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SSE Renewables

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GLENTARKEN WIND FARM
DESIGN AND ACCESS STATEMENT

RAMBOLL

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CONTENTS

APPENDICES

GLOSSARY AND ABBREVIATIONS

Initials	Description
AW	Ancient Woodland
BEMP	Biodiversity Enhancement Management Plan
BESS	Battery Energy Storage System
BP	Borrow Pit
CAA	Civil Aviation Authority
CCUS	Carbon Capture Utilisation and Storage
DAS	Design And Access Statement
EIAR	Environmental Impact Assessment Report
GDLs	Gardens And Designed Landscapes
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HEPS	Historic Environment Policy For Scotland
HER	Historic Environment Record
HGV	Heavy Goods Vehicles
HMP	Habitat Management Plan
LCTs	Landscape Character Types
LDP	Local Development Plan
LFA	Low Flying Area
MRT	Multi-Radar Tracker
ND3	National Development 3
NPF4	National Planning Framework 4
NSAs	National Scenic Areas
NVC	National Vegetation Communities
PAC	Pre- Application Consultation
SAC	Special Area of Conservation
SPP	Scottish Planning Policy
SSSI	Special Scientific Interest
WTGs	Wind Turbine Generators

1 INTRODUCTION

1.1.1 This Design and Access Statement (DAS) has been prepared by Ramboll UK Limited (Ramboll) on behalf of SSE Generation Limited ('the Applicant') in support of an application for consent[1] to construct and operate a generating station incorporating up to 12 wind turbine generators (WTGs) of up to 180 m tip height, battery energy storage system (BESS) and associated infrastructure with generation capacity of greater than 50 MW. The project is to be referred to as Glentarken Wind Farm ('the Proposed Development').

1.1.2 The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 require applications for 'major' development to be supported by a Design Statement. There is no statutory requirement for applications for consent under the Electricity Act 1989 to be supported by a Design Statement; however, the Applicant has opted to provide one as a good practice measure.

1.1.3 The purpose of the Design Statement is to explain the design principles and concepts that have been applied. Consideration has been given to PAN 68[2] which outlines the key principles and concepts to be considered within a design statement. In line with the Scottish Government guidance[3], the statement does not extend to the consideration of internal aspects of individual buildings.

1.1.4 This DAS should be read in conjunction with the Environmental Impact Assessment Report (EIAR). This DAS only provides details on access from a construction perspective. Recreational access is addressed in **Technical Appendix (TA) 12.2: Recreational and Outdoor Access Plan (EIAR Volume 4).**

[1] An application for consent for the Proposed Development will be made to the Scottish Ministers under section 36 of the Electricity Act 1989, along with a request for a direction that planning permission be deemed to be granted under section 57(2) of the Town and Country Planning (Scotland) Act 1997 as amended

[2] Scottish Government, 2003. Planning Advice Note 68: Design Statements. Online. Available at: https://www.gov.scot/publications/planning-advice-note-68-design-statements/ [Accessed: 23/08/2024]

[3] Scottish Government, 2013. Scottish Planning Series Circular 3 2013: Development Management Procedures. Available at: https://www.gov.scot/publications/planning-series-circular-3-2013-development-management-procedures/ [Accessed: 23/08/2024]

2 POLICY CONSIDERATIONS

2.1.1 **Chapter 4: Planning and Energy Policy** (**EIAR Volume 1**) outlines in detail the planning and policy considerations relevant to the Proposed Development.

2.1.2 National Planning Framework 4 (NPF4)[4] is the national spatial strategy for Scotland, setting out the spatial principles, regional priorities, national developments, and national planning policy.

2.1.3 A dominant theme within NPF4 is addressing the global climate emergency through the need to reduce greenhouse gas emissions and adapt to the impacts of climate change. NPF4 sets out a spatial strategy to ensure a net zero society and nature positive country.

2.1.4 NPF4 has introduced centralised development management policies which are to be applied Scotland wide, and also continues the approach set out in NPF3 of identifying national developments. Proposed National Development 3 (ND3), entitled '*Strategic Renewable Electricity Generation and Transmission Infrastructure*', includes renewable energy developments of over 50 MW in installed capacity; therefore, the Proposed Development has national development status. The Proposed Development will make a contribution to the attainment of renewable energy and electricity targets and emissions reduction at both the Scottish and UK levels; the quantification of this contribution is described in **EIAR Chapter 2: Development Description (EIAR Volume 1)**.

2.1.5 Policy 11 of NPF4, the principal policy used in the assessment of wind energy developments, intends to "*To encourage, promote and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage, new and replacement transmission and distribution infrastructure and emerging low-carbon and zero emissions technologies including hydrogen and carbon capture utilisation and storage (CCUS)*".

2.1.6 Since the adoption of NPF4 in 2023, NPF3 and Scottish Planning Policy (SPP) has been superseded.

2.1.7 Perth and Kinross Local Development Plan (LDP)[5], adopted in 2019 guides future development in the Perth and Kinross Council area. The Stirling Development Plan[6] was adopted in 2019 covering the council area of Stirling.

2.1.8 The design statement has also, amongst others, given regard to:

- The Electricity Act 1989[7];
- The Town and Country Planning (Scotland) Act 1997[8];
- Climate Change Act 2008[9] and Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[10];
- Committee on Climate Change – The Sixth Carbon Budget, The UK's Path to Net Zero[11];
- Progress in Reducing Emissions and Progress in Scotland – 2023 Progress Reports to Parliament[12];
- Energy White Paper – Powering our Net Zero Future[13];

[4] Scottish Government (2023) National Planning Framework 4. Available at: https://www.gov.scot/publications/national-planning-framework-4/documents/ [Accessed 23/08/2024].

[5] PKC (2019), Adopted Local Development Plan. Available at: https://www.pkc.gov.uk/ldp2 [Accessed 23/08/2024].

[6] Stirling Council (2018). The Statutory Development Plan. Available at: https://www.stirling.gov.uk/planning-and-building/planning/development-planning/the-statutory-development-plan/ [Accessed 23/08/2024].

[7] Scottish Ministers. Electricity Act 1989. Online. Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents [accessed 12/06/2024]

[8] Scottish Ministers. Town and Country Planning (Scotland) Act 1997. Online. Available at: https://www.legislation.gov.uk/ukpga/1997/8/contents [accessed 23/08/2024]

[9] UK Government. The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Online. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111187654 [accessed 23/08/2024]

[10] Scottish Government (2019) Climate Change (Emissions Reduction Targets) Act 2019. Available at: https://www.legislation.gov.uk/asp/2019/15/contents [Accessed 23/08/2024].

[11] Climate Change Committee, December 2020. Sixth Carbon Budget. Online. Available at: https://www.theccc.org.uk/publication/sixth-carbon-budget/ [accessed 23/08/2024]

[12] Climate Change Committee, March 2024. Progress Report to Parliament. Online. Available at: https://www.theccc.org.uk/publication/progress-in-reducing-emissions-in-scotland-2023-report-to-parliament/ [accessed 23/08/2024]

[13] UK Government, December 2020. Energy White Paper – Powering out Net Zero Future. Online. Available at: https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future [accessed 23/08/2024]

- The Scottish Government's 'Programme for Scotland 2023-2024 'A Fairer, Greener Scotland'[14];
- The Scottish Climate Change Plan: third report on proposals and policies 2018-2032 (RPP3)[15];
- Update to the Climate Change Plan 2018–2032: Securing a Green Recovery on a Path to Net Zero[16];
- The Scottish Energy Strategy[17];
- Scotland's Energy Strategy Position Statement[18];
- The Onshore Wind Policy Statement 2022[19]; and
- The Onshore Wind Sector Deal[20].

[14] Scottish Ministers. The Scottish Government's 'Programme for Scotland 2023-2024 'A Fairer, Greener Scotland, 2023. Online. Available at: https://www.gov.scot/publications/programme-government-2023-24/ [accessed 23/08/2024]

[15] Scottish Ministers, 2018. The Scottish Climate Change Plan. Online. Available at: https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018/ [accessed 23/08/2024]

[16] Scottish Ministers, 2020. Update to the Climate Change Plan 2018 – 2032: Securing a Green Recovery on a Path to Net Zero. Online. Available at: https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/ [accessed 23/08/2024]

[17] Scottish Ministers, 2017. The Scottish Energy Strategy. Online. Available at: https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/ [accessed 23/08/2024]

[18] Scottish Ministers, 2021. Scotland's Energy Strategy Position Statement. Online. Available at: https://www.gov.scot/publications/scotlands-energy-strategy-position-statement/ [accessed 23/08/2024]

[19] Scottish Ministers, 2022. Onshore Wind Policy Statement. Online. Available at: https://www.gov.scot/publications/onshore-wind-policy-statement-2022/ [accessed 23/08/2024]

[20] Scottish Ministers, 2023. Onshore wind sector deal. Available at: https://www.gov.scot/publications/onshore-wind-sector-deal-scotland/ [accessed 23/08/2024].

3 SITE CONTEXT

3.1.1 The 'Site' (defined by the red line boundary on **Figure 1 (Appendix 1)** is approximately 1,103 hectares, located approximately 45 km west of Perth within the Drummond Estate and approximately 2.8 km east of Lochearnhead, Stirling, Scotland. The Site includes land within the Perth and Kinross local authority area and the Stirling local authority area. The WTG array will be within Perth and Kinross, while the site entrance and a portion of the access track is located within the Stirling area. The Site extent has been reduced since scoping, to better reflect the buildable area.

3.1.2 There are two valleys within the Site: Glen Tarken and Glen Beich. Glen Beich and Beich Burn form the western boundary of the Site. Most of the meandering burns within the Site drain into Loch Earn. The majority of the Site is an area of heathland and moorland or rough hill pasture. The Landscape Character, Designations and Fabric are discussed in detail in **Chapter 5: Landscape and Visual (EIAR Volume 1)**. The southern edge of the Site has areas of arable land as well as forests and woodland. On the western border of the Site is an area of Ancient Woodland (AW).

3.1.3 There are a number of watercourses that traverse the Site. The Site is drained by Beich Burn, Glentarken Burn and Allt an Fhionn, which flow southwards into the 10.1 km long Loch Earn, situated to the south of the Site. Two lochans are present in the northeast of the Site; Loch Eas Domhain and Lochan na Creige Ruahidhe. The Hydrological features of the Site are discussed in **Chapter 8: Geology, Peat, Hydrology and Hydrogeology (EIAR Volume 1)**.

3.1.4 A number of environmental designations are present within 5 km of the Site including the River Tay Special Area of Conservation (SAC) and a number of Sites of Special Scientific Interest (SSSI's) designated for ecological features. Loch Lomond and the Trossachs National Park lies approximately 1 km to the west and south of the Proposed Development, to the nearest WTGs. The ecological features and designations are discussed in **Chapter 7: Ecology (EIAR Volume 1)** with ornithological assets and species outlined in **Chapter 6: Ornithology (EIAR Volume 1)**.

3.1.5 Peatland habitat is present across the Site, primarily formed of blanket bog, dry heath, grassland mosaics and small stands of other habitat types. In contrast, the access corridor contains more woodland, grassland, bracken, and wet heath. Peatland habitats, peatland condition and peat are discussed in **Chapter 7: Ecology (EIAR Volume 1); Chapter 8: Geology, Peat, Hydrology and Hydrogeology (EIAR Volume 1); and TA 8.2: Peat Management Plan (EIAR Volume 4).**

3.1.6 There are no Listed Buildings, Scheduled Monuments or Conservation Areas within the Site. The closest Listed Building is the Category B - Loch Earn, Dalveich Cottage which lies approximately 200 m west of the Site. The St Fillans Conservation Area lies 1.8 km south of the Site, and Dundurn Fort, fort St Fillans Hill is the closest Scheduled Monument which lies 3.9 km south of the Site. **Chapter 10: Cultural Heritage (EIAR Volume 1)** discusses the Cultural heritage assets, both designated and non-designated within the Site and the outer Study Area.

3.1.7 Key environmental constraints are presented in **Figure 2 (Appendix 1).**

4 DESIGN APPROACH

4.1.1 Consistent with renewable energy policy, the key overall objective is to maximise the energy generation potential of the Site, whilst having regard to the protection of sensitive environmental receptors. A design process was agreed with the environmental and engineering technical teams that included the parameters set out in the following paragraphs.

4.1.2 The approach to design was informed by and responded to:

- Good practice and windfarm design guidance such as SNH (2017) Siting and Design of Wind Farms in the Landscape (Version 3a)[21];
- Planning policy documents (e.g. NPF4[22], Perth and Kinross LDP 2019[23]); and
- Consultation responses received through pre-application consultation, EIA scoping and the Gatecheck process.

4.1.3 Details of all consultation feedback and the Applicants response is provided in **TA 1.2: Consultation Register (EIAR Volume 4**).

4.2 Design Brief

4.2.1 A design brief was agreed with the Applicant setting out key parameters for the Proposed Development. The brief included:

- A preliminary landscape-led WTG layout provided by the Applicant, which had been designed to create a legible composition in views from the surrounding area and when travelling through the Site;
- Details of land available (illustrated by the application Site boundary); and
- Requirements for Site construction compounds, borrow pits (BPs), substation, BESS, laydown areas, access track geometry and crane hardstanding geometry.

4.2.2 The design brief subsequently set the scope for constraint mapping with the Applicant being responsible for defining technical requirements such as WTG spacing to avoid turbulence, maximum gradient of potential WTG locations and associated track infrastructure.

4.2.3 Following agreement of the design brief, the team was instructed to undertake all necessary desktop studies and field work to identify key environmental receptors and constraints (including cumulative constraints) of relevance to the design and assessment of the Proposed Development.

4.2.4 Further analysis was completed to categorise constraints as either 'hard constraints' or 'soft constraints'. Hard constraints were defined as those features with formal protection as defined in legislation or adopted planning/ industry guidance, whereas soft constraints were characterised as having potential to constrain the development but, subject to careful design consideration and/ or mitigation measures, the Proposed Development could be accommodated.

4.2.5 A number of Design Workshops were held (from January to August 2024) between the design team and technical specialists in order to discuss engineering feasibility and environmental constraints. Six iterations of the design were developed in response to the environmental constraints and engineering feasibility, Further details of the design evolution process are provided in Section 4.5.

4.3 Key Environmental Issues and Constraints

4.3.1 In addition to the policy considerations identified, key issues and constraints for consideration in the design process were established through a combination of desk-based research, field survey and

[21] Scottish Natural Heritage (2017). Siting and Designing Wind Farms in the Landscape. Available at: https://www.nature.scot/sites/default/files/2017-11/Siting%20and%20designing%20windfarms%20in%20the%20landscape%20-%20version%203a.pdf [Accessed: 23/08/2024].

[22] Scottish Government (2023). National Planning Framework 4. Available at; https://www.gov.scot/publications/national-planning-framework-4/ [Accessed: 6/11/2024].

[23] Perth and Kinross Council (2019). Adopted Local Development Plan [LDP2]. Available at: https://www.pkc.gov.uk/ldp2 [Accessed: 06/11/2024]

consultation (through the EIA scoping process). The key environmental constraints are illustrated in **Figure 2 (Appendix 1).**

4.3.2 The design process considered the following key issues:

- Landscape character, landscape fabric and visual amenity within a study areas of 20 km;
- Cultural heritage, including mapping all known assets within the Site, all designated and non-designated heritage assets within a 10 km study area of the Site to assess the potential for visibility and setting effects;
- Sensitive fauna, with the mapping of the presence of European protected species;
- Sensitive habitats, particularly peat forming habitats (supported by habitat and peat probing surveys), ancient woodland and habitats dependent on groundwater;
- Ornithology, including surveys for bird flight activity (for Red Kite, Merlin and Black Grouse) and breeding bird activity on the Site;
- Geology, Peat, Hydrology and Hydrogeology, including identifying all sensitive surface water features, groundwater dependent terrestrial ecosystems, priority peatland and peat depth;
- Traffic and transport, including all trunk roads and local roads that are likely to experience increased traffic flows;
- Cumulative operational noise levels and exposure at nearby receptors; and
- Aviation and telecommunications assessments.

4.3.3 Further detail on environmental considerations is provided in **Appendix 2**, and **Chapter 3: Evolution of Design and Alternatives (EIAR Volume 1**).

4.4 Alternatives

Do-Nothing Alternative

4.4.1 The "do nothing" scenario is considered in the EIAR as a basis for comparing the development proposal. This scenario represents the current baseline situation as described in the individual chapters of the EIAR. Section 3 outlines the Site Context which characterises the baseline environment and assumed future environmental conditions assuming no development on the Site is established.

4.4.2 It is recognised that the baseline would not remain static for the lifetime of the Proposed Development. In particular, and apart from any changes arising from economic and agricultural policies and economic market considerations, it is predicted that biodiversity and landscape would undergo some level of change as a result of climate change. Two publications from the Landscape Institute and Scottish Natural Heritage (now NatureScot) consider the potential climate change effects on the landscape character.[24] Due to the complexities and uncertainties inherent in attempting to predict the nature and extent of such changes to landscape and biodiversity during the lifetime of the Proposed Development, it has been assumed that the current baseline would subsist. It is considered that this represents an appropriate approach for EIAR preparation purposes.

4.5 Design Evolution

4.5.1 **Figure 3 (Appendix 1)** summarises the wind farm design evolution from scoping stage to the design freeze layout.

Layout 1: Scoping Layout [14 WTGs] (Figure 4, Appendix 1)

4.5.2 The Scoping layout represented the layout that was developed based on an initial desk-based constraints review and taking account of findings of the ornithology, ecology and Stage 1 peat probing surveys.

[24] NatureScot (2017). Climate Change: Impacts on Landscape. Available at: https://www.nature.scot/climate-change/climate-change-impacts-scotland/climate-change-impacts-landscapes

4.5.3 Following Site feasibility assessments, an indicative design for a potential WTG layout containing up to 14 WTG's delivering up to 84 MW was included as part of the Applicants submission for a scoping opinion to the Scottish Government in December 2022.

Layout 2: Post Scoping (Technical) [18 WTGs] (Figure 5, Appendix 1)

4.5.4 Following the Scoping stage, the design was optimised from an energy generation and technical constraints perspective, increasing the WTG (T) number from 14 to 18 and the predicated 84 MW to 104 MW grid connection capacity.

- T16 was re-located due to the proximity of the to a tunnel linked to the Breadalbane Hydro-Electric Power scheme;
- T9 and T17 were moved onto flatter topography;
- T7 and T16 were moved out of deeper peat;
- The main spine track within the Site was set to achieve the required gradient;
- Permanent/ temporary WTG hardstand areas were incorporated based on worst case hardstand layout for N163 WTG model;
- Indicative locations for construction compounds, laydown areas and batching plant were proposed adjacent to spine track and where the topography was suitable;
- Indicative BP locations were proposed; and
- An indicative substation platform location was proposed.

Layout 3: Post Scoping Layout 2 (Environmental) [16 WTGs] (Figure 6, Appendix 1)

4.5.5 The optimised technical layout was then reviewed from an environmental perspective, primarily peat depths and landscape and visual impacts, whilst accommodating the steep topography and wind energy optimisation.

4.5.6 During the design workshop, the following elements were discussed:

- The need to present a more cohesive layout from an LVIA perspective, to avoid the WTGs appearing in two separate clusters and to set the turbines further back from the Loch Lomond and the Trossachs National Park (LLTNP). The four most westerly WTGs (T12, T13, T15, T16) were the main focus;
- In line with recommended SEPA guidance, the avoidance of deep peat which is greater than 1 m deep. Design preferences were agreed that the placement of infrastructure and WTGs would aim to be out with areas of peat where technically feasible and acceptable from an engineering perspective;
- Avoidance of blanket bog habitat (where possible), priority peatland national vegetation communities (NVC) communities in particular;
- Application of a 50 m watercourse buffer to avoid any direct impacts;
- Ornithological constraints including the implementation of a buffer zone for the Merlin, a Schedule 1 Raptor, that are located within the area; and
- Following ecological surveys, the presence of potential bats roosts, mammal holes and woodland were identified along the western Site access. Constraints and potential buffer zones regarding reptiles that were identified on Site were also discussed.

4.5.7 Following the above discussion and an engineering feasibility check, the following changes were made to the Layout 3:

- T13 and T15 were removed, as these were undesirable from a construction perspective as a result of steep slopes;
- T1 was moved approximately 1 km south setting it further back into the upland plateau. While it could be repositioned to the east to avoid the dominant Groundwater Dependent Terrestrial Ecosystems (GWDTE), this would place the turbine and hardstand in an area of deep peat, which is less desirable;
- Turbine 16 was moved to the original T5 position in order to avoid deep peat;

- T12 was re-located to the south-eastern section of the Site to produce a more cohesive layout from a landscape and visual perspective;
- T2 was re-located away from the edges of the upland ridge to reduce its prominence from an LVIA perspective. This area is also characterized by shallow peat and gentle gradients. The orientation of the hardstand and access track has been optimized to minimize earthworks, although substantial earthworks remain necessary due to the Site's inherent characteristics;
- T3 was re-located to accommodate the avoidance peat and ecological habitats. In addition, the access route to the hardstand has been revised to allow access from Turbine 2, thus minimizing disturbance from the access tracks;
- T10 was re-located chosen to minimize the impact on the peatland habitat and to reduce interference with adjacent turbines. However, T10 is situated within an area of deeper peat. Significant movement of this turbine would require a comprehensive redesign of the site, although micro-siting adjustments could potentially provide some mitigation; and
- T7 was re-located to accommodate the avoidance peat and ecological habitats.
- The use of two sections of track at the Site entrance was reviewed and implemented. The existing farm track will be upgrading (in orange) to reach BP 6. However, the gradients are too steep for WTG deliveries/operations, therefore an additional new section of track (to the left) is also required.

4.5.8 The potential for a BESS was also considered at this stage of the design. A BESS could optimise the contribution the Proposed Development can make to renewable energy targets by storing energy when there is an excess/grid constraint and releasing it when it is needed. Combining technologies such as batteries and wind can complement energy generation, contributing to a more stable grid at source. This results in the delivery of more power to the grid at the right time and more effective use of the existing grid connections, infrastructure, and land.

4.5.9 The removal/re-location of the four westerly WTGs, resulted in a unified WTG layout which allows the development to appear as one cohesive development rather than appearing as two separate developments, reducing potential landscape and visual effects.

4.5.10 Layout 3 was presented at the public exhibition held on 28th (St Fillans) – 29th May 2024 (Lochearnhead). Further details on the feedback received from the public exhibition are presented in the Pre- Application Consultation (PAC) Report, provided as a supporting document to this EIAR.

Layout 4: Post Engineering Walkover Layout [14 WTGs] (Figure 7, Appendix 1)

4.5.11 A detailed site walkover was undertaken by engineers to assess the buildability of Layout 3. The terrain around T12 and T18 was too steep to build the required hardstanding area, and they were subsequently removed.

4.5.12 Due to the challenging topography and the implications for earthworks required at each WTG location to create the required platforms for each WTG foundation and crane hardstandings, detailed consideration was given to optimising the conceptual layout and hardstanding arrangement to reduce earthworks where possible. The base case WTG model was reviewed and the decision was made to change the turbine model, as the hardstanding arrangements improve the cut/fill requirements.

4.5.13 The Site boundary was also amended to reflect the buildable area and to capture the two access points off the A85.

Layout 5: Design Chill [12 WTGs] (Figure 8, Appendix 1)

4.5.14 At this stage the associated WTG infrastructure and access track design was reviewed in more detail. The cut and fill requirements for each WTG (and hardstanding) were also reviewed in detail.

- T7, T9, T14 & T17 were removed due to the level of cut and fill required;
- Two WTGs (T20, T21) were added to more buildable locations within the space between the removed T7 and T14;

- T20 is located on flat ground adjacent to the main access track. The hardstand orientation has been optimized to minimize disturbance to deeper peat, given the topographical constraints. Micro-siting potential is limited due to steep slopes to the south and access track constraints to the north;
- T21 Initially, deep peat was not indicated in the area of Turbine T21. However, recent peat probing has revealed that the turbine base and hardstand are situated within deep peat. Relocating the turbine is challenging due to its interaction with other turbines, infrastructure, and steep slopes to the east and west.

- Minor amendments to WTG location and hardstanding orientation were made where possible, in response to environmental constraints;
- Access track position was adjusted to avoid the 50 m water buffer; and
- Access tracks were extended to cover the BP search areas.

Layout 6: Design Freeze [12 WTGs] (Figure 9, Appendix 1)

4.5.15 Stage 2 peat probing was undertaken based on layout 5 (design chill). Layout 5 was also circulated to the technical specialists for comment.

4.5.16 Following the stage 2 peat probe and BP survey, feedback from the wider environmental team, the following changes were made:

- The western access track was realigned to avoid remains of a pre-medieval settlement (non-statutory cultural heritage asset);
- Laydown area near T10 has been moved slightly (approx. 4m) to move one corner out of blanket bog;
- Indicative BP locations were confirmed, resulting in six search areas. Access tracks to BPs were also finalised;
- Slight movement of T5 and T21, due to steep topography, environmental and technical considerations;
- Relocation of the construction compound, due to steep topography;
- Relocation of substation compound, due to steep topography;
- The decision was made to use ground based Light Detection and Ranging (LiDAR) rather than a permanent mast for meteorological measurements during the operational phase. The LiDAR unit will be located next to the substation to minimise additional access tracks and additional cabling; and
- Following an engineering site walkover further detailed analysis, the Site boundary was further reduced, as this south eastern corner was not required for the Proposed Development.

4.5.17 The preferred option taken forward for assessment is the Layout 6: Design Freeze Layout as shown in **Figure 10 (Appendix 1**). The proposed layout provides an optimised layout from an environmental and construction perspective, with has been chosen as likely significant effects being avoided or minimised as far as reasonably practicable. Further details are provided in **Section 6.**

4.5.18 By following the design guidance described in Appendix 3, the number of WTGs was reduced from 18 to 12 WTGs. The WTGs and associated infrastructure were sited to reduce potential impacts to landscape, peat, heritage features, ecology and ornithology when compared to earlier iterations of the design. The infrastructure footprint was optimised to minimise overall track length and the number of watercourse crossings. In summary, the main reasons for selecting the proposed layout are the reduced impact on areas of deep peat, the provision of a unified layout from a landscape and visual perspective, and the reduced impact on priority peatland habitats habitat. The proposed layout has been chosen as it provides an optimised layout from an environmental and construction perspective. It has adopted the mitigation hierarchy with the aim of avoiding and minimising as far as practicable, likely significant effects.

4.5.19 At detailed design stage (following consent), further ground investigation surveys will be undertaken, and consideration will be given to further micrositing (within 50 m) where feasible.

5 CONSULTATION ACTIVITIES

5.1 Scoping

5.1.1 The Applicant submitted a request for a Scoping Opinion to Scottish Ministers in December 2022. This request was accompanied by a Scoping Report, prepared by the Applicant, which set out a summary of the proposals; identified the likely significant environmental effects, and summarised the proposed scope of the EIA.

5.1.2 A Scoping Opinion was received from ECU on 22nd February 2023 (ECU Ref: ECU00004700) . The contents of this and other consultation responses received are summarised in **TA 1.2: Consultation Register (EIAR Volume 4)**, along with a list of all bodies consulted during the scoping exercise.

5.1.3 Following scoping and baseline characterisation, the EIAR provides an impact assessment chapter for each of the following disciplines/factors/issues:

- Landscape and Visual;
- Ornithology;
- Ecology;
- Geology, Peat, Hydrology and Hydrogeology;
- Noise;
- Cultural Heritage;
- Traffic and Transport;
- Socio-economics, Tourism and Recreation;
- Aviation; and
- Television and Radio.

5.1.4 During the scoping process several effects were identified as not being likely to cause significant effects on the environment as a result of the Proposed Development and therefore scoped out of the EIAR, including:

- Air Quality;
- Climate Change;
- Shadow Flicker;
- Population and Human Health;
- Risk of Major Accidents and/ or Disasters; and
- Ice Throw.

5.2 Public Exhibitions

5.2.1 In addition to seeking a Scoping Opinion, the Applicant have conducted three sets of public exhibitions to seek the views of the local community and build awareness of the project. These initial public exhibitions were held in St Fillans on 19th April and in Lochearnhead on 20th April 2023. A second round of public exhibitions were held in St. Fillans on the 28th May 2024, and Lochearnhead on 29th May 2024. A third round of exhibitions following design freeze ahead of submission were held in St Fillans on the 19th November and Lochearnhead on 20th November 2024.

5.2.2 Virtual exhibitions (Glentarken Wind Farm Virtual Exhibition) were also hosted in alignment with each set of events on 2nd and 4th May 2023, 12th June 2024, and 28th November 2024.

5.3 Consultation with Local Community Councils

5.3.1 Throughout our consultation we have written on more than one occasion to four local community councils (St Fillans, Balquidder Lochearnhead & Strathyre, Killin and Comrie). Formal meetings took place with St Fillans in May 2023 and May 2024 and with Balquidder Lochearnhead & Strathyre in April 2023 and July 2024. A presentation was provided to Killin Community Council on Tuesday 5th November 2024 and similar engagement has been offered to Comrie Community Council.

5.3.2 This consultation allowed local residents to provide their opinions and raise any concerns about the principle and design of the Proposed Development. Feedback received during the public exhibition events and community council meetings are recorded and presented in the PAC Report submitted as a supporting document to this EIA Report.

6 DESIGN SOLUTION

6.1 Design Freeze Layout

6.1.1 The Proposed Development would comprise of up to 12 WTGs and associated ancillary infrastructure, as illustrated on **Figure 10 (Appendix 1)**. The Proposed Development would include the following key components:

- Up to 12 WTGs of up to 180 m tip height with internal transformers;
- WTG foundations;
- Battery Energy Storage Systems (BESS) with up to 50 MW capacity;
- Crane hardstanding and associated laydown area at each wind WTG location;
- Approximately 15.6 km of on-site access tracks comprising 11.8 km of cut track, 2.8 km floated track and 1 km of upgraded existing track, to connect to ancillary site infrastructure;
- An on-site substation, operations and control building, welfare building and store;
- A network of underground cabling to connect each wind WTG to the on-site substation;
- Watercourse crossings;
- Telecommunications infrastructure;
- A LiDAR unit to collect meteorological and wind speed data, and associated hard stand; and
- Any associated ancillary works required.

6.1.2 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 on site concrete batching;
- Up to six borrow pits; and
- Any associated ancillary works required.

6.1.3 Further details on the Proposed Development are provided in **Chapter 2: Development Description (EIAR Volume 1).**

7 ACCESS

7.1 Access from Public Roads

7.1.1 The preferred access strategy for the delivery of WTG components proposes that all WTG abnormal loads would originate from Grangemouth, along the M9 till Junction 10 then via the A84, then on to Site via the A85. Access to Site would be taken from a newly constructed Junction along the A85, approximately 2.8 km east of Lochearnhead **(Figure 10, Appendix 1).**

7.1.2 For more information on the delivery route to the Site see **Chapter 11: Traffic and Transport (EIAR Volume 1).**

7.2 Internal Site Access

7.2.1 It is anticipated that site access tracks would be constructed with locally (on site) won rock from BPs and where necessary, geotextiles with the surface course comprising of an unbound graded rock surfacing material. It is anticipated that the section of new access track between the site access junction and the first BP will be formed with imported material. Where BPs do not yield suitable material, it may be necessary to import material. This would be determined from detailed ground investigatory works.

7.2.2 Dependant on ground conditions, access tracks would be constructed using a combination of 'floating' or 'cut' track designs.

7.2.3 Approximately 15.6 km of new onsite access tracks (11.8 km of cut track, 2.8 km of floated track and 1 km of upgraded existing track) would be required to provide access to the proposed development (**Figure 10, Appendix 1**). Typical access track designs are shown in **Figure 11 (Appendix 1)**. Tracks would have a maximum 6 m running width plus a 0.5 m shoulder and embankment on each side, with appropriate widening on bends, at junctions and passing places. The estimated total permanent land take area for the new tracks would be approximately 11.9 ha.

7.2.4 A 'floating' track does not require excavation and would be required in areas over 1m of peat depth, where feasible. Geotextile material would be laid over the surface, followed by layers of crushed stone, to form the track suitable for the required site vehicles. This is a commonly used track construction installed across Scotland in peatland areas to ensure there is minimal disruption of the sub surface flow of water within the peat and to ensure no new drainage channels are formed.

7.2.5 A 'cut' track would be used in shallow peat (below 1 m) or areas of no peat. The vegetation and soil would typically be stripped to expose a suitable subsoil bearing layer on which the track (approximately 300 mm – 500 mm thick) would be constructed with compaction of suitable crushed rock from locally (on site) won graded rock from BPs, to the required shape and thickness. The upper topsoil layer, together with turf, would be stored temporarily for use in landscaping and revegetating the track shoulders and track side drainage or other reinstatement works across the Site, where appropriate. Cross-sections of track are presented in **Figure 11 (Appendix 1)**.

7.2.6 The on-site track layout will be designed to accommodate construction plant, turbine component deliveries and 4x4 vehicle traffic whilst minimising environmental disturbance and land take by avoiding areas of deeper peat and steep slopes wherever possible, avoiding, or minimising impact on areas of identified environmental constraints. Further details on mitigation through design is provided in **Appendix 2**.

7.2.7 Construction of site access tracks requires suitable drainage. Surface water run-off from the tracks would be via a crossfall into adjacent ditches and if required, settlement lagoons / ponds to attenuate flows and remove sediment before discharge to land. Further details are set out in **TA 2.1 OCEMP (EIAR Volume 4**).

7.2.8 The layout of the access tracks has been developed to minimise the number of new watercourse crossing required. A total of 23 new watercourse crossings and one upgraded existing crossing would be utilised.

8 PROGRAMME

8.1.1 The estimated construction period of the Proposed Development is approximately 18 months. This period is indicative only and may be subject to variation as a result of factors which include, but are not limited to, weather restrictions, ground conditions encountered through detailed investigation, WTG component and material delivery, timing of grid connection works and public highway constraints. However, this is considered to represent a realistic case for the purposes of assessment.

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

- public road improvement and junction creation;
- construction of main site access track to borrow pits ;
- excavation of borrow pits;
- construction of all access tracks;
- construction of the temporary construction compounds and laydown areas;
- design and construction of temporary and permanent drainage measures;
- installation of concrete batching plant;
- construction of WTG foundations, crane hardstandings and laydown areas;
- excavation of cable trenches;
- laying of electricity and communications cables in trenches;
- construction of substation platform and associated apparatus and, control and welfare building;
- construction of BESS;
- delivery, installation, testing and commissioning of wind WTGs and ancillary equipment; and
- site reinstatement, and restoration where possible.

8.1.3 The works are likely to follow the order as detailed above, however many activities will be undertaken concurrently to minimise the overall construction programme. Site restoration will be undertaken as soon as possible in affected areas to minimise disruption to land use. Where appropriate measures to be delivered as a part of the Biodiversity Enhancement Management Plan (BEMP) (**TA 7.7, EIAR Volume 4**) will be implemented at the earliest practicable opportunity to maximise and expedite the potential for beneficial effects.

8.1.4 Further ground investigation surveys will be undertaken prior to the main construction works beginning onsite to determine the specific quality of rock and the rock head depth underlying the locations for site infrastructure. Initial site investigations have informed the design of the site access roads. Pre-construction surveys for protected species will be undertaken within the working areas and appropriate buffers, to identify changes from baseline conditions and ensure all appropriate mitigation measures are in place.

8.1.5 The appointed contractor will develop the details of the site design and construction methods in compliance with the Applicant's contract requirements and the EIAR.

8.1.6 The access tracks will be left in place following construction to provide permanent access for maintenance, repairs and eventual decommissioning of the Proposed Development. The construction works will be undertaken by a competent and experienced contractor in accordance with the project consent and any associated conditions and also in accordance with good industry practice. Prior to commencing construction, a more detailed construction and reinstatement programme will be submitted to the consenting authority.

8.1.7 Traffic movements associated with the construction of the Proposed Development including required Heavy Goods Vehicles (HGV) and heavy/abnormal load movements are described in **Chapter 11: Traffic and Transport (EIAR Volume 1)**.

8.1.8 An indicative construction programme is illustrated in **Table 8.1** below.

Table 8.1 Indicative 18-Month Construction Programme

	Month																	
Task*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	■	■	■															
2	■	■	■	■	■	■	■											
3			■	■	■	■	■	■	■	■	■							
4							■	■	■	■	■							
5			■	■	■	■	■	■	■	■	■	■						
6										■	■	■	■					
7											■	■	■	■	■	■		
8													■	■	■	■	■	■

*Task:	5. Substation construction
1. Possible vegetation clearance	6. Cabling
2. Site establishment / plant deliveries	7. Erection and commissioning of WTGs
3. Borrow pit working, access track construction and hardstanding areas	8. Site reinstatement & restoration
4. Foundations	

9 SUMMARY

9.1.1 This document provides an overview of the design process undertaken by the Applicant while preparing the section 36 application for the Proposed Development. This DAS summarises the relevant LDP policy considerations, the Site context, the design approach, consultation activities and the final design solution.

9.1.2 The careful placement of the proposed WTGs and Site infrastructure within the Site boundary has facilitated effective mitigation of the majority of potentially significant effects through the design process. Further information on the residual environmental effects is presented in the **Chapter 15: Summary of Residual Effects and Schedule of Mitigation (EIAR Volume 1)**. This document describes the principles that have shaped and influenced the design of the Proposed Development.

APPENDIX 1
FIGURES

APPENDIX 2
PRELIMINARY SITE AND DESIGN GUIDANCE FOR GLENTARKEN WIND FARM

Topic	Analysis	Design Recommendations
Landscape and Visual: Landform and Landscape Fabric	The Site largely comprises upland moorland covered mountainous ridges that lie between Loch Tay and Loch Earn. A vehicle track runs along the lower valley slopes which splits to enter Glen Beich past Creag Dubh with fence lines found at the lower reaches of the valley. There is limited tree cover along the Beich Burn lower valley slopes with pasture found in this area up to the A85 which follows the shores of Loch Earn.	The Proposed Development has been designed to relate to the landform of the site and fit comfortably with the underlying pattern of the landscape.
Landscape and Visual: Landscape Character and Designations	The site is situated within the upland summits and plateaux, part of a broad upland ridge that separates Loch Earn and Loch Tay within the landscape character types (LCTs) of LCT 147 Summits and Plateaux Central and LCT 376 Summits and Plateaux Tayside. The majority of the Site (including all of the proposed turbines) is not located within national or regional landscape planning designations. The western section of the Site, including part of the access track is located within the Creag Garbh LLA. A small section of the Site at the entrance, is located within the Loch Lomond and the Trossachs National Park. Other landscape designations within the LVIA Study Area include: • National Scenic Areas (NSAs) – Loch Rannoch and Glen Lyon NSA; and River Earn (Comrie to St Fillans) NSA. • Perth and Kinross Council Special Landscape Areas (LLAs) – Loch Tay LLA; Loch Lyon & Loch an Daimh LLA; Glen Quaich LLA; Sma Glen & Glen Almond LLA; and Upper Strathearn LLA • Stirling Council Local Landscape Areas (LLAs) – Glen Lochay LLA; and Uamh Bheag LLA. • Gardens and Designed Landscapes (GDLs) – Meggernie Castle; Taymouth Castle; Monzie Castle; Ochtertyre; Drummond Castle; Aberuchill Castle; and Dunira. Wild Land Areas are also found within the Study Area, including: WLA07 Ben More-Ben Ledi; WLA10 Breadalbane-Shiehallion; WLA11 Lyon-Lochay; and WLA12 Ben Lawers.	The Proposed Development has been designed to minimise the effect on the surrounding landscape and visual resource. The design strategy for the Proposed Development has been guided by the following landscape and visual objectives: • The design and layout of the turbines should express the function of the Proposed Development as an energy generator as clearly as possible by avoiding complexity and visual confusion (particularly from key viewpoints). • The turbine layout should relate to the landscape character of the site and its surroundings, including potentially affected designated landscapes. • The turbine layout should relate to the scale of the landscape in which it is located. • To space turbines evenly over the site area avoiding a random appearance with limited instances of visual stacking and outlying turbines (particularly from key viewpoints). • To respond to the various other environmental and technical constraints identified within the site. • The design and layout of the turbines should be viewed as a visually balanced composition of turbines against the landscape, skyline and in association with other cumulative windfarm developments. Therefore, the turbine layout design has evolved with the intention and key objective of presenting a simple, well-balanced image of the
Landscape and Visual: Visual Amenity	There are a range of visual receptors in the surrounding landscape, including hill walkers, road users, visitors, settlements and properties. Twenty-two viewpoints have been selected and agreed in consultation with Perth and Kinross Council, Stirling Council, NatureScot, Loch Lomond and Trossachs National Park Authority and	

Topic	Analysis	Design Recommendations
	Mountaineering Scotland. The viewpoints used in the assessment have been selected to cover points of specific importance such as recognised viewpoints, designated landscapes, settlements, important routes and attractions, and to inform the definition of the likely extent of significant visual effects arising from the Proposed Development.	Proposed Development in the majority of views. The detailed landscape and visual aspects of the layout iteration process are summarised in Section 5.6 of **Chapter 5: Landscape and Visual (EIAR Volume 1).**
Cultural Heritage and Archaeology: Designated heritage assets (and non-designated heritage assets of national importance) on-site.	There are no designated assets located within the Site. The Stirling Historic Environment Record (HER) contains nine non-designated heritage assets of local to regional importance within the Site boundary. The Perth and Kinross HER contains five non-designated assets of local importance within the Site boundary. Designated and non-designated assets are protected by NPF 4, Historic Environment Policy for Scotland (HEPS) and the Local Development Plan. Considering preservation in situ as a priority, groundbreaking works should within these areas should be avoided or minimised, thus limiting the potential for direct impacts. The proximity of turbines and infrastructure to these assets should be carefully considered so that they can be avoided by design as much as possible.	WTGs and infrastructure should be sited to minimise impacts on the non-designated heritage assets within the Site, where possible. Buffers have been suggested to minimise, as much as possible, the potential for significant impacts. Modifications to the access track will be incorporated to avoid significant effects on the non-designated assets located in proximity. There is no guidance as to what should, or may, constitute a hard constraint buffer and those allocated are based on professional judgement of what may be appropriate as an initial basis to seek to reduce potential for adverse effects.
Cultural Heritage and Archaeology: Designated and Non-designated heritage assets off-site (regional or local importance)	Within 10 km of the Proposed Development, there are 23 Scheduled Monuments; 217 Listed Buildings (7 of Category A, 49 of Category B and 161 of Category C); three Conservation Areas; and two Inventory Gardens and Designed Landscapes. There are no World Heritage Sites or Inventory Historic Battlefields within 10 km of the Site.	There is no guidance as to what should constitute an appropriate 'stand-off' distance sufficient to maintain the integrity of the asset's settings. Each should be considered on its own merits.
Ecology	Key considerations for the Site include: • River Tay SAC - afforded protection in legislation under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and the Nature Conservation (Scotland) Act 2004. • Ancient semi-natural woodland or Plantations on ancient woodland sites – afforded protection under Scottish Government's policy on control of woodland removal (NPF4 Policy 6b). • Bats – A European protected species – are afforded protection in legislation under Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Within the	River Tay SAC scoped out of the assessment; no implications for design. Avoid direct impact / land-take of ancient woodland. Following best practice guidance (NatureScot et al, 2021), a distance of 50 m between turbine blade tip and nearest woodland (or other key habitat features) should be applied as a basic standard mitigation measure, including all key-holed sites, which may present an increased risk of bat collisions.

Topic	Analysis	Design Recommendations
	Site several individual trees and a group of trees were assessed as having moderate suitability for roosting bats. Within the riparian areas of the tributaries of the Beich Burn, two small groups of trees and two individual trees were assessed as having low suitability for roosting bats. No high potential roosts were recorded within the Site. • There are a number of watercourses within the Site that may contain fish species, including migratory salmonids and lamprey species. • Evidence of otter (spraints) and common lizard (sightings and potential hibernacula) was recorded. Squirrel feeding signs were recorded and a potential pine marten scat was found along a mammal track by Beich Burn. • Four mammal holes were recorded across the Site. It was not possible to determine if this was attributable to water vole or badger as there were no other distinguishable features. • The main site is largely formed of blanket bog (E1.6.1), dry heath (D1.1) and dry heath/acid grassland mosaics (D5) with a large number of other habitat types also present, usually in smaller stands. The access corridor contains more woodland (A1.1.1), acid grassland (B1.1/B1.2), marshy grassland (B5), bracken (C1.1/C1.2) and wet heath (D2). • Localised areas of Priority Habitats present of the Site (specified in Annex I of the Habitats Directive; Biodiversity Action Plan or Scottish Biodiversity List). • Presence of potential Groundwater Dependent Terrestrial Ecosystems (GWDTE) within the Site.	Although no suitable roost features were identified near to the turbines, a 30m buffer should be applied to potential roosts in the woodland in proximity to the proposed main access track to avoid impacts on bats. As a result of potential mammal holes being recorded on Site, a suitable buffer zone should be utilised to avoid impacts. Watercourse crossings should be minimised and a 50 m buffer around watercourses for all infrastructure should be maintained except where a minimum number of crossings are essential. This was incorporated into the design. The main priority will be to avoid areas of blanket bog (E1.6.1) and any deeper areas of modified bog (E1.7) as far as possible. Priority peatland habitat should be avoided where possible. Where priority peatland is unavoidable, infrastructure should be oriented to lessen any impact, and on-site tracks should be floated. Peatland restoration will be required to compensate for any direct or indirect loss of peatland habitat. Where restoration or biodiversity enhancement is required, detail will be outlined in the Habitat Management Plan (HMP). An Outline BEMP is provided in **TA 7.7 (EIAR Volume 4**). Potential GWDTE confirmed in **Chapter 8: Geology, Peat, Hydrology and Hydrogeology, EIAR Volume 1**). Infrastructure sited over 250 m of confirmed GWDTE where a high risk has been identified.
Ornithology	Baseline surveys were undertaken between 2021 and 2023 for the proposed Development. The surveys recorded the following: • Red kite *Milvus milvus* – located along the access track and is out with the site boundary. • Merlin *Falco columbarius* – continued to be present across the three years of surveys.	A constraint buffer for Merlin and Black Grouse of 500 m are recommended for WTGs and ancillary infrastructure.

Topic	Analysis	Design Recommendations
	• Black grouse *Lyrurus tetrix* – identified to be lekking in four areas along the access track.	
Hydrology and Hydrogeology	No water dependent designated sites are considered hydraulically connected to the Proposed Development. Key design constraints with regard to hydrology and hydrogeology include: • Groundwater has been classified by SEPA as Good and vulnerability as Class 4 and 5 • Areas of potential GWDTE have been identified by NVC mapping • Watercourses within the Site have been classified by SEPA as Good to Moderate • Loch Earn surface water catchment has been designated as a Drinking Water Protected Area; and • Private water supplies have been confirmed and considered to be at risk from the Proposed Development, without appropriate controls.	In accordance with best practice[25] wind farm construction a 50 m buffer to all watercourses and waterbodies on the Site has been applied, as shown on **Figure 8.1 (EIAR Volume 2)**. In accordance with SEPAs-LUPS 31 guidance if potential GWDTE or springs which supply private water supplies are identified within (a) 100 m of roads, tracks, and trenches, or (b) within 250 m of BPs and foundations, then it is necessary to assess how the potential GWDTE and springs may be affected by the Proposed Development. Potential areas of GWDTE are shown on **Figure 8.8 (EIAR Volume 2)** and assessed in **TA 8.5: GWDTE (EIAR Volume 4)**. No springs associated with private water supplies have been noted within 250 m of the Proposed Development. Private water supplies are discussed in full in **TA 8.6: PWSRA (EIAR Volume 4).**
Peat	Peat probing on Site and a review of the SNH Carbon Rich Soil, Deep Peat and Peatlands Habitat Map (2016) confirms areas of peat and organic material are present within the Site. Phase 1 and 2 peat probing surveys identified that no peat (0-0.5 m depth) is present across 57% of the Site; >1 m depth is present across 80% of the Site; and Peat >1.0 m depth is present at 20% of the Site.	The design should avoid siting of infrastructure and turbines in areas of peat, where technically possible, in particular in deep peat (>1 m depth) and peat which is considered in near natural condition. Potential effects on peat are discussed in **TA 8.1: PLHRA** and **8.2: PMP (EIAR Volume 4)**.
Traffic and Transport	Traffic and Transport impacts are associated with the movement of general HGV (and LGV) traffic travelling to and from the Site during construction. It is anticipated that each WTG is likely to need up to 11 abnormal loads to deliver the components to the Site. Components will be delivered on extendable trailers which will be retracted to a standard HGV size on the return journey.	All HGVs will utilise the Site Access Junction located along the A85.

[25] SEPA (2017). Land Use Planning System SEPA Guidance Note 4. Available at: https://www.sepa.org.uk/media/136117/planning-guidance-on-on-shore-windfarms-developments.pdf

Topic	Analysis	Design Recommendations
Noise	Four operational noise sensitive receptors have been identified: • Woodhouse • The Kopje • Brae Farm • Roadside Cottage A further seven receptors have been identified to be construction noise receptors: • Glenbeich Lodge • Keeper's Cottage • Glenbeich Farm • Ardveich Cottage • Ardveich House • Drummond Fish Farm • Woodend Cottage	The nearest NSRs to the Proposed Development lie approximately 3 km to the south-west. Site Specific Noise Limits must be set to individual developments and should ensure the 'Total ETSU-R-97 Noise Limits' are not exceeded.
Aviation	There is high potential for an effect on the NATS Lowther Hill ATC radar where the WTGs are in line of sight. The Site is located within the Low Flying Area (LFA) 14, a strategically important LFA within the UK Low Flying System.	The proposed solution to mitigate adverse impacts on the NATS Lowther Hill ATC radar is Multi-Radar Tracker (MRT) blanking. There will be continued negotiations with NATS to deliver suitable radar mitigation strategy prior to the operational phase of the Proposed Development. With respect to the LFA, there is a statutory Civil Aviation Authority (CAA) requirement to provide visible aviation warning lights for structures of a height of 150 m agl or more. The MOD request that all WTGs are fitted with MOD-accredited infra-red lighting which is not visible to the naked eye but is visible to aircrew using night vision equipment. A Lighting Plan has been prepared (**TA 13.1: Lighting Report (EIAR Volume 4)** and approved by the CAA and MOD taking into account the requirements for aviation lighting. Further details are provided in **Chapter 13: Aviation (EIAR Volume 1).**

Topic	Analysis	Design Recommendations
Telecommunications	A review of the Ofcom Spectrum Information Portal identified no microwave links crossing the Site. One microwave transmitter/receiver mast is within 2 km of the Site. Angus, Craigkelly and Black Hill main television transmitters and the Crieff, Killin, Lochearnhead and St Fillans local transmitters all provide some coverage of areas with 10 km of the Site. Joint Radio Company (JRC) do not foresee any potential problems based on known interference scenarios.	Design recommendations include ensuring the WTGs are outside telecommunication zones where unacceptable effects are anticipated. Detailed calculations have been carried out to identify potential interference between the WTGs and telecommunications links.