Loch Liath Wind Farm

April 2023

Design and Access Statement

Statkraft

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Chapter 1
Introduction

Introduction

1.1 This Design and Access Statement (DAS) has been prepared by LUC on behalf of Loch Liath Wind Farm Ltd (a company wholly owned by Statkraft UK Limited, and hereafter referred to as the 'Applicant') to accompany an application under Section 36 of the Electricity Act 1989 for consent to construct and operate Loch Liath Wind Farm (hereafter referred to as 'the Proposed Development').

1.2 The Proposed Development comprises up to 13 turbines with a generation capacity in excess of 50 megawatts (MW). The 'Site', i.e. the area delineated by the red line boundary, is located primarily within the Balmacaan Estate, with the access track located with the Glenmoriston Estate, directly west of the Great Glen and Loch Ness (See **Figure 1**). The Site is situated wholly within The Highland Council (THC).

1.3 As the Proposed Development has a proposed output capacity of greater than 50 MW, consent is required from Scottish Ministers (via the Energy Consents Unit (ECU)) under Section 36 of the Electricity Act 1989 (hereafter referred to as 'the Act') in consultation with relevant statutory consultees, including THC. In addition, a request is being made by the Applicant that planning permission is deemed to be granted under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 (as amended).

1.4 There is no statutory requirement for the provision of a DAS under Section 36 of the Act, however the Applicant recognises the usefulness of the Design and Access Statement as a communication tool to aid communities, consultees and decision makers in understanding the design rationale and process undertaken to develop the final layout for which Section 36 consent is being sought. The DAS also seeks to address the requirements of THC Sustainable Design Guide, as requested in the scoping response from THC. As such, the Design and Access Statement has been prepared in accordance with Regulation 13 of the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 (as amended) as required for all major developments.

1.5 This DAS comprises three parts, namely:

The Design Statement: Describes the Site and its surroundings and how the design of the Proposed Development has evolved through the iterative Environmental Impact Assessment (EIA) design process.

The Access Statement: Details how the Site will be accessed during construction and operation of the Proposed Development.

The Sustainable Design Statement: Highlights how the Proposed Development follows sustainable design principles, in line with THC supplementary guidance.

1.6 This DAS should be read in conjunction with the Environmental Impact Assessment Report (EIA Report) submitted to accompany the application for consent.

Purpose of the Design and Access Statement

1.7 The purpose of this DAS is to provide information on the principles and approach that have guided the design process. This DAS demonstrates how the Site and its surroundings have been fully appraised to ensure that the final design solution achieves a balance across the range of factors which require to be addressed. It describes the starting point for the Proposed Development's design, the various factors which have driven the design process, and subsequent iterations to the layout that were made in response to the environmental and technical issues that were identified during the EIA process, as well as during consultation with statutory and non-statutory consultees. Details are also provided on the access arrangements both in terms of transport

access for construction and maintenance works, and implications for public access and recreation, as well as any specific issues which might affect access to the Proposed Development for disabled people.

1.8 As noted above, this DAS also addresses the aspects detailed in THC Sustainable Design Guide Supplementary Guidance, which has been developed to accompany and support the approach to sustainability and design within the proposed Highland-wide Local Development Plan (HwLDP). A Sustainable Design Statement has been produced, following the tabular form of the sustainable design checklist included in the guidance document for ease of reference (see section 5 and **Appendix A**). This demonstrates how the standards have been taken into consideration in the design of the Proposed Development.

The Proposed Development

1.9 The main components of the Proposed Development comprise:

- Up to 13 wind turbines (three [T1, T6 and T7] will have tip heights of up to 180m and ten [T2, T3, T4, T5, T8, T9, T10, T11, T12 and T13] will have a tip height of up to 200m);
- It is anticipated that six of the turbines (T1, T4, T7, T10, T12 and T13) will be fitted with visible aviation warning lights;
- Foundations supporting each wind turbine;
- Associated crane hardstandings and adjacent laydown areas at each turbine location;
- Approximately 9.3km of new access tracks which includes 8.2km standard/cut track and 1.1km of floating track;
- A total of nine new watercourse crossings and a further seven drain crossings (16 crossings in total) and associated infrastructure i.e. box or bottomless culverts;
- A network of onsite underground electrical cables and cable trenches to connect the turbines to the onsite substation;
- One permanent steel lattice anemometer mast of up to 122.5m in height;
- Vehicle turning heads;
- Onsite substation and control building;
- Onsite passing places (location and size to be determined by the turbine supplier);
- Site signage; and
- A habitat management and enhancement area (further details are provided in **Appendix 8.5: Outline Restoration and Enhancement Plan** (OREP) for peat, biodiversity, woodland and landscape).

1.10 In addition to the above elements of the Proposed Development, construction will also require the following components:

- One temporary construction compound.
- Creation of one temporary borrow pit for the extraction of stone.
- Concrete batching is proposed with the exact location of the batching plant to be confirmed (this is likely to be either in the borrow pit or construction compound, with detail to be confirmed in the CEMP, and subject to obtaining an abstraction licence from the Scottish Environment Protection Agency (SEPA) should water abstraction be required).

1.11 Whilst no widening of the existing Bhlaraidh Wind Farm access from the A887 is required, it may be necessary to scrape of the top layer of material to ensure the turbine blade tips do not strike the earthworks embankment and it may be necessary to improve the running surface prior to use.

1.12 **Figure 2** shows the layout of the Proposed Development including the key components noted above.

The Applicant

1.13 The application will be made by Loch Liath Wind Farm Ltd (a wholly owned subsidiary of Statkraft UK Ltd). Statkraft is a global company in energy market operations and is Europe's largest generator of renewable energy, active in wind power, solar power and hydropower. Employing over 5,300 people, Statkraft is active in 21 countries. Statkraft is at the heart of the UK' energy transition. Since 2006, Statkraft has gone from strength to strength in the UK, building experience across wind, solar,

hydro, storage, grid stability, EV charging, green hydrogen and a thriving markets business. We've invested over £1.3 billion in the UK's renewable energy infrastructure and facilitated over 4 gigawatts (GW) of new-build renewable energy generation through Power Purchase Agreements (PPA). Across our UK businesses, we employ over 450 staff in England, Scotland and Wales and play a key role in helping the global business reach its goal of 9GW of developed wind and solar power by 2025.

Chapter 2
Site Selection and Context

The Site and its surroundings

2.1 The Site is located solely within the administrative boundary of THC. Settlements nearby are generally located within the glens and adjacent to key communications corridors. The settlements closest to the Site are Invermoriston (approximately 7km south of the closest turbine), Balnain (approximately 8.5km north of the closest turbine) and Drumnadrochit (approximately 14km north-east of the closest turbine). Several small clusters of residential properties are found scattered along the glens to the north, east, south and north-west.

2.2 The Site occupies an upland area to the west of the Great Glen and Loch Ness, with Glen Urquhart to the north and Glen Moriston to the south. The area where the turbines are proposed to be sited comprises undulating upland moorland plateaus with rocky outcrops and upland lochans. There are numerous steep-sided rocky hills within the Site and the wider area, including Meall Fuar-mhonaidh to the east (699 m Above Ordnance Datum (AOD)) from which views of the Great Glen are afforded to the north-east, east and south-east. Mixed woodland and coniferous forestry are found adjacent to the northern and south-eastern boundaries of the Site and extend onto the glen sides.

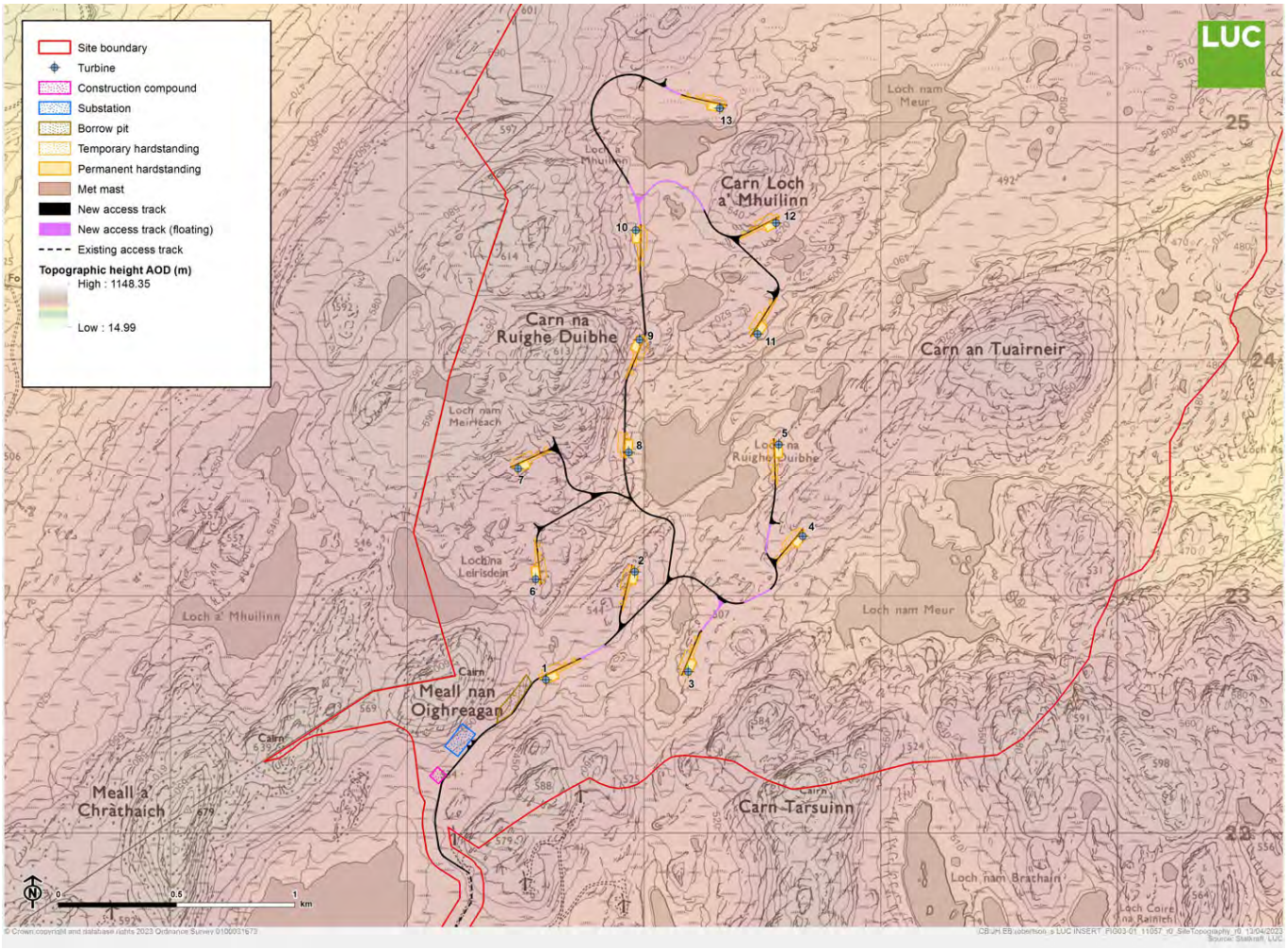
2.3 Key transportation routes located near the Site include:

- The A831 passing through Glen Urquhart which is over 5km to the north of the closest turbine;
- The A887 to the south, from where the access to the Site will be taken;
- The A82 running alongside the western shore of Loch Ness within the Great Glen approximately 6.1km to the east of the nearest turbine; and
- The B862, which follows the eastern shore of Loch Ness approximately 10.9km to the east of the closest turbine.

2.4 Several wet, peat depressions and deep peat and priority peatland habitat are present within the Site. The NatureScot Carbon and Peatland mapping indicates the majority of the Proposed Development lies mostly in Class 1 and Class 5 peat with some Class 2 peat in the extreme west, east and south and some mineral soils in the southern area. The topography of the Site is shown on **Image 1** below.

2.5 Several hydrological features existing with in the Site. The northern and the western parts of the Site drain northwards via several watercourses including Allt Seanabhaile and Loch Meiklie to the River Enrick which discharges to Loch Ness at Drumnadrochit. The east and central part of the Site drains via numerous watercourses to the River Coiltie which also discharges to Loch Ness at Drumnadrochit. Some minor areas in the south-east of the Site drain south to Allt Saigh which discharges to Loch Ness at Alltsigh. Loch Ness lies to the east of the Site within the Great Glen and receives all Site waters and drains north to the River Ness and enters the North Sea at Inverness.

Image 1: Site Topography



Cumulative Wind Farms

2.6 The pattern of existing wind farm development near the Site comprises discrete clusters of development in the remote and elevated plateau landscapes, generally found to the south and east of the Site and located away from the settled glens, including the Great Glen. The operational and consented wind farm developments are considered part of the landscape and visual baseline and included within the main assessment. The closest operational wind farm is Bhlaraidh, which lies immediately south of the Proposed Development's turbines, and comprises 32 turbines. Other wind farms within 5km to the Site include:

- Bhlaraidh Extension (consented, adjacent to the Site) comprising up to 15 turbines; and
- Corrimony (operational, 3.2km west) comprising 5 turbines.

2.7 Other wind farms further away than 5km to the Site include the operational cluster of Millennium, Beinneun and Beinneun Extension Wind Farms (approximately 17-23km to the south-west of the Proposed Development) and the operational cluster of Stronelairg, Corriegarth and Dunmaglass wind farms located approximately 20-24km to the east of the Proposed Development. The operational Farr and Kyllachy Wind Farms are located approximately 33km to the north-east of the Proposed Development.

Site Selection Process

2.8 National Planning Framework 4 (NPF4) was approved by the Scottish Parliament on 11th January 2023 and was adopted and published on 13th February 2023. However, the site selection exercise was undertaken under the planning policy in force at the time (i.e., Scottish Planning Policy (SPP) (June 2014)) which provided support for wind development in principle and

encouraged local authorities to guide development towards appropriate locations within their boundaries. Paragraph 161 of SPP highlighted the requirement for planning authorities to define a *"spatial framework identifying those areas that are likely to be most appropriate for onshore wind farms"* based on the following criteria (set out in SPP Table 1, Page 39):

Group 1: Areas where wind farms will not be acceptable

- National Parks and National Scenic Areas

Group 2: Areas of significant protection

- Recognising the need for significant protection, in these areas wind farms may be appropriate in some circumstances. Further consideration will be required to demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation.
- Group 2 areas include World Heritage Sites; Natura 2000 and Ramsar Sites; Sites of Special Scientific Interest; National Nature Reserves; Sites identified in the Inventory of Gardens and Designed Landscapes; Sites identified in the Inventory of Historic Battlefields; areas of wild land as shown on the 2014 Scottish Natural Heritage (SNH)[1] map of wild land areas; carbon rich soils, deep peat and priority peatland habitat; and an area not exceeding 2km around cities, towns and villages identified in the local development plans.

Group 3: Areas with potential for wind farm development

- Beyond groups 1 and 2, wind farms are likely to be acceptable, subject to detailed consideration against identified policy criteria.

2.9 SNH's (now NatureScot) Guidance 'Siting and Designing Wind Farms in the Landscape' (2017)[2] states that "Developers and those involved in wind farm design should also refer to the Spatial Frameworks being developed by planning authorities in response to Scottish Planning Policy (SPP). When considering an individual application, the adopted development plan, relevant supplementary guidance, wind energy capacity studies and SPP provide the framework within which the application should be considered".

2.10 The Highland Council (THC)'s Onshore Wind Energy Supplementary Guidance was adopted in November 2016. This sets out the Council's spatial framework for onshore wind development in accordance with the requirements of SPP. As indicated within the Supplementary Guidance, the Spatial Framework contains information on the requirements for safeguarding areas concerning onshore wind energy development. The Proposed Development Site is a combination of Group 2, requiring significant protection due to the presence of carbon-rich soils and priority peatland habitat and Group 3 which describes land that has potential for wind farm development as noted above.

2.11 In line with the identification of the Site as a Group 2 area under the now superseded SPP, the presence of peat and peatland habitat has formed a key consideration in the design process as detailed further below. However, it is considered that by avoiding deeper peat areas through the design, by application of embedded mitigation and good practice during construction, and by implementation of the measures detailed in the OREP (**Appendix 8.5**), significant effects on peat can be largely overcome (see **Chapter 7: Geology, Hydrology, Hydrogeology and Peat**).

2.12 It should also be noted that Policy 5 c) ii) of NPF4 explicitly supports renewable energy on peatland, carbon rich soils and priority peatland habitat for *"The generation of energy from renewable sources that optimises the contribution of the area to greenhouse gas emissions reductions targets"*. The Policy goes on to set out the requirements of assessments for development on peatland, all of which have been undertaken for the Proposed Development (i.e. identifying the baseline depth, habitat condition, quality and stability of carbon rich soils; identifying the likely effects of the Proposed Development on peatland, including soil disturbance; and identifying the effects on climate emissions and loss of carbon). These aspects are considered within **Chapter 7** and **Chapter 14: Other Issues**.

2.13 It should be noted that, in relation to NPF4, the Site is not located within either a National Park or National Scenic Area, which are the only areas where NPF4 states explicitly that proposals for wind farms will not be supported (Policy 11). Further details in relation to the planning policy context associated with the Proposed Development are set out in **Chapter 5: Statutory**

[1] SNH is now called NatureScot as of 24th August 2020.
[2] Scottish Natural Heritage (2017) Siting and Designing Windfarms in the Landscape (Version 3a)

and Policy Framework. Compliance with planning policy is discussed in the Planning Statement which accompanies the application for consent**.**

2.14 Further characteristics of the Site that make it suitable for a wind farm include:

- The Site has an excellent wind resource and is available for wind energy development;
- The Site is not covered by an international or national designations for landscape or nature conservation ;
- There is no forestry within the Site and no felling is required;
- Knowledge of the Site's conditions show that there are no key environmental constraints that would preclude development, or which cannot be avoided through design;
- The size of the Site allows for opportunities to explore and provide habitat management and enhancement, particularly for degraded peatland habitats thus also providing carbon sequestration benefits. Further details are set out in **Appendix 8.5**;
- The closest turbines are located approximately 5 kilometres (km) from the nearest residential receptors thereby avoiding unacceptable noise and residential visual amenity effects;
- The closest settlement to the Site is Invermoriston, which is approximately 7km south of the closest turbine (there is, however no visibility of the Proposed Development from Invermoriston; the closest settlement with visibility of the Proposed Development is Balnain, at a distance of approximately 8.5km to the north and north-east of the closest turbine;
- The immediate surrounding landscape is, in part, defined by the existence of the operational Bhlaraidh Wind Farm to the south-west, and the consented Bhlaraidh Wind Farm Extension to the south;
- There are no planning policies which, in principle, preclude wind energy development on the Site;
- There is a feasible grid connection available, as advised by the network operator SSEN. The grid connection will be the subject of a separate application by SSEN; and
- The Site is accessible for construction traffic and turbine deliveries, and benefits from use of an existing access which serves the operation Bhlaraidh Wind Farm, and which will also be used for construction of the consented Bhlaraidh Wind Farm Extension. This has the benefit of substantially reducing the extent of new infrastructure required for the Proposed Development.

Chapter 3
The Design

The Design Strategy

3.1 The design strategy sets out the overall approach to the progression of the design of the Proposed Development. It describes the starting point of the Proposed Development's design, and subsequent alterations to the layout that were made in response to environmental constraints, particularly landscape and visual, peat and hydrological, ecological, ornithological, wind yield and ground condition considerations, as information emerged through the EIA process.

3.2 The design strategy for the Proposed Development aimed to provide a balance between achieving the maximum energy yield possible from the Site and creating a layout which relates to the landform and scale of the Site and surrounding area, and has a positive relationship with the adjacent operational Bhlaraidh and consented Bhlaraidh Extension Wind Farms.

3.3 The starting point for the design was to maximise the potential output from the Site, which was then subsequently informed by landscape and visual considerations, therefore considering landform, scale, land use (including cumulative wind farm context) and key visual receptors. These factors will influence how the Proposed Development will be perceived by people within the surrounding area, and to what extent the landscape is capable of accommodating the Proposed Development (including in comparison with the adjacent operational and consented wind farms). The design strategy also comprised a number of design objectives which are set out below. The design of the Proposed Development has aimed to meet the guidance contained within NatureScot's Siting and Designing Wind Farms in the Landscape[2], as far as possible.

3.4 During each design iteration, careful consideration was given to minimising effects on environmental features, whilst maximising renewable energy generation potential of the Site and maintaining the objectives of the design strategy

3.5 The design of the Proposed Development has taken into consideration a range of technical, environmental, planning and commercial factors. These factors have been considered from the initial site selection, through the design process, to the final layout of the Proposed Development. This chapter describes the starting point for the Proposed Development's design, the various design considerations which have driven the design process, and subsequent iterations to the layout that were made in response to the environmental and technical issues that were identified during the EIA process.

3.6 The overarching objectives of the design strategy were to develop a layout:

- Which maximises the potential energy yield of the Site whilst ensuring a cohesive and sensitive layout which will be legible from key views in the surrounding area where there is visibility of the turbines;
- Which would minimise potential effects on Glen Urquhart and sensitive visual receptors located in the Glen;
- Which when seen alongside the operational Bhlaraidh turbines minimises the spread of turbines across the horizon from key viewpoints, in particular Meall Fuar-mhonaidh and the B862 Suidhe scenic viewpoint;
- Which minimises the horizontal extent and prominence of turbines in views from the Glen Affric NSA;
- Which reflects the established pattern of wind farm development in the Study Area, and the immediately adjacent Bhlaraidh Wind Farm and consented Bhlaraidh Wind Farm Extension, as well as being coherent in its own right;
- Which includes access tracks that utilise existing roads and tracks wherever possible, and which have been designed in such a way that they avoid steep terrain, and maximise screening through existing landform and vegetation to minimise visibility of these components; and
- Which fulfils the above objectives whilst respecting other environmental and technical constraints including ecological, ornithological; hydrological and ground conditions (including peat) related constraints identified during the EIA process.

3.7 During the design process, computer modelling was used as a tool to aid design. In particular, Zone of Theoretical Visibility (ZTV) models were generated and used to aid understanding of potential visual effects, including cumulative visual effects of the Proposed Development with other wind farms within the surrounding area. Wireframes were generated to illustrate views from key locations around the Site and to illustrate the cumulative effects with other nearby wind farm developments. Wireframes were also generated alongside photomontage visualisations to illustrate changes to views. Photomontages involved overlaying computer-generated perspectives of the Proposed Development over the photographs of the existing situation to illustrate how the views will change against the current baseline.

3.8 The main components of the Proposed Development considered in the initial design iterations were the turbines. The location of other infrastructure components was largely dictated by the positioning of the turbines, and designed around onsite environmental constraints. Later iterations to the turbine layout, following detailed engineering review, involved further alterations to turbine and infrastructure locations, which were reviewed against all constraints. For example, opportunities were taken to re-position turbine hardstandings and access tracks away from areas where detailed peat probing has identified deeper peat deposits, to reduce the likelihood of peat disturbance onsite**.**

Site Design Principles and Constraints

3.9 The final design of the scheme takes into account the design aspirations and key considerations discussed above. A number of environmental and technical constraints have been considered in the iterative design process and have guided the positioning of both turbines and infrastructure. These include, but are not limited to:

- Key landscape and visual considerations as noted above in relation to the overall design strategy;
- Hydrology, including distance to watercourses (maintaining a 50 metres (m) buffer where possible);
- Peat (avoiding deeper (>1m, and ideally >0.5m) peat where possible);
- Ornithology, including maintaining a ‘corridor’ for red throated divers flying between breeding and feeding lochs. The turbine layout has also been informed by the results of Golden Eagle Topographical (GET) modelling for golden eagle which nest in the local area;
- Ecology, including avoidance of deeper areas of peat which generally correlate with more sensitive habitats, and subsequently avoiding particular features of interest as identified through survey;
- Cultural Heritage, including considering intervisibility with key assets in terms of their setting;
- Noise, including the presence of two bothies located within the wider landholding within which the Site is located, and which previously were located within the Site which has since been reduced. From an early stage a 1km buffer was applied to these bothies and they are no longer within the Site; and
- Engineering and construction considerations, including seeking to reduce the need for significant cut and fill works where possible.

3.10 Once the Site was established as a potential location for a wind farm, it was identified at an early stage as having a number of topographical and environmental sensitivities which had to be balanced to develop a layout that is environmentally sensitive, suitable from a construction perspective, and which remains economically viable. Some of the key constraints and considerations which fed into the design process are detailed below, including an explanation of where some compromises had to be made to design a viable scheme. It should be noted that this information is simply intended to provide some illustrative examples of the changes made to the Proposed Development through the extensive design work undertaken and is not an exhaustive list and, as noted above, is intended to provide a ‘snapshot’ of the detailed design work undertaken throughout the EIA process.

Landscape and Visual Amenity

3.11 As noted above, the landscape and visual effects formed a key element of the design process. A key theme of the design workshops was to minimise potentially significant landscape and visual effects of the Proposed Development and consultation was undertaken with both THC and NatureScot as the design of the project evolved. In particular, this has resulted in the removal of turbines in the most northerly part of the Site to minimise visibility from Glen Urquhart, setting turbines back from the

western boundary of the Site to minimise the prominence of turbines in views from Glen Affric, and care has been taken to minimise the horizontal spread of turbines when seen from Meall Fuar-mhonaidh and the B862 Suidhe scenic viewpoint.

3.12 To illustrate the changes that were made to the design of the Proposed Development and how this relates to potential effects on landscape and visual amenity, comparative wireframes are provided at the end of this chapter for three of the key layouts detailed below (Layout 1 (Scoping, 26 turbines), Layout 4 (layout presented to NatureScot and THC in November 2021, 17 turbines) and Layout 6 (Design Freeze, 13 turbines) (**Images 7a-c** to **11a-c**).

3.13 The wireframes demonstrate how the design has evolved and sought to minimise effects on views from Glen Urquhart, reduce the spread of turbines when seen from key viewpoints including Meall Fuar-mhonaidh and the B862 Suidhe scenic viewpoint, and reduce the spread and prominence of turbines in views from Glen Affric and are presented from the following five key viewpoints (VPs) which are assessed in detail in **Chapter 6: Landscape and Visual Amenity**[3]:

- VP1: Affric Kintail Way near Braefield;
- VP2: Meall Fuar-mhonaidh;
- VP3: Balbeg;
- VP5: Coire Loch Trail, Glen Affric; and
- VP8: B862 Suidhe Viewpoint.

Peat

3.14 Phase 1 and Phase 2 Peat surveys were undertaken across the Site and at the infrastructure locations in line with good practice guidance[4]. Areas of deep peat (greater than 1m deep, and where possible greater than 0.5m) were avoided for siting turbines and associated infrastructure where feasible, although this has not been possible at all infrastructure locations due to the variability in peat depths and the need to consider other constraints. **Figure 7.9** in **Chapter 7** shows the design freeze layout overlaid on the peat depth data that was collected across the Site.

3.15 Extensive design work was undertaken to optimise the layout for peat, including dropping turbines, realigning tracks, flipping hardstandings, reducing the extent of hardstanding area and, following further site surveys, micrositing turbines and infrastructure to avoid small bog pools of hydrological and ecological interest.

3.16 **Image 2** below shows T4 overlaid on the peat data, illustrating how the design has changed to minimise effects on peat following detailed Phase 2 peat probing surveys illustrating where the hardstanding has been rearranged over several design iterations. The final design freeze layout is outlined in black, with previous iterations shown in purple outline. Another example is provided in **Image 3** below which shows how T3 has been designed to respond to the peat data that emerged through the surveys. This also illustrates how changes were made at the same location to benefit the water environment by removing infrastructure from the 50m watercourse buffer to the west.

3.17 In addition to undertaking peat probing, the peat surveys sought to identify areas of eroded and hagged peat located close to the infrastructure which will benefit from reprofiling and where excavated peat can be reused to seek to improve these areas and provide an environmental benefit and enhancement as part of the Proposed Development. Further details are set out in the OREP which is provided as **Appendix 8.5**. This identifies measures to benefit peat and habitats as well as ornithology and other ecological protected species.

[3] In addition to the wireframes provided in support of this chapter, wireframes and photomontages for the application layout of the Proposed Development are also provided for each of these viewpoints in **Chapter 6**.
[4] Scottish Government, Scottish Natural Heritage and SEPA (2017) Peatland Survey. Guidance on Developments on Peatland [pdf]. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance-2017/govscot%3Adocument/Guidance%2Bon%2Bdevelopments%2Bon%2Bpeatland%2B-%2Bpeatland%2Bsurvey%2B-%2B2017.pdf

Image 2: Relocation of Turbine 4 Infrastructure for Peat Depth

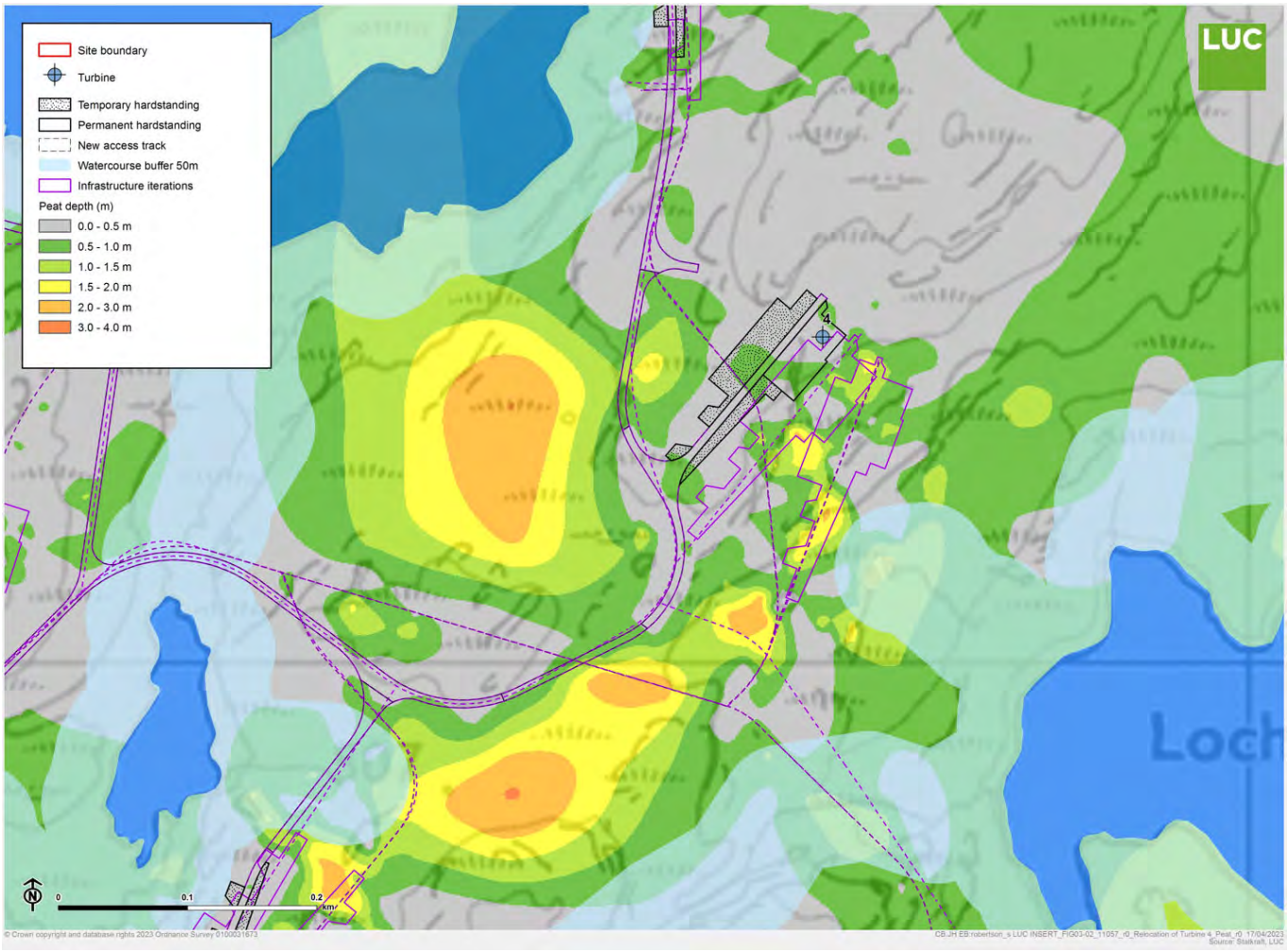
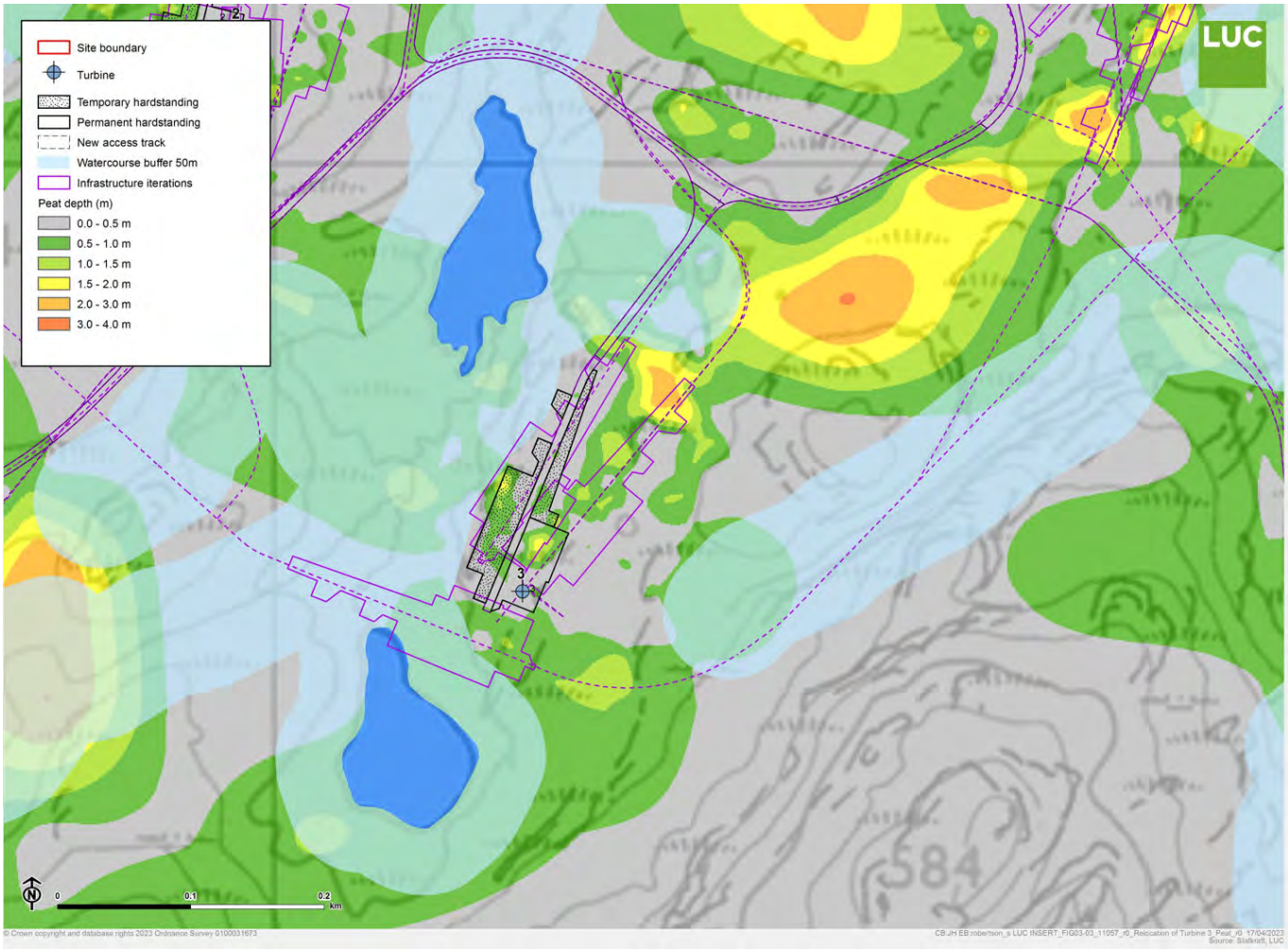


Image 3: Relocation of Turbine 3 Infrastructure for Peat Depth and Watercourse Buffers



Hydrology

3.18 All watercourses were mapped and 50m buffers applied to those shown on 1:50,000 and 1:25,000 OS mapping. Design of the Proposed Development has sought to avoid encroaching into these where possible, with the exception of watercourse crossings (details of which are provided in **Appendix 7.5: Watercourse Crossing Inventory**). At T8, to avoid encroaching into a tributary of Loch na Ruighe Duibhe, the extent of the temporary hardstanding has been reduced as illustrated on **Image 4** below, with T7 also shown to provide a comparison with a 'standard' hardstanding.

3.19 There are a small number of locations where it has not been possible to maintain the 50m buffer for all infrastructure due to the presence of other constraints on the Site; these locations are detailed in **Chapter 7**. Whilst no significant effects are identified on hydrology during construction or operation of the Proposed Development, good practice mitigation is proposed to protect the watercourses as detailed further in **Chapter 7**.

Image 4: Layout of Hardstanding at T8 Compared with Typical Hardstanding Layout at T7

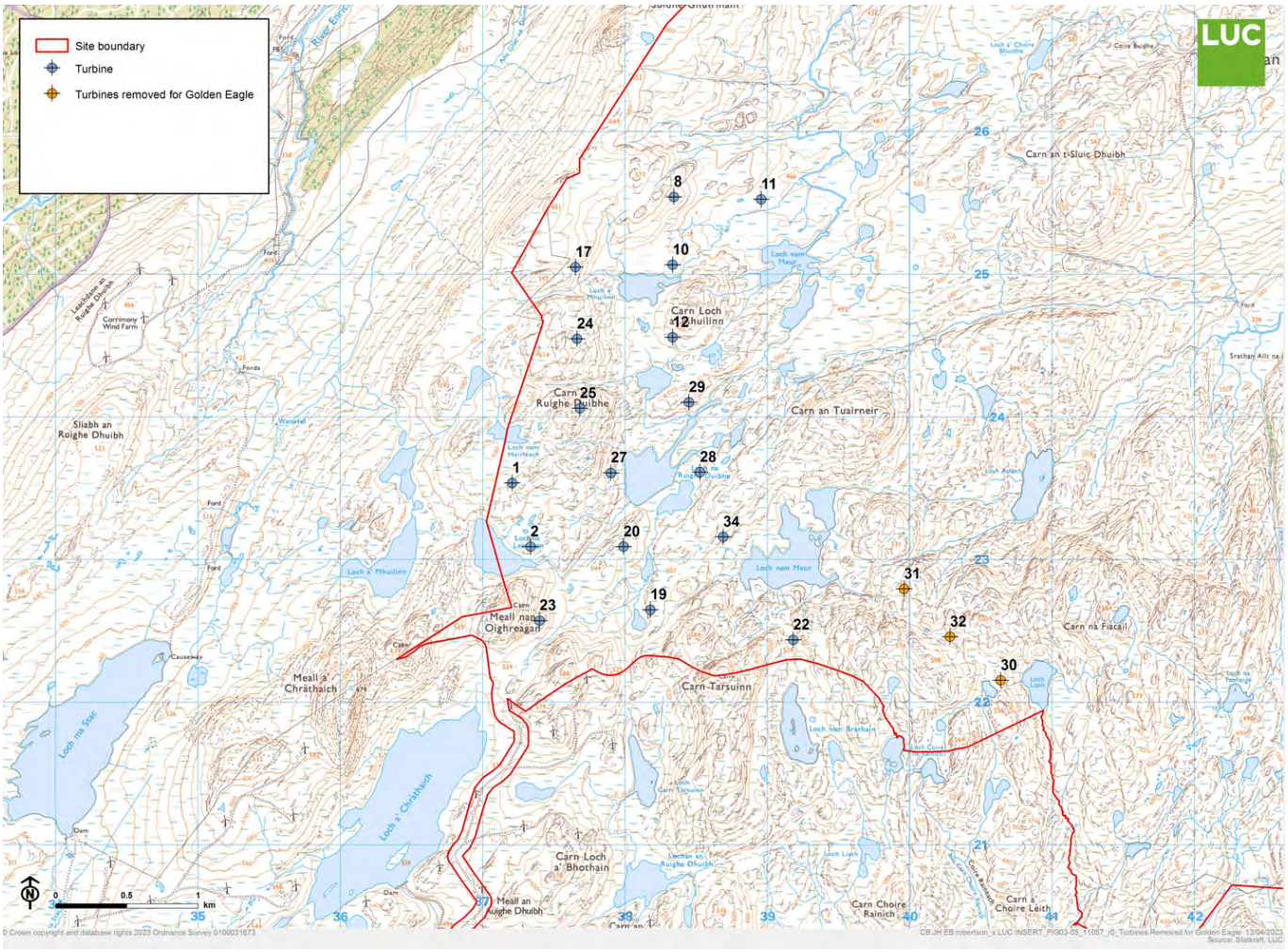
Ornithology

3.20 Ornithological surveys were undertaken between September 2019 and August 2021 including flight activity surveys, upland breeding bird surveys, breeding raptor surveys, breeding diver and Slavonian grebe surveys and black grouse surveys. As a result of early findings from these surveys, changes were made to the layout to allow a 'corridor' to be maintained for red throated divers flying between breeding and feeding lochs, and based on the findings of initial GET modelling, several turbines were dropped and the layout was refined for golden eagle, which are also known to nest nearby. This included the removal of three turbines from Layout 3 which formed a 'string' at the east of the Site as described further below and as illustrated on **Image 5**.

3.21 Whilst identified as being present in the ornithology survey area, no changes were needed to the layout to avoid black grouse leks or their associated protection buffers, and potential effects on Slavonian grebe were scoped out of detailed assessment as agreed with NatureScot in June 2021 (and subsequently confirmed with the Royal Society for the Protection of Birds (RSPB)).

3.22 Full details of the bird surveys and findings are provided in **Chapter 9: Ornithology**, with confidential information on breeding bird locations provided to NatureScot, RSPB and the Energy Consents Unit (ECU) only. The OREP includes measures to benefit ornithology, including provision of diver rafts and planting of woodland, and a detailed proposal has been prepared for golden eagle monitoring as set out in **Appendix 9.5: Regional Eagle Conservation Management Plan (RECMP)**.

Image 5: Turbines Removed for Golden Eagle



Ecology

3.23 Habitat and protected species surveys were undertaken which found extensive heathland and blanket bog habitats throughout the Ecology Survey Area. The most notable protected species recorded was water vole, evidence of which was recorded associated with watercourses and lochans throughout. In addition, there was a single sighting of a badger within the Site, and a camera trap recorded otter on one occasion and pine marten on two occasions; however these were incidental sightings outside the Ecological Study Area (ESA) and, as detailed further in **Chapter 8: Ecology** of the EIA Report, no protected sites (e.g. holts, dens or setts) were recorded.

3.24 Siting of turbines, including hardstanding, avoids the deeper areas of peat, which generally correlate with more sensitive habitats, and infrastructure has been moved to avoid bog pools of ecological and hydrological interest where possible. As upland water voles exist as metapopulations, with local colonisations and extinctions in response to unpredictable events (such as predation or storms), it is not possible to design the siting of infrastructure to minimise effects. However, as noted above, a 50m buffer has been maintained from all lochs, and watercourse crossings are limited wherever possible.

Cultural Heritage

3.25 Within the Site there are limited known assets of cultural heritage significance as confirmed by field survey. The survey confirmed the presence of three modern memorial cairns which commemorate the lives of John Ferguson, who died while fishing in Loch nam Meur, and Russel Cameron who died in 2002, while the third was erected in 1996 in remembrance of the

17th century battle of Carn Mharbh Dhaoine. These are outside the Site Boundary and will not be affected by the Proposed Development.

3.26 In terms of potential effects on setting, several designated assets were identified at an early stage of the design as having the potential to experience effects. However, design changes responding to this means that there will be less potential interaction between the Proposed Development the setting of these assets and a number of visualisations have been provided to accompany the assessment of effects on cultural heritage, which are included in **Appendix 10.1: Historic Environment Assessment** of the EIA Report and which have been discussed and agreed with historic Environment Scotland (HES).

Engineering and Construction Considerations

3.27 The Site comprises varying topography with some areas of steep slopes. Therefore careful consideration has been given to the engineering constraints associated with the design, and the constructability of the Proposed Development. This has included designing infrastructure to reduce the need for significant cut and fill engineering works and, where possible, designing tracks to follow the contours of the Site. Several areas of 'floating' track have been identified to minimise the amount of peat excavation required, where peat depths are continuously over 0.5m. The location of the floating tracks is shown on **Figure 2**.

Site Infrastructure

Turbines

Turbine Scale

3.28 It is recognised by the Scottish Government that there is a pressing need to produce considerably more energy from renewable sources. As such, there is a need to plan for considerably larger scale wind energy development, as well as other forms of renewable energy. With the need to 'think big' comes the need to think where development of such a scale could be accommodated. In addition, the scale of the Proposed Development's turbines has been dictated partly by the size of turbines available to be obtained from manufacturers, who are producing larger turbines in line with advances in technology.

3.29 As noted above, consideration has also been given to the pattern of development and the scale of the other wind farms proposed in the wider area, including at the adjacent Bhlaraidh Wind Farm Extension, which has been consented at maximum blade tip height of 180m. In this way, the extent of the Proposed Development and the size of turbines has considered the overarching design objective of achieving a positive relationship with other nearby schemes.

Turbine Colour

3.30 SNH guidance[2] states that "As a general rule for most rural areas of Scotland, a single colour of turbine is generally preferable ...a light grey colour generally achieves the best balance between minimising visibility and visual impacts when seen against the sky ... paint reflection should be minimised ... for multiple windfarm groups or windfarm extensions, the colour of turbines should generally be consistent". The turbines proposed for the Proposed Development are to be a non-reflective pale grey colour, to be consistent with adjacent schemes and as per industry standard.

Aviation Lighting

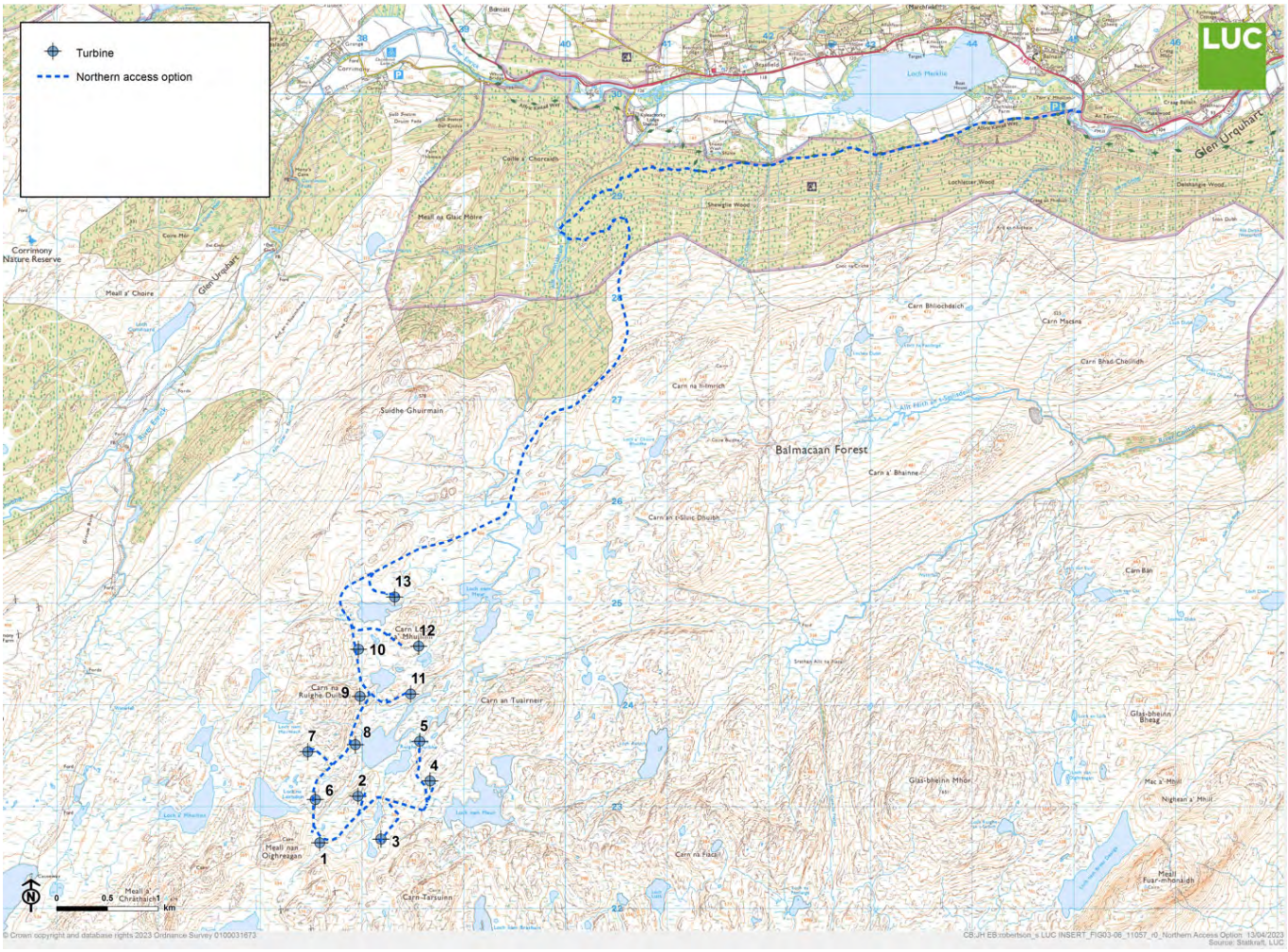
3.31 One of the key considerations form a landscape and visual amenity perspective was designing an appropriate aviation lighting scheme which both satisfies the requirements of aviation policy and reduces the visual effects of such lighting at nearby receptors. Further details on the requirements for aviation lighting are provided in EIA Report **Chapter 14**, and details of the proposed lighting scheme for the Proposed Development are set out in **Appendix 14.2: Aviation Lighting and Mitigation Report** of the EIA Report. In summary, six of the 13 wind turbines are proposed to have medium intensity (minimum of 2000cd) visible lighting mounted on the turbine hubs but no intermediate low intensity lights (32cd) on the turbine towers. Infrared lights (invisible to the naked eye) will be installed on all of the 13 turbines. This reduced lighting scheme has been agreed with the Civil Aviation Authority (CAA) and Ministry of Defence (MoD) through pre-application consultation. Further details on anticipated effects on landscape and visual amenity are set out in the EIA Report in **Appendix 6.4: Wild Land Impact Aspect** of the EIA Report.

Ancillary Infrastructure

3.32 As noted above, the infrastructure required was designed and arranged in such a way as to avoid the identified onsite constraints. Numerous infrastructure layouts have been progressed as the scheme evolved, with some minor iterations to turbine locations being necessary to facilitate the optimum onsite infrastructure requirements and respond to civil engineering constraints, such as topography. Access track routes in particular have been designed to minimise watercourse crossings and to avoid constrained areas within the Site, including steep slopes and deeper peat.

3.33 As noted above, a key benefit of the Proposed Development is that it will be accessed using existing access which serves the operational Bhlaraidh Wind Farm, and which will also be used for construction of the consented Bhlaraidh Wind Farm Extension. This has the benefit of substantially reducing the extent of new infrastructure required for the Proposed Development. An alternative access was also considered from the north, partially via the Affric Kintail Way as illustrated on **Image 6** below, however following a detailed review by the project team, including field surveys of both access options, the northern access option was dropped due to the increased potential for significant environmental effects when compared to use of the existing Bhlaraidh Wind Farm access from the south, largely as a result of the requirement to construction approximately 11km of additional new access track resulting in greater effects on habitats and peat. The northern access option was also located close to ornithological sensitivities, and partially followed the Affric Kintail Way long distance walking route. Together these considerations would result in greater effects during construction than use of the existing Bhlaraidh Wind Farm access track, which will require only minor surfacing upgrades to accommodate the delivery of the turbine components of the Proposed Development to the Site.

Image 6: Northern Access Option



Design Evolution

3.34 The development of the layout has evolved through a number of design iterations. The process has been summarised as five discrete layout iterations (as shown in **Figures 3.1a** to **3.1f**), although a number of refinements have been made in between which have been subject to careful scrutiny by the project team at a number of design workshops, particularly in relation to engineering, hydrology and peat considerations. Various other detailed iterations and refinements were undertaken between the key design variants described below.

Layout 1

The Scoping Layout, developed by the Applicant, is presented in **Figure 3.1a** and consisted of 26 turbines at a maximum tip height of 200 m. This was also presented to the Highland Council at the pre-application meeting which took place in February 2020. The layout was based largely on technical and operational efficiency criteria e.g. wind yield, but also took into account other known high-level constraints such as buffers on watercourses and included some initial input from the landscape team. This layout represented the 'maximum development scenario' considered to be possible at the Site.

Layout 2

As a result of initial feedback from surveys undertaken at the site the key difference between Layout 1 and Layout 2 was the removal of four turbines (T13/T14/T18/T21 in **Figure 3.1a**) to ensure provision of a 'corridor' for red throated diver movement between lochans within the turbine area, as presented in **Figure 3.1b**.

With the exception of two turbines (T5 and T12), the position of all other turbines was refined to take account of initial peat survey data (100 m grid), to avoid steep slopes over 15 degrees, and to improve composition from key views. A larger rotor diameter was also assumed in terms of likely candidate turbine.

Layout 3

Further data from the ornithology surveys and a detailed review of the layout by the landscape team resulted in the removal of the most northern turbines from the layout and redesign to reduce visibility and prominence from Glen Urquhart, the Glen Affric National Scenic Area and the Central Highlands Wild Land Area.

An initial infrastructure design was prepared for this layout, including access tracks, working areas and substation location. This layout is presented in **Figure 3.1c**.

Layout 4

As a result of initial GET modelling for golden eagle, three turbines were removed from the layout in the south-eastern corner of the layout resulting in a 17-turbine layout that was refined to improve composition from key views (including Meall Fuar-mhonaidh) and was taken forward to further consultation with the Highland Council and NatureScot. This layout is presented in **Figure 3.1d**.

At this stage, two possible options for access to the site were under consideration, one from the south via the existing Bhlaraidh Wind Farm access (which is being taken forward to the final design) and alternative from the north, partially via the Affric Kintail Way.

Layout 5

Following the feedback received from the Highland Council and NatureScot a further three turbines were removed from the north of the Site and the tip heights of three turbines reduced to 180 m to seek to reduce visibility and improve composition from key locations including from Glen Affric and to reduce the horizontal extent in the view from Meall Fuar-mhonaidh.

In addition numerous small changes were made to turbine locations and associated infrastructure to take account of ground conditions as informed by field work, including:

- Compound moved further south, parallel to access track;
- T17 moved to behind hill north of Carn Tarsuinn;
- T13 to be moved approximately 25m west to avoid bog pool;
- T16 adjusted to avoid bog pool;
- Junction to T11/14 moved approximately 30m west to avoid bog pool; and
- Edge of T9 hardstanding to be moved out of bog pool and turning head removed.

The layout also took on feedback from Applicant's wind resource and modelling team including updating the spacing to take account of a revised wind direction of 225 degrees south-westerly. This layout is presented in **Figure 3.1e**.

Layout 6

Following detailed review by Applicant, and based on advice from the specialist EIA team in relation to constructability and the potential for impacts, particularly on peat and hydrology, the most south-easterly turbine (T17) was removed from the layout. In addition, following advice from the hydrology team, and a review by the project engineer and the Applicant, the following tweaks were reviewed, some of which resulted in further minor modifications to the design as noted below:

- Turning head at T14 moved out of deepest peat;
- Track to the north of T10 was noted as being in wet bog and suggested to be moved west by the peat survey team. However, as the track is positioned within the hardstanding, any amendment to the track would require a tweak in the associated hardstanding such that it would ultimately impact on the deeper peat. In addition, the rotation of the hardstanding would mean that it wouldn't run parallel with the contours creating a larger footprint, as such, no changes were made in this location. Sections of the track north and south of T10 will be floated past the junction to T12 and T13 where located on areas of deep peat. Full details of the sections of track to be floated are shown on **Figure 4.1** of **Chapter 4.**
- Hardstanding at T12 flipped so the larger area is on lower terrain;
- The hydrology team proposed moving T11 slightly west however it has been situated in this location to minimise impact on peat therefore no changes were made; and
- T2 moved c.10m to east to avoid peat.

At this stage a final decision was reached on use of the existing Bhlaraidh Wind Farm access, as detailed above. Layout 6 (design freeze) is presented in **Figure 2**.

Design Conclusion

3.35 The final layout takes into account the design aspirations outlined above. The Site is complex, with a number of competing technical and environmental constraints which have been considered in the iterative design process, and which have guided the positioning of both turbines and associated infrastructure. The inherent nature of wind turbines as tall, modern structures means that the form of the Proposed Development as a whole is important, and a clear design strategy is necessary. The overall aim of the design strategy was to create a wind farm with a cohesive design that relates to its landscape context (including other schemes) in line with appropriate published guidance, and balanced against the need to minimise potential effects on peat and ornithology in particular. The following key views were considered in the design, and illustrative wireframes from these locations are provided below (the Proposed Development is shown in grey, in the centre of each image):

- VP1: Affric Kintail Way near Braefield (**Images 7a-c**);
- VP2: Meall Fuar-mhonaidh (**Images 8a-c**);
- VP3: Balbeg (**Images 9a-c**);
- VP5: Coire Loch Trail, Glen Affric (**Images 10a-c**); and
- VP8: B862 Suidhe Viewpoint (**Images 11a-c**).

3.36 A number of iterations were considered throughout the design evolution, to develop a layout that fulfils the overarching objectives whilst maximising energy yield and respecting other technical and environmental constraints including ecological, ornithological, hydrological and ground conditions identified during the consultation and EIA process. The final design freeze layout has been presented to THC, NatureScot and Scottish Environment Protection Agency (SEPA) to explain the rationale for the final design and confirm how issues raised through the consultation process have been addressed. This included detailed follow up discussions with SEPA to clarify why it has not been possible to make further suggested changes to the layout due to competing constraints at the Site, as explained above.

3.37 Overall, the adverse effects of the Proposed Development have been minimised, with the residual significant adverse effects being limited to effects on landscape and visual amenity. The result of the design process is the final application layout, comprising up to 13 turbines not exceeding maximum blade tip heights between 180-200m, with associated ancillary

infrastructure, both permanent and temporary, which has been carefully sited and designed to reflect economic, technical and environmental sensitivities.

Illustrative Wireframes from VP1: Affric Kintail Way near Braefield

Image 7a: Layout 1: Scoping Layout (26 turbines of up to 200m to blade tip)

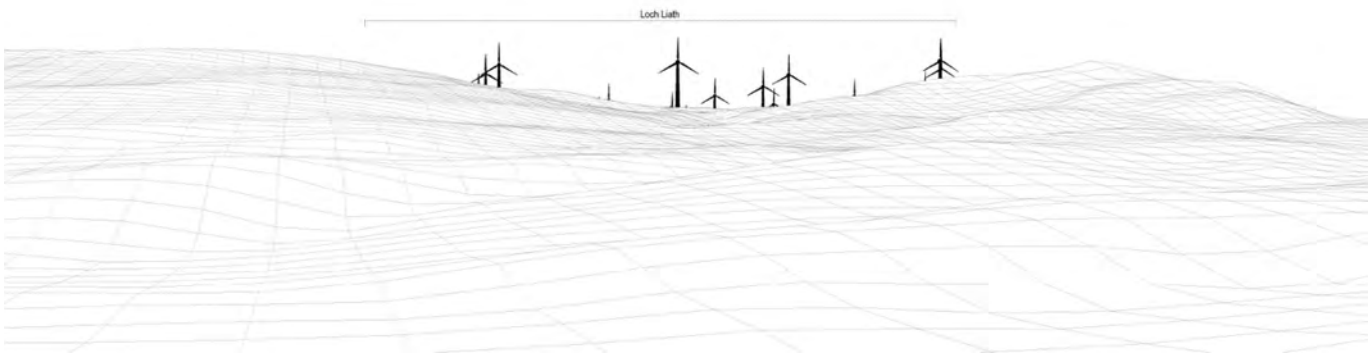


Image 7b: Layout 4 (17 turbines up to 200m to blade tip)

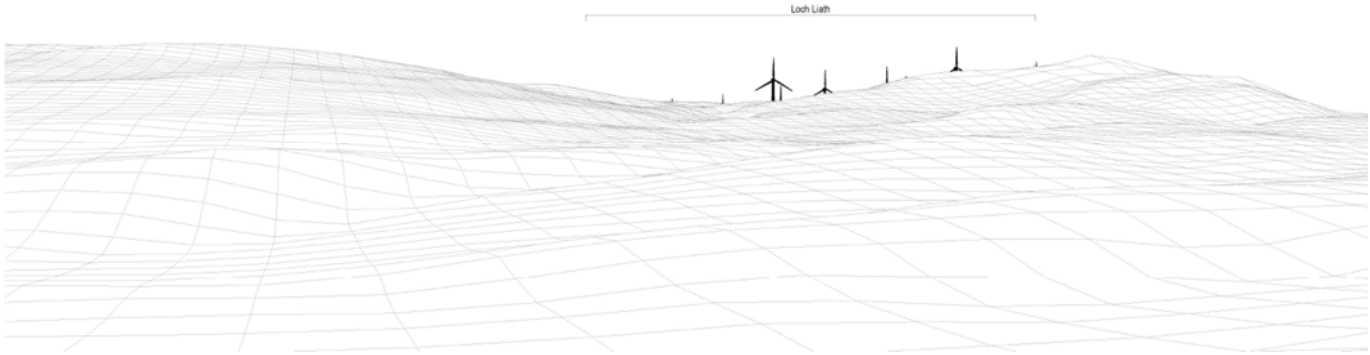
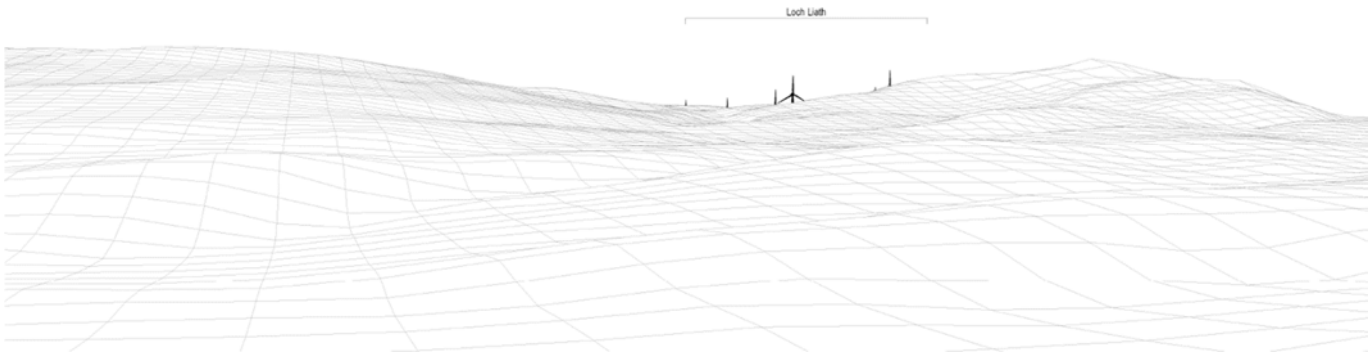


Image 7c: Layout 6: Design Freeze (13 turbines with a mixture of heights 180m/200m to blade tip)



Illustrative Wireframes from VP2: Meall Fuar-mhonaidh

Image 8a: Layout 1: Scoping Layout (26 turbines of up to 200m to blade tip)

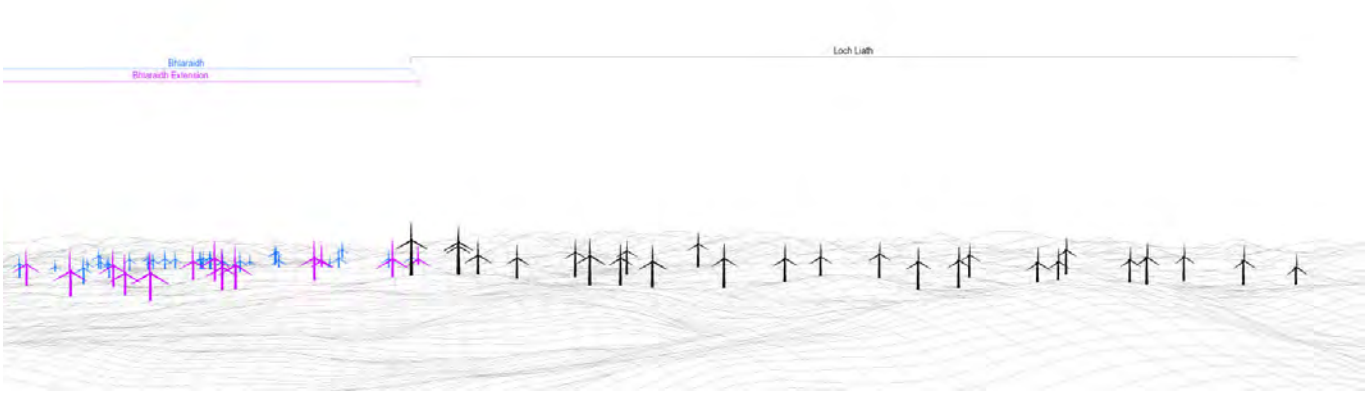


Image 8b: Layout 4 (17 turbines up to 200m to blade tip)

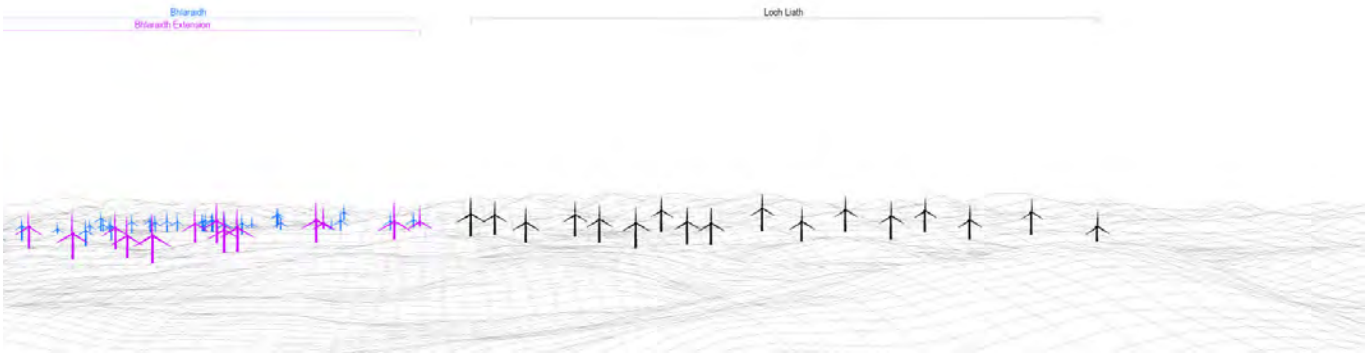
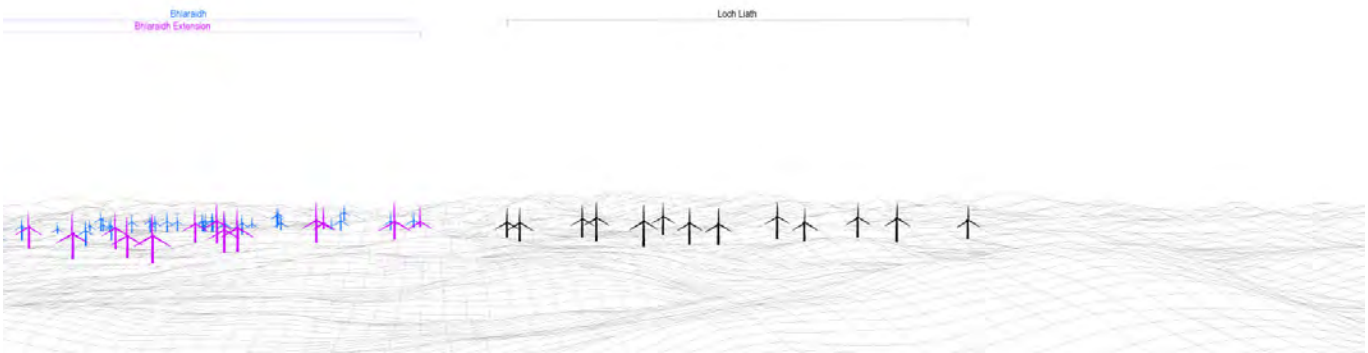


Image 8c: Layout 6: Design Freeze (13 turbines with a mixture of heights 180m/200m to blade tip)



Illustrative Wireframes from VP3: Balbeg

Image 9a: Layout 1: Scoping Layout (26 turbines of up to 200m to blade tip)

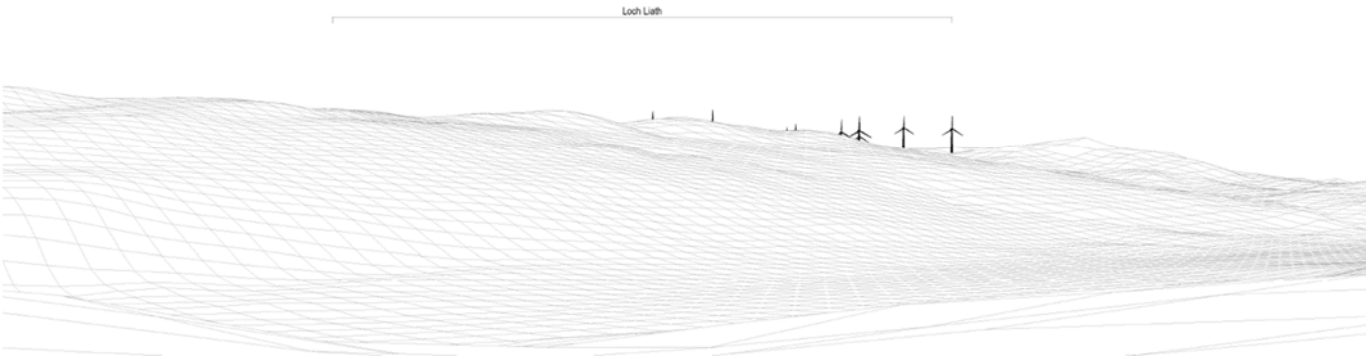


Image 9b: Layout 4 (17 turbines up to 200m to blade tip)

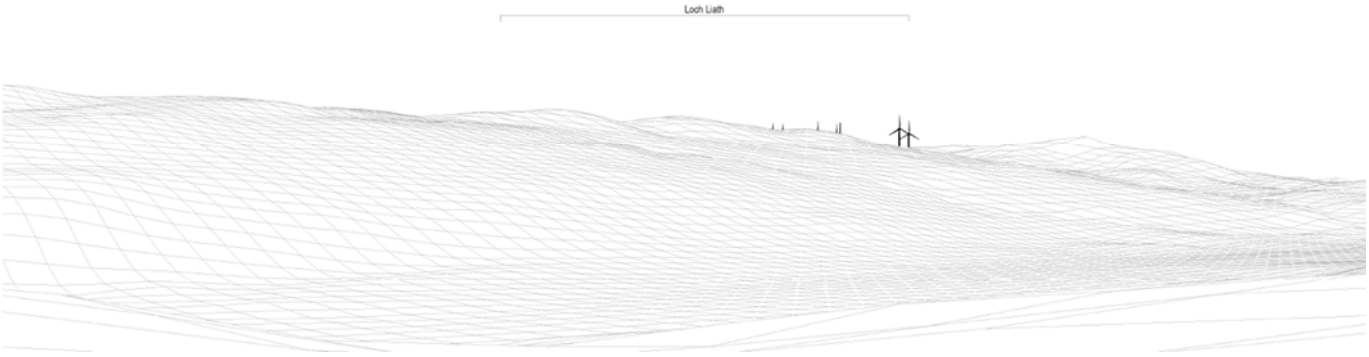
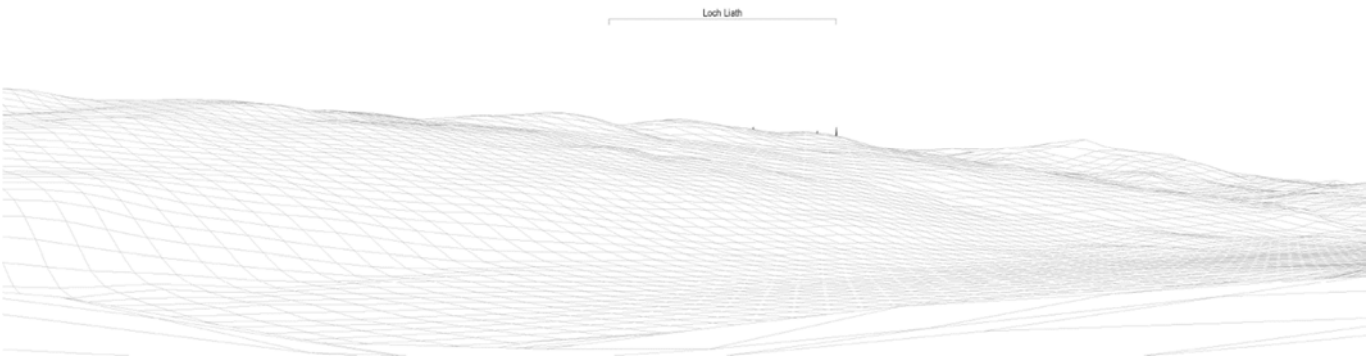


Image 9c: Layout 6: Design Freeze (13 turbines with a mixture of heights 180m/200m to blade tip)



Illustrative Wireframes from VP5: Coire Loch Trail, Glen Affric

Image 10a: Layout 1: Scoping Layout (26 turbines of up to 200m to blade tip)

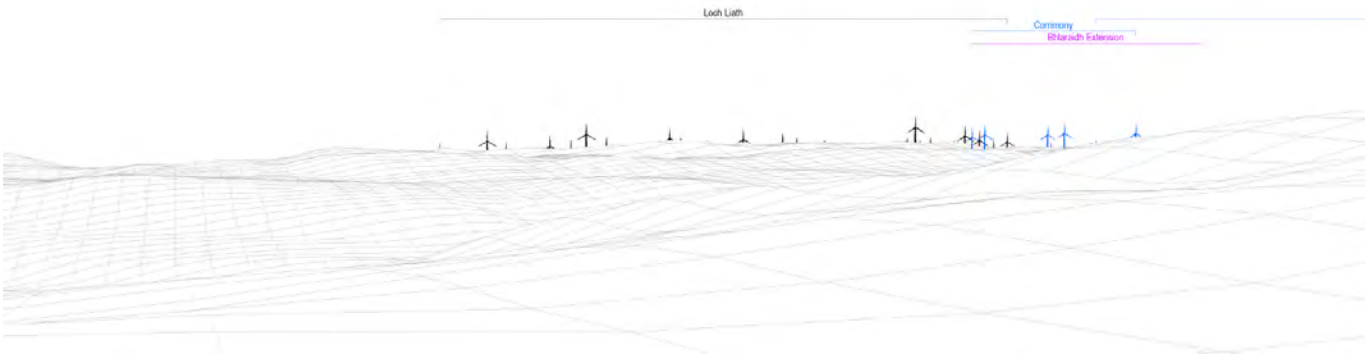


Image 10b: Layout 4 (17 turbines up to 200m to blade tip)

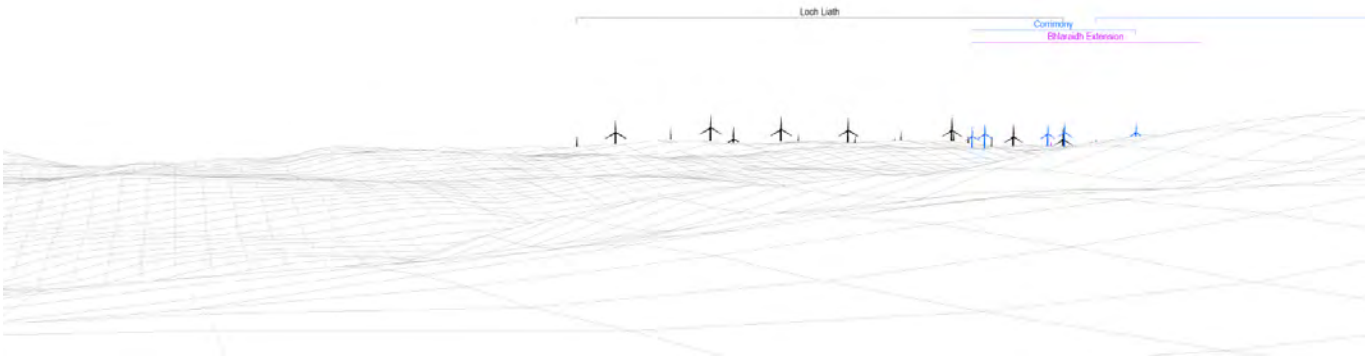
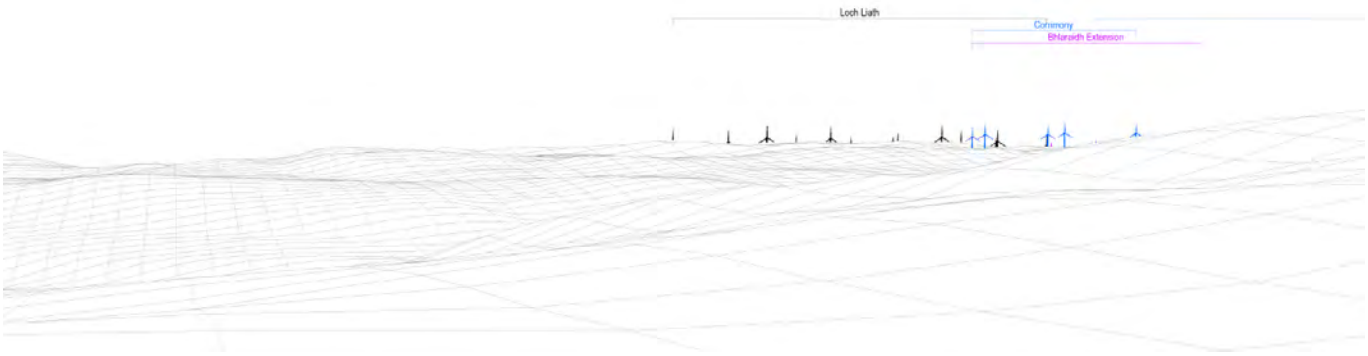


Image 10c: Layout 6: Design Freeze (13 turbines with a mixture of heights 180m/200m to blade tip)



Illustrative Wireframes from VP8: B862 Suidhe Viewpoint

Image 11a: Layout 1: Scoping Layout (26 turbines of up to 200m to blade tip)

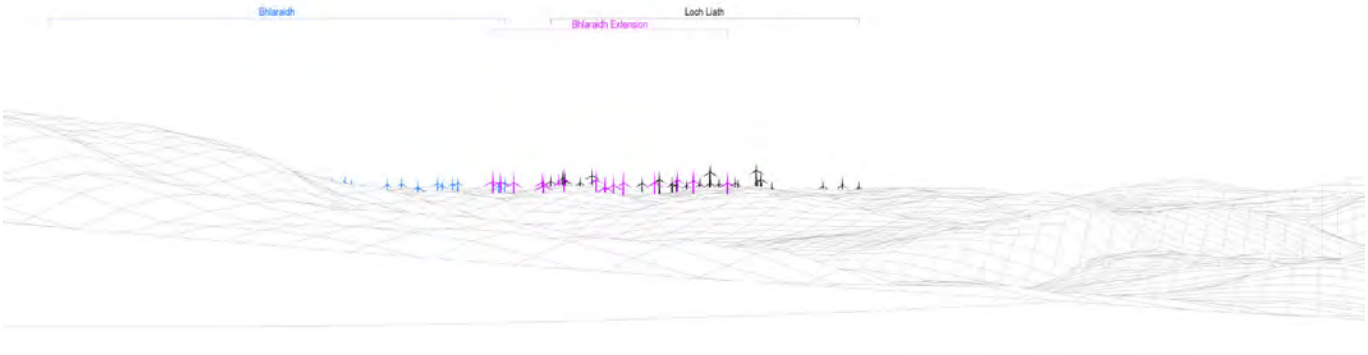


Image 11b: Layout 4 (17 turbines up to 200m to blade tip)

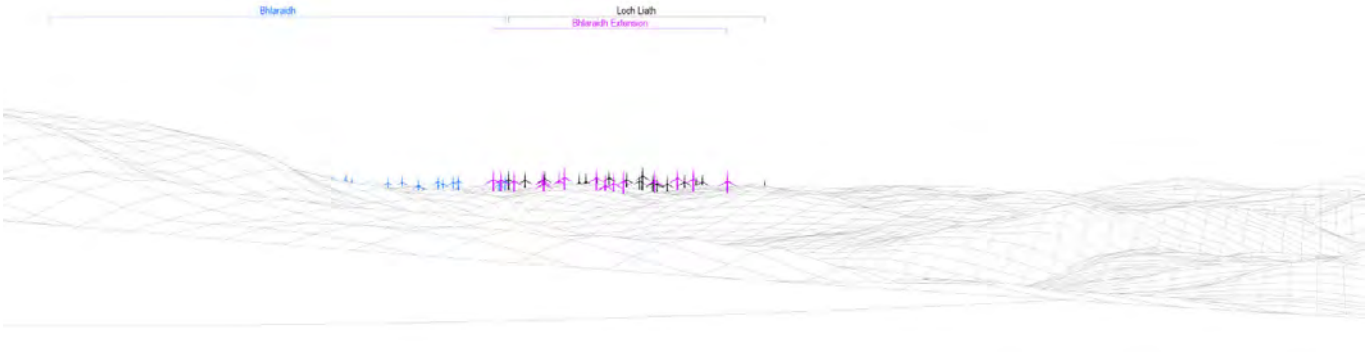
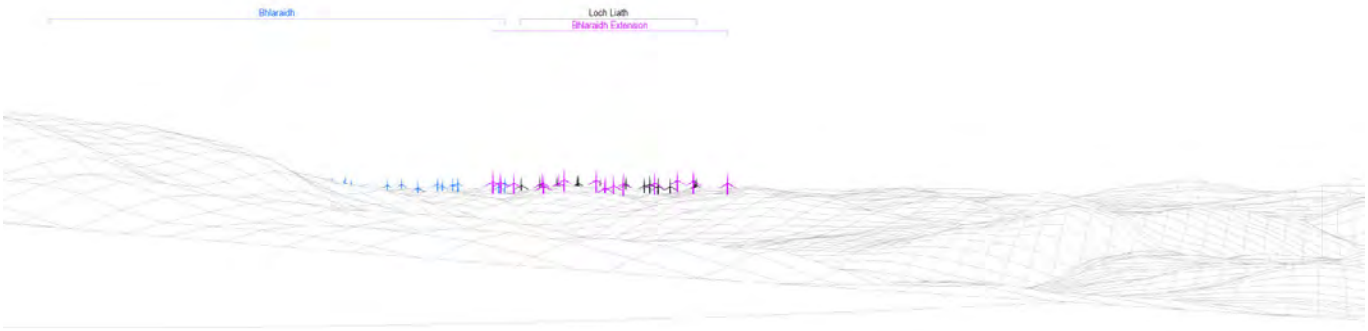


Image 11c: Layout 6: Design Freeze (13 turbines with a mixture of heights 180m/200m to blade tip)



Chapter 4
Access Statement

Access to the Site

4.1 The Proposed Development will be accessed through the existing Bhlaraidh Wind Farm access, located along the A887. Vehicles will then reach the turbine locations through newly constructed access tracks. All vehicles will access and egress the Site through this access.

4.2 Details of the proposed vehicle movements during construction and operation of the Proposed Development are provided in EIA Report **Chapter 12: Traffic and Transport. Chapter 12** also provides detail on the proposed abnormal loads' route to the Site which is supported by EIA Report **Appendix 12.1 Transport Assessment**.

Internal Access Tracks

4.1 In total approximately 26.6km of track will be utilised for the Proposed Development. Approximately 17.3km of existing track will be used with minor upgrades if required (i.e. the existing Bhlaraidh Wind Farm access track, which is likely to require only scraping of the top layer of material to ensure the turbine blade tips do not strike the earthworks embankment and possible improvements to the running surface prior to use as noted above). In addition, 9.3km of new access track will be constructed for the Proposed Development. The nominal track running width will be approximately 6m. Adjacent to this track will be an assumed 1 m width verge at either for cabling and appropriate drainage subject to local ground conditions. Track widths may be slightly wider in some sections to accommodate bends in the track alignment. Turning heads will be installed at appropriate locations to accommodate abnormal load turning.

Access for All

4.2 Resurfacing and upgrading of the existing track, if required, and construction of new, fit for purpose tracks, will ensure a suitable surface for all users who require to access the Proposed Development for construction and operational purposes.

4.3 The only building proposed will be the substation and control building which will be provided in line with the relevant building regulations to accommodate the access needs of people with limited mobility.

4.4 There will be no access provision for those with mobility disabilities to the wind turbines themselves due to their inherent design characteristics and for health and safety reasons.

Active Travel Networks

4.5 A review of THC's Core Path network indicates that there are no Core Paths in the vicinity of the site access. However, a small section of route HI17 is located along the proposed access to the Proposed Development and is listed as an "other route" and is not designated as a Right of Way (RoW) (see **Figure 4**). As this route is currently used for access to the operational Bhlaraidh Wind Farm, it is not anticipated that any specific mitigation to be put in place at this location, however signage will be installed during construction to make it clear that works are taking place.

Access Improvements

4.6 Whilst not located within the Site, the Applicant is committed to providing upgrades on the existing route to the summit of Meall Fuar-mhonaidh as a wider access improvement in the local area. The summit of Meall Fuar-mhonaidh is located approximately 7km to the east of the closest turbine. Further details are provided in the EIA Report **Appendix 13.1: Outline Access Management Plan**.

Chapter 5
Sustainable Design Statement

5.1 Sustainable design refers to the selection of an appropriate site for a particular development whilst ensuring that the architectural style is suitable for the site, so that the Proposed Development does not detract from the sense of place. It incorporates the use of 'environmentally friendly' materials and construction techniques as well as resource efficiency, which help to minimise environmental impact whilst conserving local character and enhancing the viability of communities.

5.2 In accordance with the HwLDP Policy 28: Sustainable Design, a Sustainable Design Statement has been produced to demonstrate that the design of the proposed wind farm is compliant with the standards set out in THC's Sustainable Design Guide Supplementary Guidance (THC, 2013a). The Sustainable Design Statement, prepared in the THC's checklist format, for ease of reference, is provided in **Appendix A**. This provides an account of how THC's sustainable design standards have been carefully considered in the design of the Proposed Development. The information presented shows that a sustainable design solution has been achieved for the Proposed Development and how, where possible, this exceeds minimum standards. Where appropriate, reference has been made to information presented in the Design Statement (Section 2) or the EIA Report.

5.3 It should be noted that not all issues within the sustainable design checklist are relevant to the design of the Proposed Development, and this has been noted where appropriate.

Chapter 6
Summary and Conclusion

6.1 Designing large scale renewables sites is a complex process which often requires a compromise between competing environmental disciplines and commercial considerations. Therefore, it is necessary that the project design is driven by a clear, robust and effective design strategy.

6.2 This DAS demonstrates that the siting and design of the Proposed Development has been carefully considered and the final design reached as a result of a number of stages of design iteration. The environmental effects associated with the Proposed Development have been avoided or mitigated to the greatest feasible extent through the EIA process, and this has informed the design process. The layout evolved by responding to environmental and technical investigations and consultations carried out and the final design was reached by balancing and responding to the constraints and considerations outlined in this DAS.

6.3 The overall aim of the design strategy was to create a wind farm with a cohesive design that minimises environmental effects to the greatest feasible extent and is sympathetic in form and scale to the surrounding landscape and other wind developments within it whilst achieving the greatest feasible proportion of the Site's renewable energy generation potential. The Applicant is of the view that the Proposed Development is appropriate in terms of its design and represents a sustainable development, and meets the relevant requirements of the THC Sustainable Design Guide.

Appendix A

Sustainable Design Statement

Table A.1: Sustainable Design Checklist

Sustainable Design Issue	Minimum Standard Required	Response
1. Layout, scale, proportion, materials, construction and finishing Will the appearance of the Proposed Development be visually appropriate, complementing local character whilst reinforcing local distinctiveness (e.g. materials, road pattern etc.) and be clearly integrated with the wider community? A. Building materials and colour complement local character B. Site layout, building style and scale enhance local character C. Roof-scapes visually respect the local context (allowing for low carbon technologies where appropriate) D. Continuity of local building details such as simple and uncomplicated design of roofs, dormers, windows and doors E. Potential for personalisation by prospective residents F. Contemporary approach which reflects the local vernacular where appropriate.	A-D achieved.	The design iterations were influenced by landscape and visual considerations including landform, scale, land use (including other wind farms) and key visual receptors. More detail can be found in EIA Report **Chapter 3: Site Selection and Design Strategy**. The colour of turbines is non-reflective pale grey in line with NatureScot guidance. The buildings onsite will be the control building and substation. The final colour and spec of the buildings will be sensitive to the local landscape and will incorporate sustainable design features to make buildings look less industrial. Materials will largely consist of concrete, slab and site-won, processed and placed rock, reducing the need to import material to site. Points D–F are not applicable to the Proposed Development.
2. Landscaping Has a landscaping scheme been drawn up for the site which ensures that: A. Landscape forms the context for the Proposed Development; B. The Proposed Development integrates into or enhances the present landscape character; C. Green spaces are provided for public/private and site boundaries (including tree and shrub planting); D. Public open space and recreational provision is given as required; E. Safeguards green networks within the site, and the establishment of green	Landscape scheme drawn up covering criteria A–E.	The objective of minimising landscape and visual impacts has been a key component in the design, and careful consideration has been given to potential effects on landscape character, as assessed in detail in the EIA Report **Chapter 6**. A number of areas of blanket bog and peatland will be restored as part of the Outline Restoration and Enhancement Plan (OREP), along with mixed native woodland planting and riparian scrub planting (see **Appendix 8.5** of the EIA Report). The design seeks to assimilate the perceived scale of the turbines, and the scale of the overall development and the OREP seeks to ensure continuity of

Sustainable Design Issue	Minimum Standard Required	Response
network features that link into the wider green network.		forestry and peatland on site in accordance with best practice design principles. Point C – E are not applicable to the Proposed Development. Further details on how the Proposed Development has been designed to be sympathetic with the local landscape are provided in **Chapter 3**.
3. Cultural heritage Are the culturally and archaeologically important features on the site and their settings known, and how will these be affected by the Proposed Development?	Important features are identified, assessed and protected.	A comprehensive assessment has been undertaken for cultural heritage and all known features on the site have been identified, mapped and assessed as part of the EIA. Further details can be found in EIA Report **Chapter 10: Cultural Heritage** which provides a baseline description of all known assets within the Site boundary, and considers effects on setting of assets in the wider study area.
4. Materials Which materials are from secondary or recycled sources, have low-embodied energy, and are from sustainable and/or local sources? A. Roof B. External walls C. Internal walls (including separating walls) D. Upper and ground floors (including separating floors) E. Windows	At least three out of the five key elements achieve a Green Guide rating of A+ to D. 100 % of timber must be from Forest Stewardship Council (FSC)/ Programme for the Endorsement of Forest Certification Schemes (PEFC) sources.	The construction of the Proposed Development will require approximately 97,000m^3 of stone aggregate (including for permanent access tracks, structural fill beneath turbine foundations and crane hardstandings). The borrow pit search area has the estimated capacity to provide 70% of this requirement. However, for the purposes of a robust assessment for effects on traffic and transport, it has been assumed that 50% of the stone will be obtained from the borrow pit, with 50% being required to be imported. Stone won from Site will have a similar colour and hue to the existing rock outcrops on site. Further details are presented in the EIA Report in **Chapter 4: Project Description** and **Chapter 12**.
5. Natural heritage Has an assessment been made of the site's ecology and will the ecological value of the site be protected or recreated to equal quality and or enhanced?	Assessment undertaken and strategy produced by an ecologist (or equivalent) to protect or recreate existing ecological value.	Comprehensive ecological surveys and assessment have been undertaken as part of the EIA, including Phase 1 Habitat surveys, National Vegetation Classification (NVC), Ground water Dependent Terrestrial Ecosystem (GWDTE) surveys and protected species surveys. It is proposed that an Ecological/Environmental Clerk of Works (ECoW) will be present on site during the construction and reinstatement phases to oversee the implementation of necessary mitigation measures.

Sustainable Design Issue	Minimum Standard Required	Response
		Further details are provided in the EIA Report in **Chapter 8**.
6. Enhancing wildlife Will there be: A. No net loss in relation to habitats and species? B. A mixture of locally occurring species specified for planting and landscaping schemes? C. Any new links between habitats within the site or links to habitats outside the Proposed Development boundary? D. An increase in important or sensitive habitats identified in the Local Biodiversity Action Plan (LBAP), by either creating or restoring ecological value (as assessed by an ecologist), or support for a species identified in the LBAP?	A–D achieved.	The ecology and ornithology assessments (presented in **Chapter 8** and **Chapter 9** of the EIA Report) detail the habitat loss associated with the construction and operation of the proposed wind farm and potential effects on flora and fauna, including birds. No significant impacts on habitats or species are predicted however an ECoW will be required to be present on the site during construction. This role would be undertaken by a suitably qualified and experienced consultant, to be agreed with THC, NatureScot and SEPA and would involve the monitoring of the mitigation measures, together with a briefing with regards the ecological sensitivities on the site, to all site personnel prior to their commencing work on the site. Details of what will be covered in a Species Protection Plan for ecology is provided in **Chapter 8** of the EIA Report. This will ensure that provisions of the relevant wildlife legislation are complied with in relation to protected species, and that the risk of disturbance is minimised. **Chapter 9** provides the details of the Bird Protection Plan (BPP) which will be implemented during construction. The OREP (**Appendix 8.5**) sets out the restoration and enhancement proposals which will be implemented for peat, habitats, and protected species to deliver biodiversity benefits on the Site.
7. Energy efficiency What steps have been taken towards reducing CO2 emissions through energy-efficient design for the Proposed Development? A. Minimising energy demand for the site through orientation and maximising passive solar gain; B. Maximising the thermal efficiency of individual buildings through thermal mass, insulation, natural shelter and appropriate glazing; C. Minimising demand for water heating, space heating and cooling, lighting and power in individual	A–C achieved.	It is the Applicant's intention to construct energy efficient, low carbon buildings as part of the office requirements for the temporary construction compound and control building. The buildings will respond directly and sympathetically to the rural context and with sensitivity to the local vernacular. Constructed out of environmentally responsible materials, locally sourced if possible, the buildings will be designed using modern methods of construction to ensure compliance with current architectural and environmental principles.

Sustainable Design Issue	Minimum Standard Required	Response
dwellings through efficient equipment and controls.		
8. Renewable energy Has the energy demand for the Proposed Development been calculated to determine: A. The amount of low- or zero-carbon technologies (LZCT), e.g. wind, solar, hydro, photovoltaic (PV), combined heat and power (CHP) that is practicable to meet the extant building standards CO2 emissions reduction target. B. The % of total site energy demand that will be produced from onsite renewable energy technologies. C. Meeting the remaining energy demand efficiently, e.g. non-renewable or waste powered district heating and cooling.	A–C is required only where the Proposed Development is 500 m2 or over. The CO2 emissions reduction target should be met through a combination of onsite LZCT and other appropriate measures. The amount of LZCT employed will depend on the technical constraints and scale of the Proposed Development.	Points A-C are not applicable to the Proposed Development. The Proposed Development will make a contribution to the increase in renewable energy generation capacity and CO_2 reduction in Scotland. It will have an installed capacity of 85.8MW. The carbon balance assessment (**Appendix 14.1 Carbon Balance Assessment** of the EIA Report) has calculated the 'payback time' of CO_2 emissions for the Proposed Development. The payback time is defined as the length of time (in years) required for the Proposed Development to be considered a net avoider of emissions rather than a net emitter. The calculation of payback time includes consideration of emissions resulting from the construction and operational phases of the Proposed Development and includes the quantification of the carbon storage loss as a result of loss of peat and forestry within the site (expressed as CO_2 emissions). The expected payback time is calculated to be 2.4 years.
9. Foul waste water treatment Will the Proposed Development be connected to the public sewer? If not, has a sustainable waste water treatment system been designed to avoid unacceptable damage to the water environment?	Separate systems are proposed for foul and surface water drainage. Foul drainage is via a connection to the public sewer; where no connection is available, a system is designed and built to a standard to allow adoption by Scottish Water and can easily be connected to the public sewer at a later date. Discharges from private sewerage systems will be registered or licensed by the Scottish Environment Protection Agency (SEPA), depending on the Proposed Development size.	All sewage and waste water will be collected on site in an appropriately designed and located septic tank and will be tankered from site at an appropriate frequency. Disposal of sewage from the site will be carried out by methods recommended in GPP4 (GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer). In all cases, final disposal will be into the local sewer system at a location agreed with Scottish Water.
10. Flooding What measures have been taken to ensure that the Proposed Development will: A. Be free from significant risk of flooding; B. Not add to the area of land that requires flood prevention measures;	Reference has been made to SEPA's flood risk maps to determine if a flood risk assessment is required. In all cases the Proposed Development site is demonstrated to be outwith the functional floodplain (i.e. there is not more than a 1:200 year flood risk).	Flood risk data provided by SEPA shows that the only areas near the Proposed Development at risk of fluvial flooding are in the immediate vicinity of Loch na Ruighe Duibhe, particularly in the north and south. Further to the North the Loch Nam Meur and Allt Seanabhaile have associated localised flood zones. No infrastructure is located within these areas, with the exception of watercourse crossings. The track

Sustainable Design Issue	Minimum Standard Required	Response
C. Not affect the ability of the functional floodplain to store or move flood waters?		network and turbine layout has been designed to avoid, as far as is practicable, areas that have been identified as at risk of flooding, with the exception of watercourse crossings. A monitoring programme for maintenance of crossings (to prevent blockages and flooding) will be provided within the Construction Method Statement and Sustainable Drainage Systems (SuDS) shall be incorporated to the final detailed design to minimise hydrological effects of the Proposed Development and to maintain the current hydrological systems. See **Chapter 7: Geology, Hydrology, Hydrogeology and Peat** of the EIA Report for more details.
11. Surface water runoff Which of the following localised strategies for ensuring that runoff from the finished Proposed Development does not exceed runoff from the previously undeveloped site have been proposed and designed in accordance with The Sustainable Drainage Systems SUDS Manual (Construction Industry Research and Information Association (CIRIA) Publication C697)? A. Prevention of runoff at source – through simple design measures on individual buildings (e.g. minimising paved areas) to allow water to return to the natural drainage system as near to the source as possible and not to contribute to runoff. B. Source control of runoff rate/volume – through control of the rate/volume of runoff generated close to source (e.g. rainwater harvesting systems, green roofs and individual soakaways for buildings). C. Site control of water management – water is managed from several areas (e.g. roofs and parking areas into one large soakaway or device such as an infiltration basin). This incorporates enhancing biodiversity and amenity, and is sized to allow the incorporation of further developments in future.	A and B.	A Drainage Management Plan (DMP) and detailed drainage design (temporary and permanent) specific to the Proposed Development will be implemented. This will detail proposed surface drainage measures to treat and deal with all the surface runoff from the Site, to be designed in accordance with SuDS principals. The drainage design will factor in all localised pathways, maintain hydrological connectivity within flushes, and provide separation of clean water and dirty water. Artificial drainage will be installed only where necessary. The individual lengths, depths and gradients of these drains will be minimised to avoid intercepting large volumes of diffuse overland flow and generating high velocity flows during storm events. Drainage features will, wherever practical, be installed in advance of ground being cleared of vegetation, with sustainable drainage techniques specifically targeted at impermeable surface area locations. Watercourse crossings will be subject to appropriate SEPA Controlled Activities Regulations (CAR) licencing and will be designed to allow the conveyance of a 0.5% AP (200 year) flow event plus an allowance for climate change and freeboard. Additionally, mitigation will be put in place to control and attenuate runoff during all phases of the Proposed Development and crossings will be regularly checked and maintained during operation.

Sustainable Design Issue	Minimum Standard Required	Response
12. Water conservation How will the Proposed Development sustainably meet the required water demands including through the use of: A. Water efficient appliances such as dual flush toilets, aerating taps and water-efficient white goods; B. Rainwater collection for re-use; C. Green roofs.	A	Good practice in relation to drainage is detailed in the EIA Report in **Appendix 7.1: Best Practice Methods**. During the operation of the proposed wind farm, a minimal amount of water will be used. Rainwater will be collected from the roof of the control building via a gutter and inlet pipe to fill a header tank, where possible. Point C is not applicable to the Proposed Development.
13. Waste and recycling Has suitably screened space been made available for the storage of waste and recyclables in or around each building, including: A. Space for sorting and storing recyclable materials; B. Space for general waste storage; C. Space for composting organic kitchen and garden waste?	A-C	Waste will be generated and will require management during construction, including construction material packaging, and personal waste generated by construction personnel. Best practice procedures will be applied to reduce, reuse and recycle all materials, which will be identified, classified, quantified and, where practicable, appropriately segregated. Any materials that cannot be reused will be disposed of according to relevant waste management and environmental legislation. Waste will be transferred using a registered waste carrier to a licensed waste disposal site or recycling centre. More details on waste management methods are detailed in **Chapter 4** and **Appendix 4.1: Outline Construction and Environmental Management Plan (CEMP)** of the EIA Report.
14. Site management How will development of the site be undertaken in a manner that minimises disturbance to neighbouring properties and the environment including addressing: A. Noise pollution B. Light pollution C. Air pollution D. Construction waste E. Surface water runoff F. Soil handling G. Protection of trees H. Traffic movements I. Access	The considerate constructors scheme is implemented to minimise noise, light and air pollution and a site waste management plan is put in place that reflects the requirements of Netregs, including identifying: Types of waste removed from the site; The person who removed the waste; The site to which the waste is taken. Key sources of potential disturbance and pollution are identified and mitigation measures put in place.	A. Working hours for construction will be from 07.00 to 19.00 Monday to Friday and 07.00 to 13.00 on Saturdays. No site work is proposed on Sundays and public holidays, unless otherwise agreed with THC. Exceptions to the proposed working hours will be made for concrete foundation pours, turbine erection, turbine component delivery and emergency works, however noisy works and major traffic movements will not be expected outwith these times. Full details and the results of the noise and traffic and transportation impact assessments can be found in **Chapter 11: Noise and Vibration** and **Chapter 12** of the EIA Report, respectively. B. Depending on the time of year and the stage of the construction

Sustainable Design Issue	Minimum Standard Required	Response
		programme, temporary lighting may be required at the temporary construction compound during working hours. This will be designed to minimise light-spill on sensitive habitat features such as watercourses and waterbodies. C. A dust and air quality management plan will be prepared as part of the CEMP. This will identify potential sources of dust emissions, their associated impacts and also the measures to be implemented to reduce dust and particulate emissions. Further details are provided in the outline CEMP provided as **Appendix 4.1** of the EIA Report. D. A waste management plan will be prepared as part of the CEMP. The removal of construction waste will be undertaken within the defined working hours. E. Details of a Surface Water Monitoring Plan are set out in the CEMP (EIA Report **Appendix 4.1**). F. Details on soil and peat handling are set out in the CEMP (EIA Report **Appendix 4.1**) and **Appendix 7.3: Outline Peat Management Plan**. G. Point G is not applicable to the Proposed Development as no felling of trees is required. H. The implementation of an agreed Traffic Management Plan (TMP) will aim to reduce the movement of construction vehicles during the morning and evening peak traffic hours, when the road network is typically at its busiest. An outline TMP is provided in **Chapter 12**. I. An access management plan has been prepared and is provided as **Appendix 13.1** of the EIA Report.
15. Transport How does the Proposed Development proposal make a positive contribution towards the improvement of the sustainable transport network by: A. Reducing car dependency;	Positive impacts are demonstrated on A–D.	Not applicable to the Proposed Development.

Sustainable Design Issue	Minimum Standard Required	Response
B. Promoting sustainable transport modes; C. Creating or linking to existing sustainable travel modes including the core path network, safe routes to schools and workplaces by cycle, pedestrian or public transport; D. Reducing the need to travel, demonstrated through a Transport Assessment where transport impacts are considered to be significant.		
16. Pedestrians and cyclists How close is the Proposed Development to existing public transport networks? What provision is made for secure cycle storage in new buildings and at associated local facilities including transport hubs?	State approximate distance from the centre of the Proposed Development to the nearest bus stop. For residential development, the design provides external cycle storage space, for example in private garden area or garages, or in the case of flats secure communal cycle storage. For non-residential development, secure cycle storage is provided on site.	Not applicable to the Proposed Development.
17. Efficient use of land and existing buildings How does the design ensure that: A. Disturbance to soils is minimised, for example through minimising required earthworks. B. Where appropriate demolition materials will be re-used onsite, rather than transported offsite as waste materials. C. Existing redundant and derelict buildings are sympathetically converted and/or restored where appropriate, with a bat survey and mitigation plan carried out if necessary.	A–B. C is required where derelict and redundant buildings exist on the development site. Their exclusion from a development proposal should be adequately explained and evidenced.	Careful consideration has been given to the design of the Proposed Development to seek to minimise impacts on peat. Further details are provided in the EIA Report in **Chapter 3** and **Chapter 7**. Points B and C are not applicable to the Proposed Development.
18. Design for flexibility Has flexibility been designed into all units to provide adaptability to changing needs? A. Has design to lifetime homes standards been adopted? B. Has infrastructure been installed to allow for home working, e.g. telephone/Wi-Fi for all developments? C. Does building structure and position allow for future extension? D. Have construction techniques been used that enable internal walls to be	A–B required for residential developments; C–D required for non-residential developments.	Not applicable to the Proposed Development.

Sustainable Design Issue	Minimum Standard Required	Response
removed or repositioned easily to create new spaces?		
19. Private amenity space Is there provision for private amenity space, e.g. private garden, balcony, roof terrace or patio, or a communal garden/courtyard that is easily accessible for occupants of designated properties, and does the size and type of area provided allow for: A. All occupants to sit outside at once; B. Safe access by those using wheelchairs or mobility aids; C. Growing fruit or vegetables; D. Composting of kitchen and garden waste; E. Drying washing.	A-E	Not applicable to the Proposed Development.
20. Accessibility of community facilities How far in miles is the Proposed Development from the following facilities? A. Healthy facilities such as a surgery or pharmacy; B. Education facilities such as a crèche, primary and secondary schools; C. Shop; D. Bank, Post Office or cash machine; E. Leisure facilities such as a community centre or indoor sports facility.	State approximate distances from the Proposed Development to the facilities listed A–E.	Not applicable to the Proposed Development.

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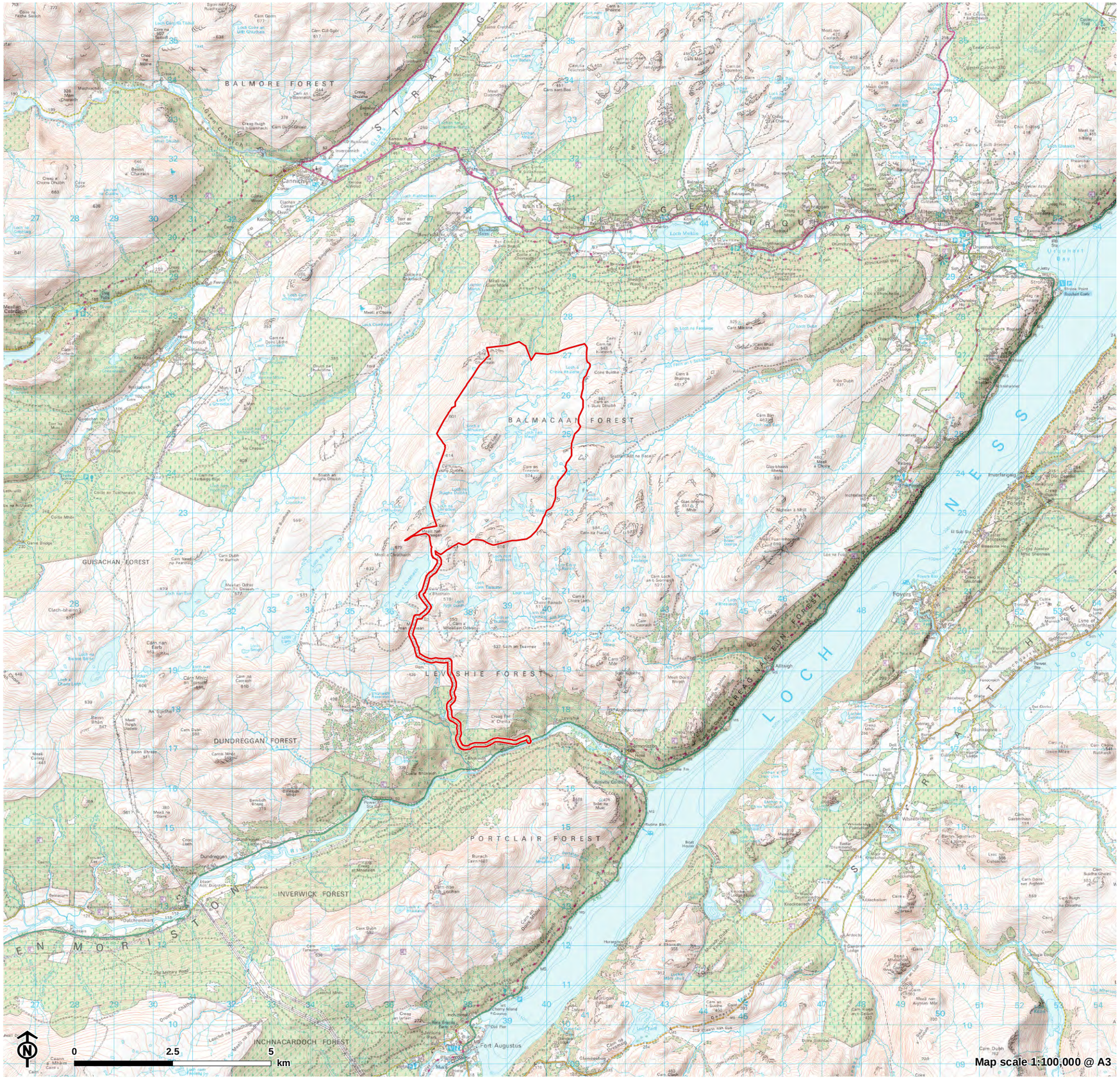
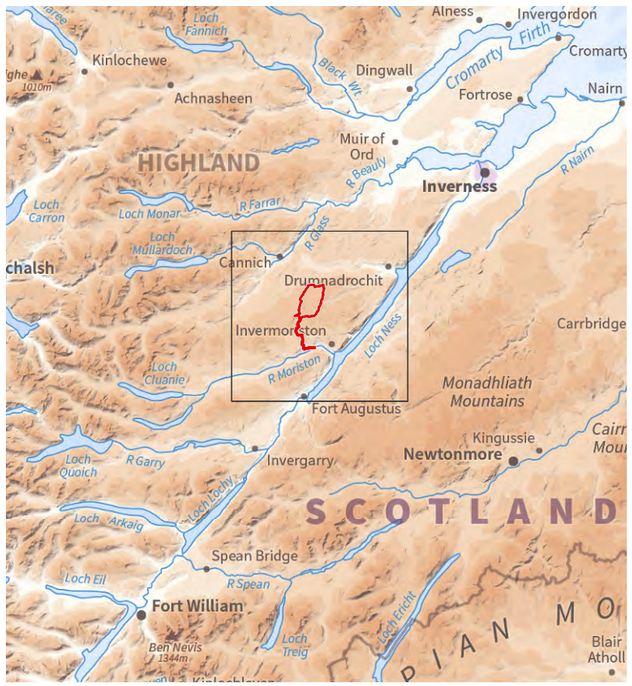
Figure 1: Site Location

Site boundary





Statkraft

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Source: Statkraft, LUC

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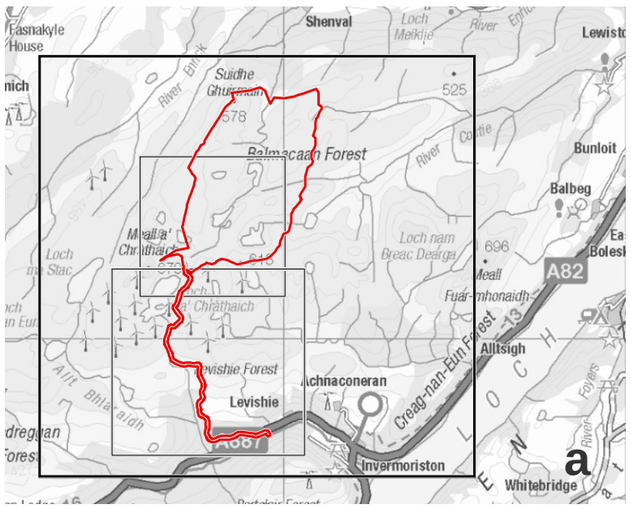
Figure 2: Site Layout

- Site boundary
- Turbine
- Construction compound
- Substation
- Borrow pit
- Temporary hardstanding
- Permanent hardstanding
- Met mast
- New access track
- New access track (floating)
- Existing access track



0 0.5 1 km

Map scale 1:45,000 @ A3

CB:SR EB:robertson_s LUC FIG02-00a-c_11057_r1_EIA_Site Layout_A3L 13/04/2023
Source: Statkraft, LUC

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Figure 3a: Layout 1: 26 Turbines up to 200m to Blade Tip (Scoping Layout)

Turbine

Site boundary

BALMACAAN FOREST

LEVISHIE FOREST

CREAG NAN EUN

Map scale 1:45,000 @ A3

0 1 2 km

CB:SR EB:robertson_s LUC FIG03-00a_11057_r0_EIA_Layout 1_A3L 13/04/2023
Source: Statkraft, LUC

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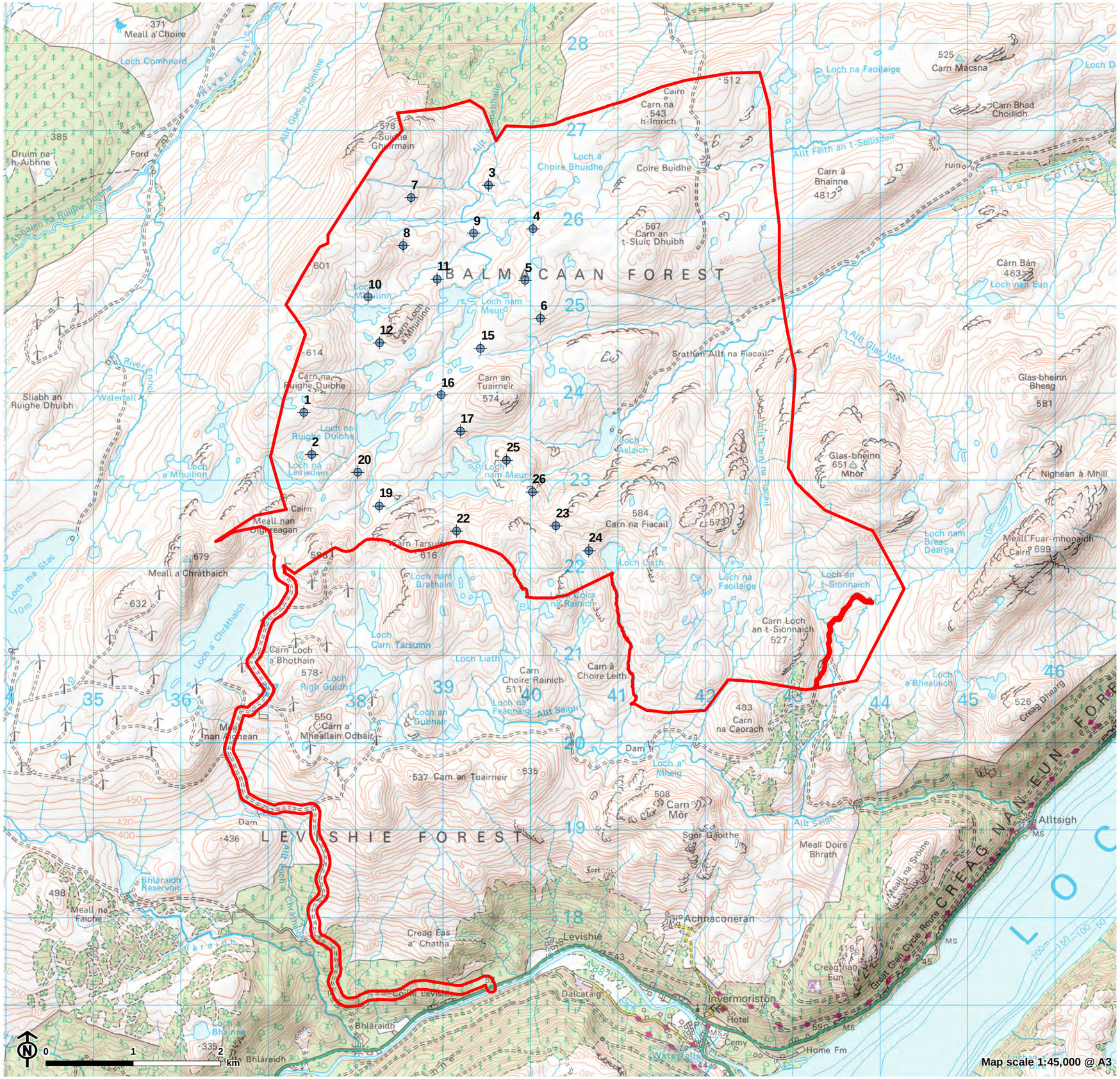
Figure 3b: Layout 2: 22 Turbines up to 200m to Blade Tip

Turbine
Site boundary



CB:SR EB:robertson_s LUC FIG03-00b_11057_r0_EIA_Layout 2_A3L 13/04/2023
Source: Statkraft, LUC

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Figure 3c: Layout 3: 20 Turbines up to 200m to Blade Tip

Turbine
Site boundary

Map scale 1:45,000 @ A3

CB:SR EB:robertson_s LUC FIG03-00c_11057_r0_EIA_Layout 3_A3L 13/04/2023
Source: Statkraft, LUC

Statkraft

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Figure 3d: Layout 4: 17 Turbines up to 200m to Blade Tip (this layout was presented to NatureScot and THC in November 2021)

Turbine
Site boundary

Map scale 1:45,000 @ A3

CB:SR EB:robertson_s LUC FIG03-00d_11057_r0_EIA_Layout 4_A3L 13/04/2023
Source: Statkraft, LUC

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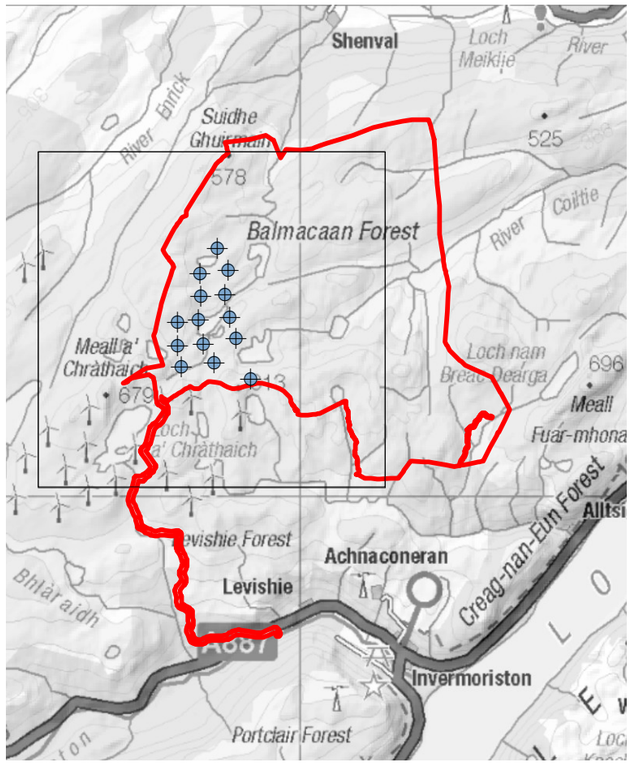
Figure 3e: Layout 5: 14 Turbines with a Mixture of Heights 180m/200m to Blade Tip

- Turbine
- Site boundary
- Proposed access track
- Borrow pit
- Construction compound
- Hardstanding
- Substation



Statkraft

Map scale 1:25,000 @ A3

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Source: Statkraft, LUC

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Figure 4: Core Paths and Rights of Ways Within 15km of Site Boundary

HI/HI53/1
HI/HI70/1
HI/HI52/1
HI/HI67/1
HI/HI71/1

- Site boundary
- Turbine
- 15 km from site boundary

Recreational routes

- The Caledonia Way (Sustrans)
- Loch Ness 360
- South Loch Ness Trail
- Meall Fuar-mhonaidh route
- Affric Kintail Way (indicative realignment)
- Great Glen Canoe Trail
- Great Glen Way
- Trail of the Seven Lochs
- Core Paths

Right of Way (Scotways)

- Other Route
- Recorded Rights of Way
- Right of Way

0 2.5 5 km

Map scale 1:160,000 @ A3

CB:SR EB:robertson_s LUC FIG05-00_11057_r0_EIA_CorePaths_ROW_15km_A3L 13/04/2023
Source: LUC, Statkraft, Scotways, NaturrScot, LDWA

Statkraft