes of steel reinforcement, an increase of approximately 100m³ of concrete in comparison to the original foundations.
- 2.4.10. Finalised, site-specific designs would be developed once the final candidate turbine is selected and detailed intrusive ground investigations are undertaken during the detailed design phase.

WTG Bases - Hardstandings

- 2.4.11. The hardstandings for the Proposed Varied Development have increased in size to support the taller WTGs. The revised footprint for each hardstand reflects a worst-case scenario, with a total area of approximately 4554m². This includes both permanent and temporary zones. The permanent area, measuring around 2126m², will remain in place to support ongoing operational and maintenance activities. The temporary area, approximately 2385m², is designated for construction-related functions such as component laydown, storage, and installation aids required for the safe assembly of WTG components, including crane operations. The temporary laydown area will be reinstated when construction is completed. The final permanent area is an increase of 369m² when compared to the Consented Development.
- 2.4.12. As has already been stated, the hardstands have not only increased in size, but as is shown in **Figure 1.4: Consented and Proposed Varied Layouts**

and further explained in detail in **Figure 2.12a-2.12p: T01-T16 Design Review**, some hardstands have been rotated to optimise engineering and earthworks constraints, as well as avoiding or minimising environmental impacts (e.g. on habitats, peat and watercourses).

WTG Installation

- 2.4.13. WTG components including towers, blades, drivetrains, hubs and nacelles are likely to be transported from the port of entry to the Proposed Varied Development using suitable abnormal load vehicles. The port of entry and delivery route remains the same as for the Consented Development.
- 2.4.14. On arrival onto the Site, the WTG components would be delivered and offloaded at the hardstanding of the WTG to be erected. The process for installation has not changed when compared to the Consented Development.

Access Tracks

Access Track Layout

- 2.4.15. The access track layout¹ is shown on **Figure 1.3: Proposed Varied Development Layout**. As with the Consented Development, access from the Site entrance on the A83 to the Site would be achieved by utilising the access track which is shared with nearby properties.
- 2.4.16. Once on the Site, existing tracks used for the operational wind farm will be used to access the new development boundary. The existing tracks are typically constructed to a high standard with a running width of around 3m. Approximately 3.5km of upgraded existing track would be utilised for the Proposed Varied Development. As with the Consented Development, these existing tracks will be widened to between 4.5m & 6m running surface, plus 0.5m shoulders each side.
- 2.4.17. As with the Consented Development, new access tracks would generally be between 4.5m & 6m wide running surface, plus 0.5m shoulders each side, as illustrated in **Figure 2.3: Indicative Access Track Details**, except where locally widened at bends, corners and at Passing Places, as required to suit WTG Supplier requirements. Some localised widening on bends and corners of the existing access tracks would also be required to access the WTGs during both construction and operation. The access tracks would be designed to incorporate passing places that would be suitable for construction plant and

¹ Subject to a 50m micro-siting limit subject to approval of specialist advisers.

4x4 traffic. Approximately 8.6km of new track would be constructed as part of the Proposed Varied Development.

Access Track Construction

- 2.4.18. It is anticipated that site access tracks would be constructed with locally (on site) won graded rock from borrow pits and / or existing tracks / hardstands and, where necessary, geotextiles with the surface course comprising of a durable unbound graded rock surfacing material. Where practicable, materials recovered during the decommissioning of existing tracks and hardstands from the Operational Development may also be reused within the Proposed Varied Development, helping to reduce the need for imported material and minimise waste generation.
- 2.4.19. Generally, a 'cut track' design will be used in areas of shallow or no peat. The topsoil and peat will be stripped to expose a suitable foundation horizon on which to build the track. This will apply to approximately 7.7km of new track.
- 2.4.20. In areas of deeper peat (>1m depth), a 'floating track' design will be utilised where technically feasible. This will incorporate geotextile material laid onto the existing peat surface at a width to suit the road width, and a layer of approximately 800mm crushed stone then laid on top to form the track. It is anticipated that this will only apply to approximately 900m of the new track.
- 2.4.21. Where appropriate, peat and soil from excavations on site would be utilised for reinstatement along both sides of the track verges and allowed to regenerate naturally as detailed within the Construction and Environmental Management Plan ('CEMP') (refer to approved CEMP provided to satisfy Planning Condition 12 in **Technical Appendix 3.7a: CEMP**) and Peat Management Plan ('PMP') (refer to updated PMP provided at **Technical Appendix 8.1: Peat Management Plan** of this EIA Report).
- 2.4.22. It is expected that all construction methodologies, good practice and embedded mitigation presented in the CEMP will be adopted for the construction of the Proposed Varied Development and therefore this information is not repeated in this EIA Report. The CEMP will be reviewed prior to construction and updated if required due to any changes to regulatory or good practice requirements at the time.

Access Track Watercourse Crossings

- 2.4.23. The proposed Site track layout has been designed to minimise watercourse crossings through a combination of avoidance and the use of existing crossings wherever possible. The Proposed Varied Development includes five

new watercourse crossings and the extension or widening of eight existing crossings.

Drainage

- 2.4.24. Schematic drainage design has not changed for the Proposed Varied Development. All indicative drainage drawings attached to CEMP (refer to **Technical Appendix 3.7a: CEMP**) are still current and have not been replicated in this EIA Report. A detailed drainage design will be completed during the Detailed Design stage of the project.

Temporary Construction Compounds

- 2.4.25. Temporary construction compounds containing welfare; offices; parking for cars and plant; and storage facilities, would be required for construction workers at the locations shown on **Figure 1.3: Proposed Varied Development Layout**.

Substation

- 2.4.26. The Proposed Varied Development would connect to the electricity transmission network via an on-site substation, as illustrated on **Figure 1.3: Proposed Varied Development Layout**. An indicative plan and elevation of the substation is provided in **Figure 2.7a: Indicative Substation Plan**, and **Figure 2.7b: Indicative Substation Elevations**.
- 2.4.27. The proposed substation platform differs from the Consented Development in that it has increased in size from 65x40m to 200x100m. However, half of this larger platform is temporary and is required for construction purposes only and would be reinstated before the development becomes operational.
- 2.4.28. The substation has also been relocated from its previously approved position. This relocation ensures compliance with required safety buffer distances from turbines and facilitates improved access for the Scottish and Southern Electricity Networks ('SSEN') Transmission. The connection from the on-site substation to the National Grid will be subject to a separate S.37 consent application by the SSEN Transmission.

Operations and Welfare

- 2.4.29. The Operations and Welfare provision will now be incorporated within the new substation platform, representing a change from the Consented Development, as shown on **Figure 2.6: Construction Compound – Indicative Layout**,

Figure 2.7a: Indicative Substation Plan and Figure 2.7b: Indicative Substation Layout – Elevations.

On-site Electrical Cabling

- 2.4.30. The electrical cabling for the Proposed Varied Development has not changed when compared to the Consented Development, except in the case that the routing of the cabling will be altered slightly to mirror the changes to the access track route as described above. The cross-country cable routes have also been amended slightly to route to the revised turbine locations.

2.5. Associated Development Components

Grid connection

- 2.5.1. The export of electricity generated by the Proposed Varied Development requires a connection to the electricity transmission network. SSEN Transmission is seeking consent from Scottish Ministers under S.37 of the Electricity Act 1989 for the construction of the Tangy IV Wind Farm and Cnoc Buidhe Wind Farm 132 kV OHL Shared Use Connection (the 'Shared Use Grid Connection') connecting at Carradale. SSEN Transmission is preparing its own EIA Report in support of that application.
- 2.5.2. As outlined in Chapter 1, the project is defined for the purposes of this EIA Report as potentially comprising both the Proposed Varied Development and the overhead transmission line for which SSEN Transmission is seeking consent under S.37 of the Electricity Act 1989.
- 2.5.3. Based on the information presented in the SSEN Transmission Scoping Report (March 2025), the Shared Use Connection comprises three principal components. The main element is an approximately 13-kilometre 132kV double circuit overhead line supported on series steel lattice towers with an average height of approximately 30.4 metres, extending along the Kintyre peninsula to a terminal tower where the line will then tee off to two underground cable connections. The first one extends west to serve Cnoc Buidhe Wind Energy Hub, and the other extending southwards for to serve the Proposed Varied Development substation.
- 2.5.4. The description of the proposed Shared Use Grid Connection can be found within Section 2 of Technical Appendix 3.5: Tangy IV Wind Farm and Cnoc

Buidhe Wind Farm 132 kV OHL Shared Use Connection Environmental
Impact Assessment Scoping Report.

- 2.5.5. The indicative route corridor is also shown that document and construction will be carried out by SSEN-T and its contractors, separately from the construction of the Proposed Varied Development.

Concrete Batching

- 2.5.6. As with the Consented Development, concrete batching is anticipated to be undertaken off site, although temporary on-site batching may be carried out within the Temporary Laydown Area if required. The indicative location of the Temporary Laydown Area is shown on **Figure 1.3: Proposed Varied Development Layout**.

Borrow Pits

- 2.5.7. The borrow pits anticipated to be used for the Proposed Varied Development are shown in **Figure 1.3: Proposed Varied Development Layout**. No changes are proposed to the four borrow pit search areas approved for the Consented Development.

Borrow Pit Reinstatement

- 2.5.8. Following construction, the utilised borrow pits would be reinstated with a suitable restoration profile. Reinstatement methodology is as described within the 2018 EIA Report and the approved CEMP (**Technical Appendix 3.7a: CEMP**) and it is expected that the measures presented in these documents will be adopted during construction of the Proposed Varied Development and therefore they are not required to be duplicated for the purposes of this EIA Report.

2.6. Indicative Construction Programme

- 2.6.1. It is expected that many of the required works would be carried out concurrently, although predominantly in the order identified in **Table 2.5** to minimise the overall length of the construction programme. A typical construction period for a wind farm of this size is estimated to be approximately 24 months. The indicative construction programme is illustrated in **Table 2.5**, with the final period dependent on weather and ground conditions experienced at the Site. This remains unchanged from the Consented Development.
- 2.6.2. Site reinstatement would be programmed and carried out to allow rehabilitation of disturbed areas as early as possible to minimise storage of excavated material on vegetation. Details on reinstatement are provided in **Technical Appendix 3.7a: CEMP**.

Table 2.5: Indicative Construction Programme

Quarter	1	2	3	4	5	6	7	8	9
Site Establishment									
Access Track Upgrade and Construction									
Concrete Works									
Forestry works									
Decommissioning of Tangy I and II									
Borrow Pit Operation									
Turbine Bases and Hardstandings									
Substation Works									
Cable Delivery and Installation									
Turbine Delivery & Erection									
Wind Farm Turbine Commissioning									
Reinstatement & Restoration									

Working Hours

2.6.3. Working hours are as proposed for the Consented Development:

- Construction activities which are audible from any noise sensitive receptors shall only take place between 07.30 and 19.00 hours Mondays to Fridays, and 08.00 to 16.00 hours on Saturdays. No working activities would be planned on Sundays. In the event of work being required out

with these hours, e.g. abnormal load deliveries, commissioning works or emergency mitigation works, the Planning Authority would be notified prior to these works taking place, wherever possible.

- Movements of heavy goods vehicles to and from the site during construction will take place between 07.00 and 19.00 hours Monday to Friday and 08.00 to 16.00 hours on Saturdays. No vehicle access during these periods will take place on Sundays or bank holidays without the prior approval of the Planning Authority
- For all construction and decommissioning works taking place within 1 kilometre of Tangy Loch, activity will only occur between one hour after dawn and one hour before dusk during the goose roost season (30 September to 30 April).

2.7. Environmental Management during Construction

- 2.7.1. All mitigation and environmental management activities proposed as part of the Consented Development shall be adopted during construction of the Proposed Varied Development.
- 2.7.2. Prior to construction works, sensitive ecological areas, and other specific sensitive locations (e.g. cultural heritage assets, watercourses) would be marked out as appropriate on site by specialist advisers (e.g. the Environmental Clerk of Works ('ECoW')) to avoid unnecessary encroachment and protect sensitive areas during construction. The Principal Contractor would ensure no vehicle movements or other activities take place out with the approved working area.

Micrositing

- 2.7.3. There may be a requirement to microsite elements of the Proposed Varied Development as a result of additional constraints encountered during site works. Turbines, access tracks, underground cables and crane hard standing areas may be microsit within 50m of the positions shown on **Figure 1.3: Proposed Varied Development Layout**. Beyond this, agreement would be sought from the Planning Authority in consultation with NatureScot and SEPA. Any micrositing would require agreement of the specialist advisors (e.g. the ECoW) as appropriate.

Construction Environmental Management Plan ('CEMP')

- 2.7.4. As has already been stated within this Chapter, the outline CEMP submitted with the 2018 EIA Report was updated and approved post-consent to satisfy planning condition 12 (**Technical Appendix 3.7a**). The CEMP provides information on the appropriate measures to be taken for the avoidance,

minimisation and control of adverse, environmental impact associated with construction activities. The requirements presented in the CEMP are relevant to the construction of the Proposed Varied Development and therefore a CEMP is not required to be updated or duplicated for the purposes of this EIA Report. If the project is consented, the CEMP will be reviewed prior to the commencement of development for the Proposed Varied Development and may be updated to take into account changes to relevant environmental regulations, any consultation feedback, or post-consent surveys as required.

Site Environmental Management

- 2.7.5. The Principal Contractor would have overall responsibility for environmental management on the Site. The services of specialist advisors, such as the project ECoW, would be retained as appropriate to be called on as required to advise on specific issues. The Principal Contractor and the Applicant would ensure construction activities are carried out in accordance with the mitigation measures outlined in this EIA Report and those detailed in the CEMP.
- 2.7.6. Contractors would be required to adhere to the following to reduce or mitigate the environmental effect of the construction process:
- the conditions of any granted consent;
 - relevant environmental regulations; and
 - any other relevant mitigation measures identified in this EIA Report.
- 2.7.7. A copy of any conditions of consent and the CEMP would be incorporated into tender documents and form part of the contract between the Applicant and/or Developer and the Principal Contractor. The selection criteria for the Principal Contractor would include a requirement to evidence completion of similar projects with successful implementation of environmental management.

Waste Management

- 2.7.8. Waste management requirements will not change from those contained in the CEMP (**Technical Appendix 3.7a**) and will comply with all regulations and guidance at the time of construction.

Health and Safety Related Issues

- 2.7.9. As with the Consented Development, health and safety would be initially addressed as part of the Pre-Construction Information Pack prepared by the Principal Designer for the project under the Construction (Design and Management) Regulations 2015. The Principal Contractor would be required to prepare a Construction Phase Health and Safety Plan and forward

information to the Principal Designer during the works to enable the Health and Safety File to be completed.

- 2.7.10. Turbines are designed to be safe and are built to withstand extreme wind conditions. The turbines selected for the Proposed Varied Development would have the appropriate health and safety certification.
- 2.7.11. In accordance with Sections 6(1)(g) and (h) of the Land Reform (Scotland) Act 2003, access rights are not exercisable while building or civil engineering works, or working of minerals, are being carried out. This will be applied throughout the construction working area for health and safety reasons.
- 2.7.12. An Operations and Maintenance Manual for the design life of the wind farm would be prepared, which would cover all operational and decommissioning procedures.

Site Reinstatement

- 2.7.13. Reinstatement works are generally undertaken during construction (and immediate post-construction phase) and aim to address any areas of ground disturbance and changes to the landscape as part of the construction works. Reinstatement is undertaken as soon as practical following the construction works in each area, such as the re-dressing of road and track verges (and other areas that may be disturbed as a result of the construction process).
- 2.7.14. It is expected that all site reinstatement requirements presented therein and within the CEMP will remain the same for the construction of the Proposed Varied Development and therefore an updated CEMP is not required to for the purposes of this EIA Report.

Forestry

- 2.7.15. The land within the site application boundary is predominantly upland grazing and energy generation with commercial forestry. An assessment of the impacts on forestry was undertaken as part of the 2018 EIAR and stated the coniferous plantation woodland on the site (270.75ha) will be felled to enable construction, with replanting to a keyhole design following the construction phase.
- 2.7.16. More information on forestry and compensatory planting is found at **Chapter 13: Land Use, Socio-Economics and Recreation** of this EIA Report.

Consultations with the Local Community during Construction

- 2.7.17. Consultation with the local community during the construction of the Proposed Varied Development is an important consideration for the Applicant and the Principal Contractor. Appropriate communication channels will be maintained throughout the construction period to provide updates on forthcoming activities, programme information, and any works with the potential to affect local residents and the community.

Site Operation and Maintenance

- 2.7.18. Site operation and maintenance requirements are as per the Consented Development. Routine maintenance, inspections and servicing would be carried out on each turbine as required at the Proposed Varied Development, including major component and blade inspections. Appropriate maintenance works would be carried out routinely, and immediately following any unexpected events on site, such as failure of a generator or gearbox.

Ice Throw

- 2.7.19. As with the Consented Development, turbines will be fitted with vibration sensors which shut the turbines down should any imbalance that might be caused by icing be detected. In addition, mitigation measures in place for the Operational Development would benefit the Proposed Varied Development. These include:
- service crews are trained regarding the potential for ice throw;
 - ice risk conditions are monitored by the operational wind farm staff; and
 - public notices are in place at access points alerting members of the public and staff accessing the Site of the possible risk of ice throw under certain weather conditions.

Risks of Major Accidents and/or Disaster

- 2.7.20. As with the Consented Development, during operation, routine maintenance inspections will be completed in order to ensure the safe and compliant operation of all built infrastructure

Track Maintenance

- 2.7.21. Frequency of track maintenance depends largely on the volume and nature of the traffic using the track, with weathering of the track surface also having an appreciable effect. Heavy plant is particularly wearing and on-going track maintenance would be undertaken as necessary throughout the year. Safe

access and management of silt run off from weathered track material would be maintained all year round.

- 2.7.22. There would be no public vehicular access to the Site.

Site Decommissioning

- 2.7.23. Decommissioning proposals remain the same as for the Consented Development. The decommissioning period for a wind farm of this size is estimated to be between six and twelve months. Detailed decommissioning proposals would be established and agreed with relevant authorities through the relevant planning condition prior to commencement of decommissioning activities.
- 2.7.24. Decommissioning of the wind farm would be undertaken at the end of its operational lifespan.