GORDONBUSH EXTENSION WIND FARM

DESIGN STATEMENT

JUNE 2015

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Appendix 3.1: Design Statement

Contents

Comparative Wirelines

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1 INTRODUCTION & BACKGROUND

1.1 Background

1.1.1 SSE Generation Ltd (SSE) (the Applicant) is proposing to construct an extension to the operational Gordonbush Wind Farm. Gordonbush Extension Wind Farm (the Development) is located approximately 9.5km to the north-west of Brora within the Highland region of Scotland. The Development comprises of 16 wind turbines in total; 13 wind turbines at up to 130 metres (m) to blade tip and 3 wind turnines at up to 115m to blade tip, and would have an output capacity of 56MW. Consent for the Development will be sought by way of an application to the Scottish Ministers under Section 36 of The Electricity Act 1989.

1.1.2 Although a Design Statement is not a statutory requirement for Section 36 applications, the formal scoping opinion issued by the Energy Consents and Deployment Unit (ECDU) in December 2013 states within paragraph 7.3, that a design strategy for the wind farm should be expressed through a design statement which should demonstrate how the design principals associated with the Development have been applied to achieve a consistent and coherent layout.

Purpose of the Document

1.1.3 The purpose of this Design Statement is to outline the issues, constraints and decision making processes that have led to the design of the Development. This Design Statement is included as an appendix to the Gordonbush Extension Wind Farm Environmental Statement (ES) and accompanies the Section 36 application for the Development.

1.1.4 The Design Statement has been prepared in accordance with the guidance set out in Planning Advice Note (PAN) 68: Design Statements (2003) and SNH Siting and Designing Wind Farms (2014).

1.1.5 This Design Statement describes the iterative design process of the Development, including the design objectives that were formulated at the start of the design process and the alternative turbine layouts and heights that have been considered throughout the process.

1.2 The Proposed Development

Site Details

Location

1.2.1 The Development is located on Gordonbush Estate approximately 9.5km to the north-west of the village of Brora, in Sutherland. The Development lies to the south-west of Gordonbush Wind Farm.

Description

1.2.2 The Development is located in an area of moorland plateau and the ground elevations range from approximately 150m Above Ordnance Datum (AOD) in the south-west of the site to approximately 330m AOD in the north-east of the site.

1.2.3 The site is located between Strath Brora and Strath of Kildonan and is surrounded by higher landform to all sides other than the west (see Section 2.3.30 to 2.3.34 of this Design Statement for a more detailed site appraisal).

Access

1.2.4 The principal construction and operations access to the site would utilise the same delivery route used for Gordonbush Wind Farm, including routes taken for abnormal loads; from the A9 trunk road at Brora, the route would turn west along an unclassified road past the Clynelish Distillery to meet the C6 Strath Brora road.

The Proposal

1.2.5 The Development would include the following components:

- 16 wind turbines (with an output of up to 56MW) comprising:
  - 13 turbines at up to 130m tip height; and
  - 3 turbines at up to 115m tip height.
- Crane hardstanding area at each wind turbine location with a maximum area of 1900m^2;
- One permanent meteorological mast at up to 90m in height and associated hardstand with a maximum area of 840m^2;
- An operations building with parking for operational and maintenance staff;
- On site access tracks (of which approximately 7.96km are new access tracks and approximately 11km are existing tracks where upgrades may be undertaken to facilitate delivery of the wind turbine components);
- A network of underground cabling to connect each wind turbine to the existing onsite substation;
- Modifications to the existing on site control building and grid substation to accommodate additional cables and equipment; and
- Any associated ancillary works required.

1.2.6 In addition to the above components of the operational wind farm, the construction phase will require the following:

- A temporary concrete batching plant;
- Temporary telecommunication infrastructure;
- A temporary meteorological mast;
- A temporary construction compound and storage area; and
- Reopening and extension of two of the original on site borrow pits developed as part of the Gordonbush Wind Farm.

1.2.7 Existing infrastructure from the operational Gordonbush Wind Farm would be utilised for the Development where possible and is therefore included within the site boundary. This

includes the use of the existing substation for the grid connection; existing access tracks and two of the original borrow pits.

1.2.8 Further details of the above components of the Development are contained within Chapter 4: Description of Development of this ES.

2 THE DESIGN PROCESS

2.1 Site Selection

2.1.1 Gordonbush Extension Wind Farm has been selected as a suitable site for wind energy development due to environmental and technical considerations identified during the site selection and feasibility process, including:

- Excellent wind resource;
- Good access to site following upgrades to the local road network during the construction of Gordonbush Wind Farm;
- Proximity to transmission network and capacity within existing substation (at Gordonbush Wind Farm);
- Absence of nature conservation designations on the site;
- Located outwith any National Parks or National Scenic Areas;
- Sparsely populated area reducing the likelihood for unacceptable impacts on local residents;
- Gordonbush Wind Farm became operational in June 2012 and it generated enough renewable electricity to power around 60,000 homes during its first year[1]. It is considered to be one of SSE's best performing sites;
- Opportunity to expand an operational wind farm site, increasing operating efficiency whilst minimising additional environmental effects when compared to a new site for a project of a similar size;
- Located within an Area of Search for wind farm development, as identified by The Highland Council (THC) (March 2012);
- Located outwith, but adjacent to a Wild Land Area identified by Scottish Natural Heritage (SNH); and
- Location in which a development can accord with the principle set out in Scottish Planning Policy in relation to renewable energy.

[1] Based on average household consumption of 3,200 kWh a year

2.1.2 A core development area was established whereby all technical and environmental studies would be focussed to determine where wind turbines could be located to maximise energy yield and minimise significant environmental effects.

2.1.3 Environmental assessment work on Gordonbush Estate has been on-going for over a decade as part of the design, development, construction and on-going monitoring of the Gordonbush Wind Farm. This information has been drawn upon where relevant to inform the design and throughout the EIA process.

2.2 Planning Policy & Guidance

2.2.1 The design of the Development has taken into consideration relevant planning policy. The relevant documents considered in terms of location, siting and design of the Development are listed in the following section.

National

Scottish Planning Policy (SSP) (2014)

2.2.2 In terms of onshore wind, paragraphs 161 to 166 of the SPP note that planning authorities should generally set out in the Development Plan a spatial framework identifying those areas that are likely to be most appropriate for onshore wind farms as a guide for developers and support the development of wind farms in locations where technology can operate efficiently.

2.2.3 To provide guidance on appropriate locations, a spatial framework table is included in the SPP which sets out three groups; Group 1 contains areas where wind farms will not be accepted, i.e. National Parks and National Scenic Areas; Group 2 lists areas of significant protection where it should be demonstrated that effects can be overcome by siting, design or mitigation, and include international and national designated areas, other national mapped interests (e.g. wild land) and areas of separation from communities to limit visual impact; and Group 3 areas (all other areas) where wind farms are likely to be acceptable subject to detailed consideration against identified policy criteria.

2.2.4 It should be noted that the Development is not located within either Group 1 or Group 2 and is therefore classed as a *"Group 3"* area.

Regional

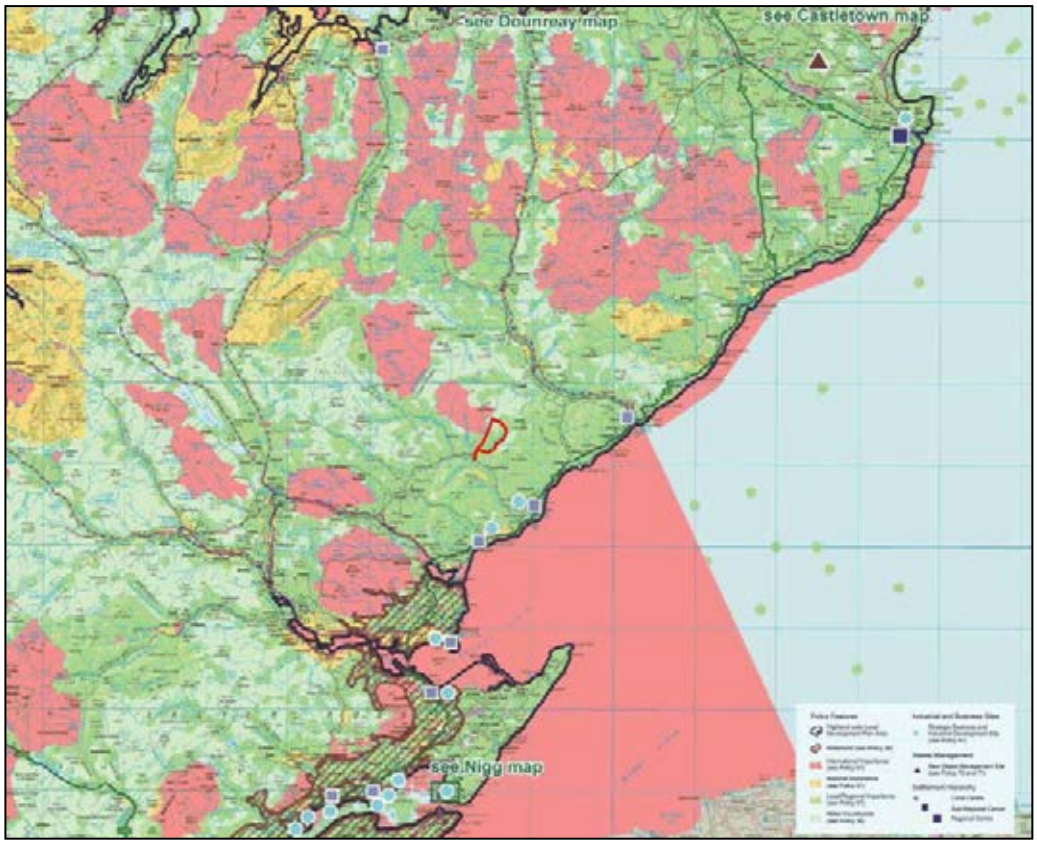
Highland Wide Local Development Plan (HwLDP) (2012)

2.2.5 The HwLDP was adopted by The Highland Council in April 2012, superseding the general policies and most other related material of the area Local Plans. It sets out the overarching vision statement, spatial strategy and general planning policies for the whole of The Highland Council area. In addition, this includes a Proposals Map (as shown in Plate 1) and Supplementary Guidance.

2.2.6 The key renewable energy policy in HwLDP, and relevant to this application is Policy 67: Renewable Energy Developments. It states that the Council will support a proposal where it is satisfied they are located, sited and designed and that they will not be significantly detrimental, individually or cumulatively with other developments.

2.2.7 This Design Statement, along with the ES and Planning Statement provide evidence that the final layout has considered and is compliant with the requirements contained in the relevant policies within the HwLDP.

Plate 1: The Development in the context of the HwLDP Proposals Map



Sutherland Local Plan (SLP) (2010) & Caithness and Sutherland Local Development Plan (CaSPlan)

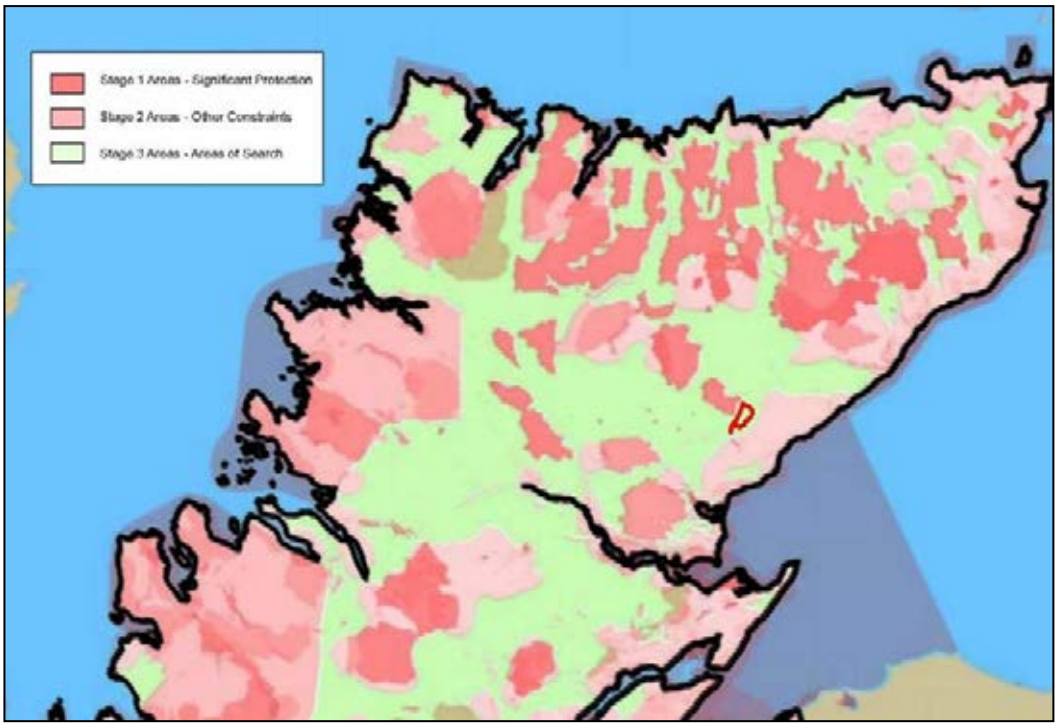
2.2.8 The general policies within the SLP were superseded when the HwLDP was adopted; however, site specific policies have been retained until these are replaced by one of three area plans, including the CaSPlan, which is expected to be published in 2017. The SLP has no specific policies relating to wind farms, the site or the locality of the proposed Development.

Interim Supplementary Guidance: Onshore Wind Energy (2012)

2.2.9 The Onshore Wind Energy Supplementary Guidance has replaced parts of the Highland Renewable Energy Strategy and Planning Guidelines (2006). The guidance sets out the spatial framework for onshore wind energy developments and develops further detail on guidance provided in policy 67 (Renewable Energy Developments) of the HwLDP. It states that further onshore wind developments will be required to meet UK and Scottish targets and paragraph 2.3 states that the spatial framework does not prevent large wind energy developments in any part of Highland, provided constraints have been assessed and considered.

2.2.10 It identifies areas of the Highlands that require significant protection (stage 1), areas with potential constraints (stage 2), which consider matters relating to the historic environment, regional or local landscape and natural heritage designations, tourism and recreation, community, aviation; and finally identified areas of search (stage 3). These are areas where there are no significant constraints on development and where appropriate proposals are likely to be supported subject to detail consideration against identified criteria. The Development is located entirely within the Council's defined Area of Search for wind energy development, as shown in Plate 2, and is therefore in accordance with the Councils spatial strategy.

Plate 2: The Development in the context of Interim Supplementary Guidance: Onshore Wind Energy



2.3 Environmental & Technical Constraints

2.3.1 Having considered the merits of developing the site in general, this section of the Design Statement covers the appraisal of constraints associated with the site.

2.3.2 The design of the Development is determined through two main considerations; technical and environmental constraints, and landscape and visual design principles. Technical and environmental constraints are those such as ecological and ornithological issues, ground conditions, steepness of slope, and so on. This information is compiled into constraints mapping, which identifies the areas of the site that are most and least constrained for development.

2.3.3 The layout is determined to some degree by these technical and environmental constraints, as these can provide rigid limitations to development. However, within the parameters laid down by technical and environmental constraints, the landscape and visual

design principles are of paramount importance, particularly in relation to the existing wind farm.

2.3.4 The design principles need to be strongly influenced by the relevant guidance. They are also informed by the good practice guidance provided in the second edition of *Siting and Designing Wind Farms in the Landscape* (SNH, 2014) (see section 2.3.39 to 2.3.36).

Environmental Constraints

Environmental Designations

2.3.5 The Development is not located within any areas covered by statutory designations; however, designations of varying importance are present in the wider area, as detailed below.

International

2.3.6 The Caithness and Sutherland Peatlands Special Area of Conservation (SAC) and Ramsar site designated for its upland wetland and peatland habitats and species, and also the Caithness and Sutherland Special Protection Area (SPA) designated for its nationally important populations of raptors, wildfowl and waders are located within 2km of the Development to the north-west.

National

2.3.7 Two statutorily designated sites lie within 5km of the Development site, Coir' an Eoin Site of Special Scientific Interest (SSSI) to the west, which is part of the Caithness and Sutherland Peatlands Special Area of Conservation (SAC), and Carrol Rock SSSI on the south-westerly shore of Loch Brora. Coir' an Eoin SSSI is designated for its upland wetland and peatland habitats and species, including blanket bog and otter. Carrol Rock is designated for its block scree birch woodland.

2.3.8 The closest National Scenic Area (NSA) to the site is the Dornoch Firth NSA, located approximately 22km to the south. At this distance, no affects are anticipated.

2.3.9 The Ben Klibreck – Armine Forest Wild Land Area (WLA) borders the western extent of the development boundary and the Causeymire – Knockfin Flows WLA is located approximately 10.5km to the north-east of the site. Within paragraph 215 of SPP, it states the need for development to *"demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation"*.

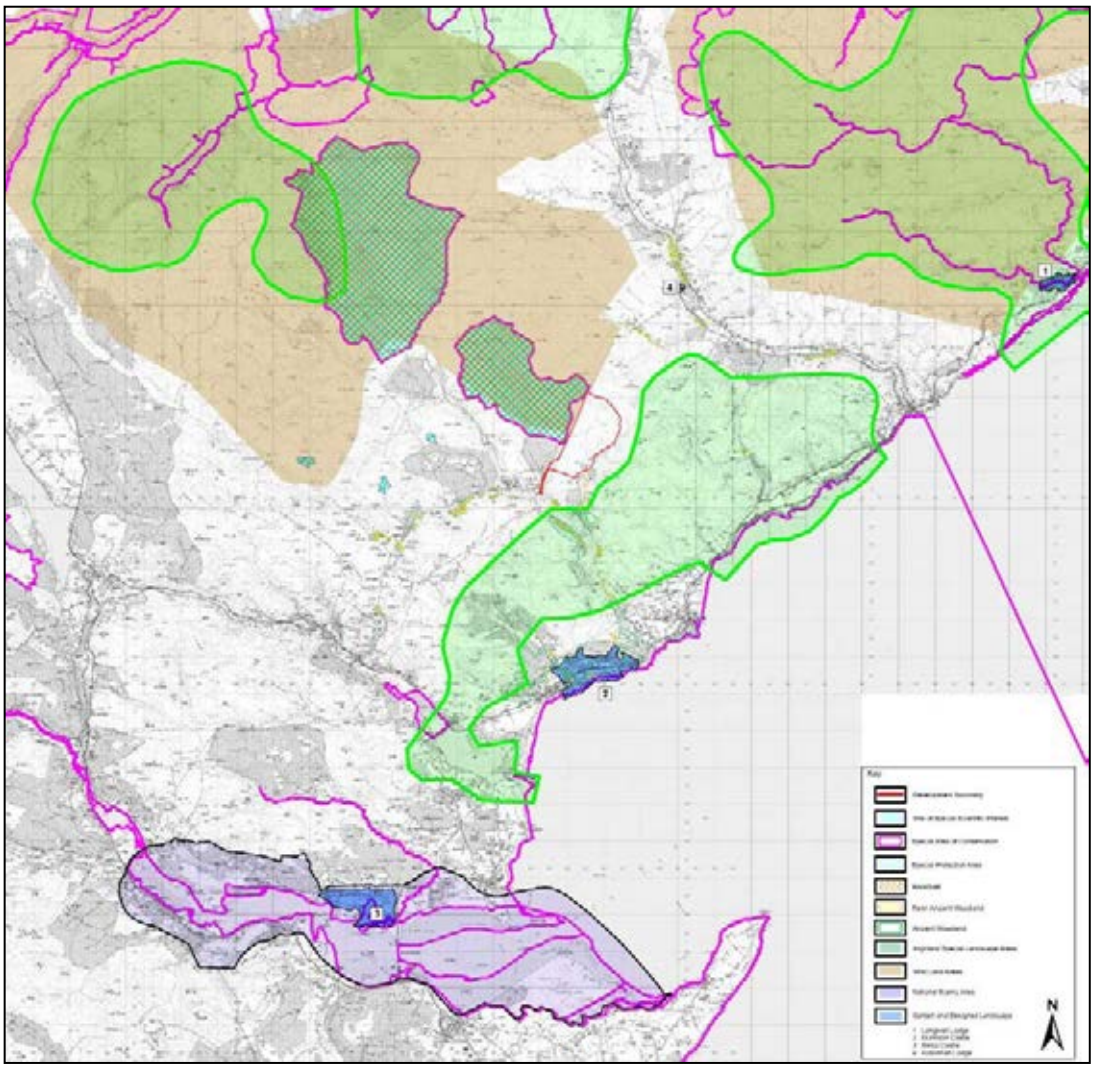
Local & Other Designations

2.3.10 There are four Special Landscape Areas (SLA) identified and designated by The Highland Council in its document 'Assessment of Highland Special Landscape Areas' 2011 within the study area. These include The Flow Country and Berriedale Coast SLA; Bens Griam and Loch nan Clar SLA; Ben Klibreck and Loch Choire SLA; and Loch Fleet, Loch Brora and Glen Loth SLA, which is the closest SLA to the Development at approximately 1.6km to the east. The SLAs have been considered in terms of design by understanding how the special qualities of and potential views from the SLAs may be affected, and including viewpoints where appropriate.

2.3.11 Gardens and Designed Landscapes (GDL) in the surrounding area listed in 'An Inventory of Gardens and Designed Landscapes in Scotland' (Historic Scotland, 2012) include Langwell Lodge (25km, northeast); Dunrobin Castle (9km, south); Skibo Castle (24km southwest); Dunbeath Castle (33km, north-east); House of the Geanies (33km, south-east); and Kildonan Lodge (9km, north).

2.3.12 Areas of ancient semi natural woodland are found within Strath Brora and the lower parts of the Allt Smeorail valley.

Plate 3: Environmental Designations



Habitats and Protected Species

2.3.13 An extended Phase 1 Habitat survey was undertaken, supplemented by a National Vegetation Classification (NVC) survey of UK Biodiversity Action Plan (BAP) priority habitats. Protected mammal and animal surveys were also undertaken.

2.3.14 The presence of valued ecological receptors including Ground Water Dependent Terrestrial Ecosystems (GWDTEs) were also identified and considered during the iterative design process. The intention was to not locate turbines within areas classed as highly

groundwater dependent, such as habitat type M6c, and outwith habitat areas classified as moderately groundwater dependent, where possible.

Ornithology

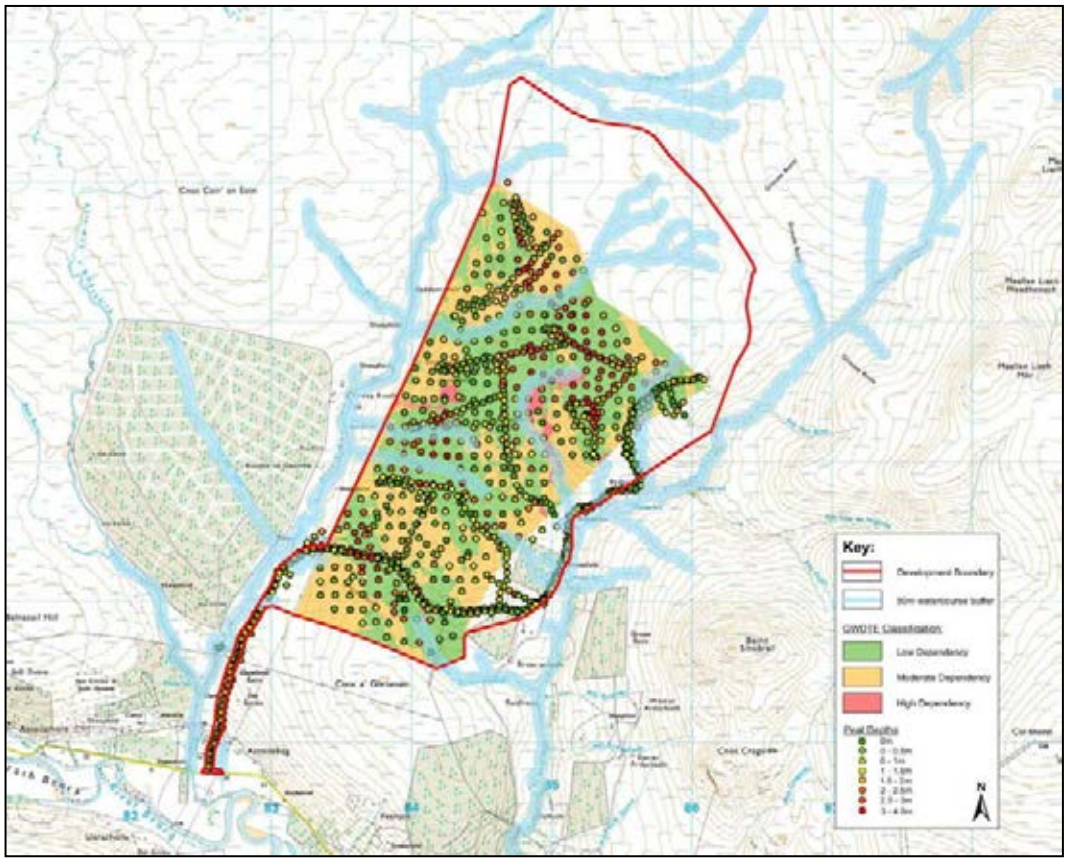
2.3.15 Birds breeding on the site of the Development were surveyed with results supplemented by historical data and concurrent monitoring data from the adjacent Gordonbush Wind Farm, which covered the extension search area, to determine nesting locations and flight lines of species named within Annex 1 of The Birds Directive, or European Directive 2009/147/EC. These were mapped, and it was considered that there would be no significant effects on raptors or other sensitive species within the development boundary, or within the disturbance distance of the boundary. As such, bird constraints did not influence the design of the wind farm.

Hydrology, Hydrogeology & Geology

2.3.16 All water courses visible on OS 1:50,000 mapping were identified and a buffer of 50m was applied between a watercourse and the positioning of a turbine.

2.3.17 A peat depth survey was undertaken to identify peat depths and to inform a layout which minimises peat slide risk where practicable. Results indicate that the majority of the site comprises of peaty / thin soil <1m in depth; however, pockets of deeper peat (>2m) do exist, and these areas were taken into consideration and avoided during the design process. The ground conditions determined the design of new access track and whether they would be cut design or float design.

Plate 4: Hydrological & Geological Constraints



Noise

2.3.18 Potential noise effects arising from the construction and operation of the Development have been considered. The nearest residential property to the Development is located approximately 2km to the south-west (Ascoile).

2.3.19 The design process aimed to locate turbines at a sufficient distance to nearby residential properties, in order to reduce significant noise levels associated with the Development.

Cultural Heritage

2.3.20 There are no Scheduled Monuments, Listed Buildings, Conservation Areas, Inventoried Battlefields or Garden and Designed Landscapes within the development boundary.

2.3.21 A number of archaeological features were recorded within the development boundary during recent field work, as well as from previous reported archaeological investigations undertaken for the original Gordonbush Wind Farm and the Beauly to Dounreay 275kV overhead transmission line. The design iteration process has sought to minimise potential impacts on these features of cultural heritage interest.

Cumulative

2.3.22 There are a number of existing wind farms in the area. There are currently 6 operational wind farms within the 35km study area, comprising: Gordonbush, Kilbraur and its Extenstion, Achany, Lairg and Rosehall. In addition, a further 4 wind farms are at application stage comprising: West Garty, Braemore, Creag Riabhach and Strathy South. There are no consented developments within the study area.

2.3.23 The cumulative situation changes frequently as applications are made, or withdrawn and layouts of submission applications are changed. Therefore a cut off date of 28th February 2015 has been applied.

2.3.24 Cumulative impacts can arise between wind farms and this needs to be considered and taken into account during the design process. For this Development, careful consideration is required to the coherence of the design with the adjacent Gordonbush Wind Farm, and Kilbraur its Extension located on the opposite side of Strath Brora glen.

Technical Constraints

Turbine Separation

2.3.25 Appropriate positioning of turbines relative to one another must be taken into consideration to ensure that each wind turbine operates as efficiently as possible. To determine optimum spacing factors such as average wind speed, flow turbulence and wind direction all need to be taken into account. In addition, appropriate separation from Gordonbush Wind Farm infrastructure (particularly wind turbines) was also considered. As a general rule, a separation ellipse of 5 x 5 rotor diameters was defined.

Grid Infrastructure

2.3.26 The Beauly to Dounreay 275kV overhead transmission line runs alongside the western extent of the Development boundary. As such, a separation equating to topple distance (130m) + 10% would be maintained.

Topography / Gradient

2.3.27 No wind turbines should be located on steep ground.

Landscape & Visual

2.3.28 Potential impacts to landscape character, visual amenity and wild land were an important factor in this iterative design process. The appearance of the Development within the context of Gordonbush Wind Farm is of key importance in those locations where the operational wind farm is already visible. The process of the landscape and visual design of the Development is initiated by an appraisal of the site and closer study area, which identifies the issues that would need to be considered in the design of the Development. This is then followed by the formulation of the Design Principles that should be followed in the design of the Development. This information is then considered in Section 3 of this report, which describes the design iterations in relation to various aspects of the design process.

Site Appraisal

2.3.29 A description of the baseline landscape and visual resource around the site and study area is included in Chapter 7 (Landscape and Visual Impact Assessment) of this ES. The information that is most relevant to the Design Statement is summarised below.

2.3.30 The Development site consists of a single large-scale slope of moorland that ranges from approximately 150m Above Ordnance Datum (AOD) in the south-west of the site to approximately 330m AOD in the north-east of the site. All sides of the site other than the west are surrounded by higher landform; to the west and south-west, the slope of the site continues to fall into the valley of the Allt a' Mhuilinn before rising gently again into a series of cnocan. To the north-east of the site, the moorland slope continues to rise up to Cnoc a' Chrubaich Mhoir, and on this slope, above the site, is the operational Gordonbush Wind Farm. Landform around the site and the study area can be seen on ES Figure 7.2.

2.3.31 To the south of the site is Strath Brora, separated from the site by the landform of Cnoc a' Ghrianain (214m AOD). The strath is particularly enclosed at this point, contained to the north by Cnoc a' Ghrianain and to the south by Kilbraur Hill (324m AOD) and Carrol Rock. Loch Brora lies within the strath due south of the site. The minor road that links Brora to Rogart also runs through Strath Brora at this point, passing to the south of the site in the narrow corridor between Loch Brora and Cnoc a' Ghrianain. Around 5km to the south of the site, on the north-west-facing slopes of Meall Horn and Meall Odhar, is the operational Kilbraur Wind Farm.

2.3.32 Immediately to the west of the site, east of the Allt a' Mhuilinn, is a 275kV overhead transmission line which marks the eastern edge of the Ben Klibreck - Armine Forest Wild Land Area (WLA).

2.3.33 The operational Gordonbush Wind Farm lies to the north-east of the Development and consists of 35 turbines arranged in rows that radiate from the landform of Cnoc a' Chruabaich Mhoir, running broadly south-east to north-west. The lowest turbine, in the south-west, is at 277m AOD while the most elevated turbine, in the north-east, is at 399m AOD. The wind farm has a distinctive appearance of following the long, sloping hillside in orderly rows. The operational turbines are 110m to blade tip, with a 69m hub height and 82m rotor diameter. The rotor speed of the turbines is 8.5 to 17.1 revolutions per minute (rpm).

2.3.34 The operational wind farm abuts the Development site, ensuring that a high level of visual and physical cohesion can be achieved through careful consideration of the layout, scale, turbine dimensions, rotor speed and number of turbines in the Development. Integration between the Development and the operational wind farm is an important factor in the minimisation and reduction of the effects of the Development itself, and the avoidance of potential cumulative effects that may arise between the operational and proposed turbine groups.

2.3.35 There are a number of sensitive landscape and visual receptors that lie in reasonable proximity to the Development, the most notable of these include:

- Ben Klibreck - Armine Forest Wild Land Area (WLA);
- Loch Fleet, Loch Brora and Glen Loth SLA;
- The minor road (C6) from Brora to Rogart, which runs through Strath Brora;
- Core paths;
- Properties in Strath Brora, and
- Strath Brora and Loch Brora.

2.3.36 In order that potential effects on sensitive receptors such as these are considered in the design of the Development, a series of key viewpoints (see Table 1) that represent views from sensitive landscape and visual receptors were selected as design viewpoints against which to test wirelines for each turbine layout option. Wirelines that show some of the turbine layout options from these viewpoints are shown in Figures 1 to 6 in order to illustrate the iterative design process.

Table 1: List of Key Viewpoints

VP No.	Viewpoint Name	Co-ordinates	Reason for Inclusion	Approximate Distance (to development boundary)
ES Viewpoint 2	Loch Brora (south-west side)	284710, 908389	Viewpoint on the west Loch Brora core path, at a location where the operational wind farm is not visible. Within the Loch Fleet, Loch Brora and Glen Loth SLA.	3.6km
ES Viewpoint 3	Brora to Rogart minor road south of Killin	285892, 905961	Viewpoint to represent the first clear visibility of the Development as gained by westbound travellers on this road. No visibility of the operational Gordonbush Wind Farm. Within the Loch Fleet, Loch Brora and Glen Loth SLA.	3.2km
ES Viewpoint 4	Brora to Rogart minor road north of Killin	285565, 907283	Viewpoint approximately 1.5km west of Viewpoint 3, which illustrates how visibility decreases along the road before ceasing several hundred metres to the west of this viewpoint. No visibility of the operational Gordonbush Wind Farm. Within the Loch Fleet, Loch Brora and Glen Loth SLA.	4.4km
ES Viewpoint 5	Strath Brora near Balnacoil	281797, 910867	Viewpoint located to the south of the minor road, included to show visibility that may be gained by people walking beside the river. Visibility from the road itself is screened by woodland in this area.	750m
ES Viewpoint 6	Brora to Rogart minor road near Sciberscross	278487, 910447	View gained by eastbound travellers on the minor road, with the operational Gordonbush and Kilbraur Wind Farms clearly visible.	4.0km
ES Viewpoint 11	Hope Hill	277861, 918871	Viewpoint within the Ben Klibreck-Armine Forest Wild Land Area. Visibility of the operational Gordonbush Wind Farm.	7.9km

2.3.37 More detail on the landscape and visual assessment is contained within Chapter 7 (Landscape and Visual Assessment) of this ES.

Design Principles

2.3.38 As described in Section 2.3.2 and 2.3.3, the design of the Development is determined through two main considerations, technical and environmental constraints and landscape and visual design principles. The layout is determined to some degree by these technical and environmental constraints, as these can provide rigid limitations to development. However, within these parameters, the landscape and visual Design Principles are of paramount importance.

2.3.39 A total of three Design Principles have been applied at the Development, based on the baseline information that is summarised in the Site Appraisal (Section 2.3.28 – 2.3.36) of this Design Statement). Guidance contained within the SNH report, Siting and Designing Wind Farms in the Landscape, Version 2 (May 2014) is considered throughout the design process, as is consultation with SNH and THC. The Design Principles are described below.

Relationship with Baseline Wind Farm Development

2.3.40 The Development will abut Gordonbush Wind Farm, and it is important that the Development integrates as closely as possible with the operational wind farm in order that the overall Gordonbush wind energy development presents a coherent, integrated and strategic approach.

2.3.41 The relationship of the Development with Kilbraur Wind Farm (and its Extension) should also be considered due to its proximity and the relationship between development at Gordonbush and Kilbraur, which lie on the northern and southern sides of Strath Brora respectively. The key issue here is that separation is retained between the Development and Kilbraur in order to avoid perceived or actual coalescence between the clusters of wind farm development, and also to avoid perceived encroachment on Strath Brora, which lies between the two wind farm clusters.

2.3.42 The factors that will fulfil this Design Principle include the following:

- The Development should be as similar as possible to the operational Gordonbush Wind Farm in terms of extent, layout, orientation, and appearance;
- Turbine dimensions and the number of turbines in the Development should be informed by both the operational Gordonbush Wind Farm and the scale and nature of the surrounding landform and landscape character;
- Where the operational Gordonbush turbines are not visible, the Development should appear as a cohesive, well-designed and appropriately-located entity in itself;
- The Development should consistently appear to be associated with the upland moorland landscape, and be associated with the same landform features and skyline as baseline wind farm development;
- Physical, visual and perceived separation should be clearly maintained between the Development and Kilbraur Wind Farm; and
- Existing infrastructure should be used wherever possible.

An Appropriate Location in the Landscape

2.3.43 One of the key issues of wind farm development in this area, where the uplands are interspersed by strath landscape, is the specific location and extent of the Development. The upland landscape is generally considered to be appropriate for wind energy development because of its large scale, simplicity, relatively uniform landscape patterns (including the presence of baseline wind farms) and ground cover, and it is important that the Development has a strong association with the upland landscape and does not appear to encroach down into the smaller-scale, more enclosed and complex strath landscape. The blurring of distinctions between landscape types that can occur where wind farm development is perceived as directly affecting two or more quite different landscape character types, such as the upland and strath types, should also be avoided. The factors that will fulfil this design principle are as follows:

- The landform of Cnoc a' Ghrianain provides a clear visual and physical division between the strath and the uplands, and the southern extent of the Development should be contained within this;
- The Development should be contained on and relate to the same long, simple moorland slope (running from Cnoc a' Chrubaich Mhoir in the north to Cnoc a' Ghrianain in the south and contained to the west and east by the valleys of Allt a' Mhuilinn and Allt Smeorail) that accommodates the operational Gordonbush Wind Farm, with no encroachment into adjacent, less uniform and more complex strath and valley landscapes;
- The extent of the Development and the scale of the turbines should not overwhelm the scale and extent of this moorland slope or the surrounding landscapes;
- Turbine bases should not be visible from the part of Strath Brora that lies immediately to the south of the site; and
- The Development should reflect and accord with the landscape patterns of the site and its close surroundings (including the baseline wind farm development).

Consideration of Sensitive Receptors

2.3.44 Effects on sensitive landscape and visual receptors, including the Ben Klibreck - Armine Forest WLA; the Loch Fleet, Loch Brora and Glen Loth SLA; the minor Brora to Rogart road; core paths; properties in Strath Brora; and Strath Brora and Loch Brora, should be avoided, minimised or reduced, where possible.

2.3.45 This Design Principle will be fulfilled in part by the factors listed for the two previous Design Principles. Additional factors include the following:

- The Development should have a cohesive, logical and balanced appearance from all locations, and particularly in views from the key sensitive receptors, both when seen in conjunction with the operational Gordonbush Wind Farm and when seen in isolation;
- The Development should appear to be of appropriate scale in relation to landform and landscape patterns, avoiding uncomfortable comparisons and interruption of local landmarks and focal points (i.e. Carrol Rock and Beinn Smeorail); and
- The extent and nature of visibility from sensitive receptors should be carefully reviewed and considered at each stage in the design process, and visibility reduced when required.

2.3.46 The implementation of these Design Principles throughout the design process is described in Section 3.

3 DESIGN ITERATIONS

3.1 Wind Turbines

3.1.1 The design of the Development has evolved through an iterative process, responding to the various technical and environmental constraints that have become apparent during the site survey work before reaching a 'final' layout for the site, for which consent is now being sought.

3.1.2 A core development area was initially established, and included within the scoping report, whereby all technical and environmental studies would be focussed to determine where turbines could be located to maximise energy yield and minimise significant environmental effects. The aim was to use the existing infrastructure from the operational wind farm wherever possible.

3.1.3 A brief description of the key design iterations between scoping stage and design freeze are detailed below.

<u>Design 1 (September 2013) and Design 2 (October 2013)</u>

3.1.4 Two initial layouts were put forward as a starting point for the design iteration and EIA process. Design 1 included a total of 20 turbines, whilst Design 2 included a total of 18 turbines. In both layouts, turbines were located to maximise energy yield from the available space within the core development area. Turbines were proposed to have a tip height of 132m.

Plate 5: Design 1 (September 2013)

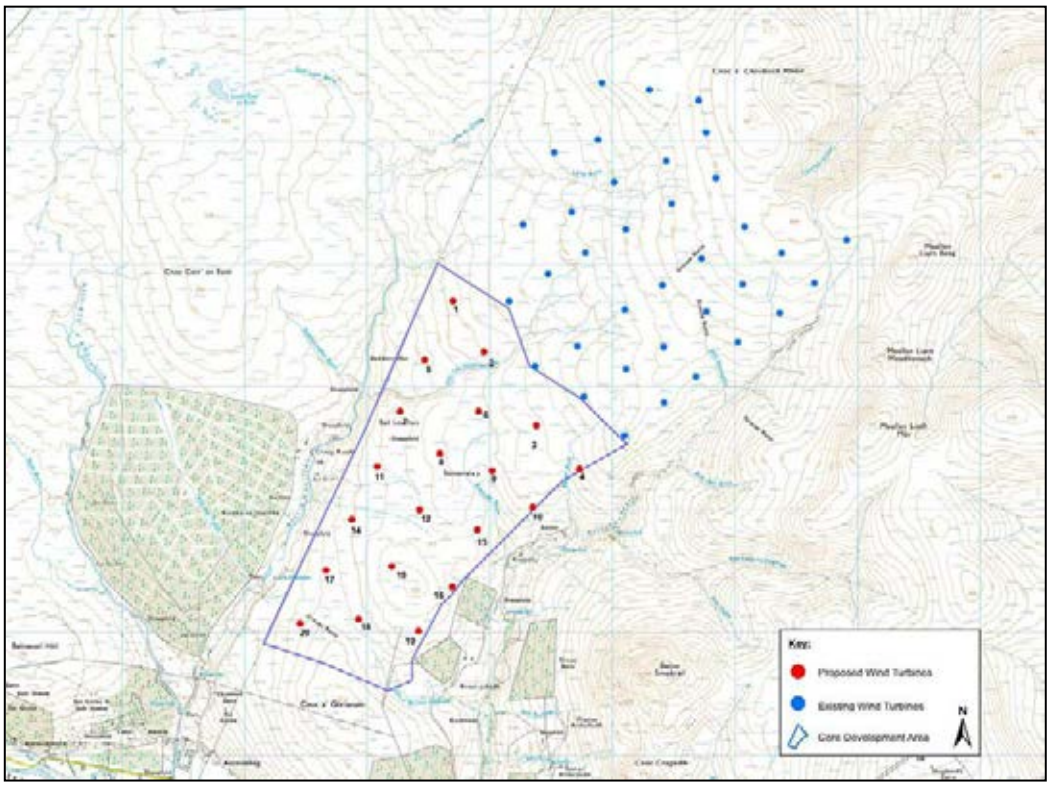
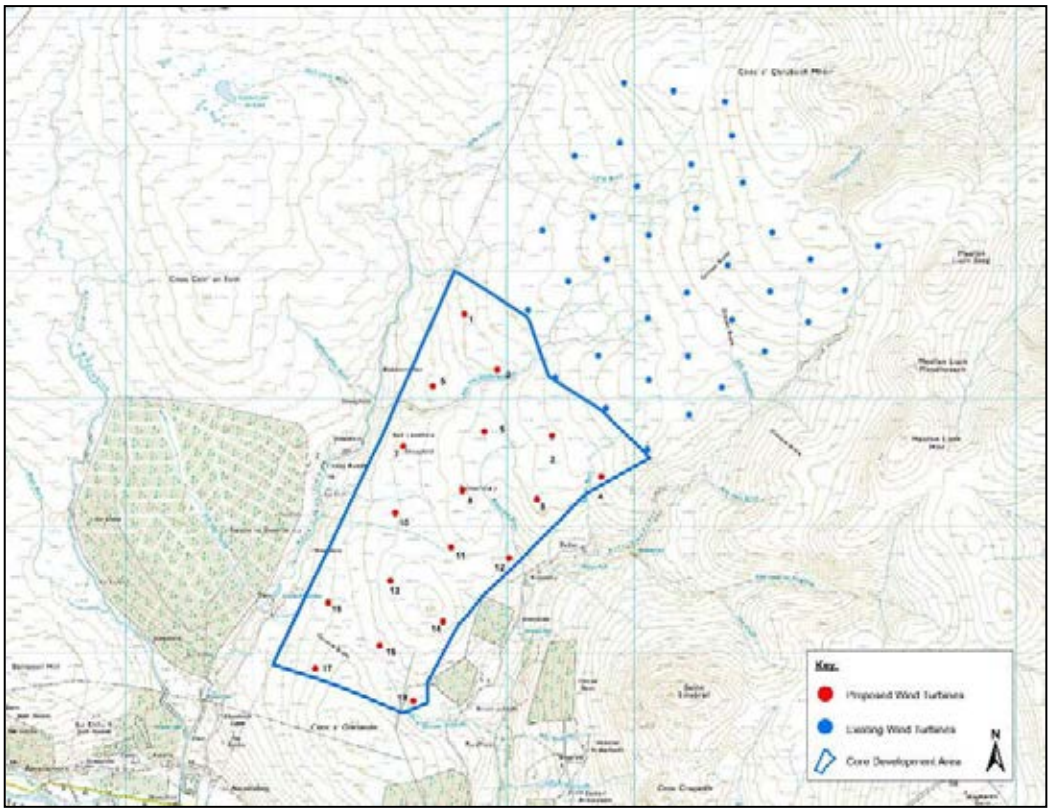


Plate 6: Design 2 (October 2013)



3.1.5 These layouts had no landscape and visual input and the issues arising from it formed the basis for the formulation of the Design Principles and informed the ongoing design process.

3.1.6 The following key issues, which are described in relation to the Design Principles, were identified:

- *Relationship with Baseline Wind Farm Development:*
  - The 'row' design of the operational Gordonbush Wind Farm is not reflected in the turbine layout (as seen in the wireline for Viewpoint 6, Figure 5);
  - The Development doubles the north-south extent of the operational Gordonbush Wind Farm, not respecting the scale and extent of the operational site, or the landform of Cnoc a' Ghrianain at the southern end of the site;
  - The Development turbines are all 22m higher to blade tip than the operational turbines;
  - Where it is seen in isolation, without the operational wind farm, the Development lacks cohesion and balance (as seen in the wirelines for Viewpoints 2, 3, 4 and 5, Figures 1 and 4);
  - The Development extends beyond the southern end of the long moorland slope onto the slopes of Cnoc a' Ghrianain, and is thus associated with various different landform features; and
  - Separation from Kilbraur Wind Farm is relatively close, at just over 4km (as seen in the wireline for Viewpoint 11, Figures 6).
- *An Appropriate Location in the Landscape:*
  - The Development extends onto the slopes of Cnoc a' Ghrianain, and is thus associated with both the uplands and the strath rather than being contained within the uplands (as seen in the wireline for Viewpoint 5, Figures 4);

- The Development appears to overwhelm the landform of Cnoc a' Ghrianain; and
- The Development extends beyond the large-scale, open upland area where landscape patterns are considered to be appropriate for wind farm development, encroaching towards the more complex and enclosed landscape of Strath Brora (as seen in the wirelines for Viewpoints 2, 3, 4, 5 and 6, Figures 1 to 5).

- *Consideration of Sensitive Receptors:*
  - The Development has a high level of visibility from extensive parts of Strath Brora and Loch Brora (including parts of the SLA, the Brora to Rogart road and core paths) as seen in the wirelines for Viewpoints 2, 3, 4, 5 and 6 (Figures 1 to 5);
  - The Development has a high level of visibility from the WLA and notably extends the wind farm influence seen in the setting to the WLA, as seen in the wireline for Viewpoint 11 (Figure 6);
  - The Development lacks cohesion and balance when seen by itself in views from sensitive receptors (as seen in the wirelines for Viewpoints 2, 3, 4 and 5, Figures 1 to 4), and when seen in association with the operational wind farm, the additional extent and variation in scale is apparent (as seen in the wirelines for Viewpoints 6 and 11, Figure 5 and 6); and
  - The Development is seen in direct relation to the focal point of Beinn Smeorail in some views from Strath Brora (as seen in Viewpoint 5, Figure 4).

3.1.7 These issues were considered in the design iteration process that led to Design 3, as described below.

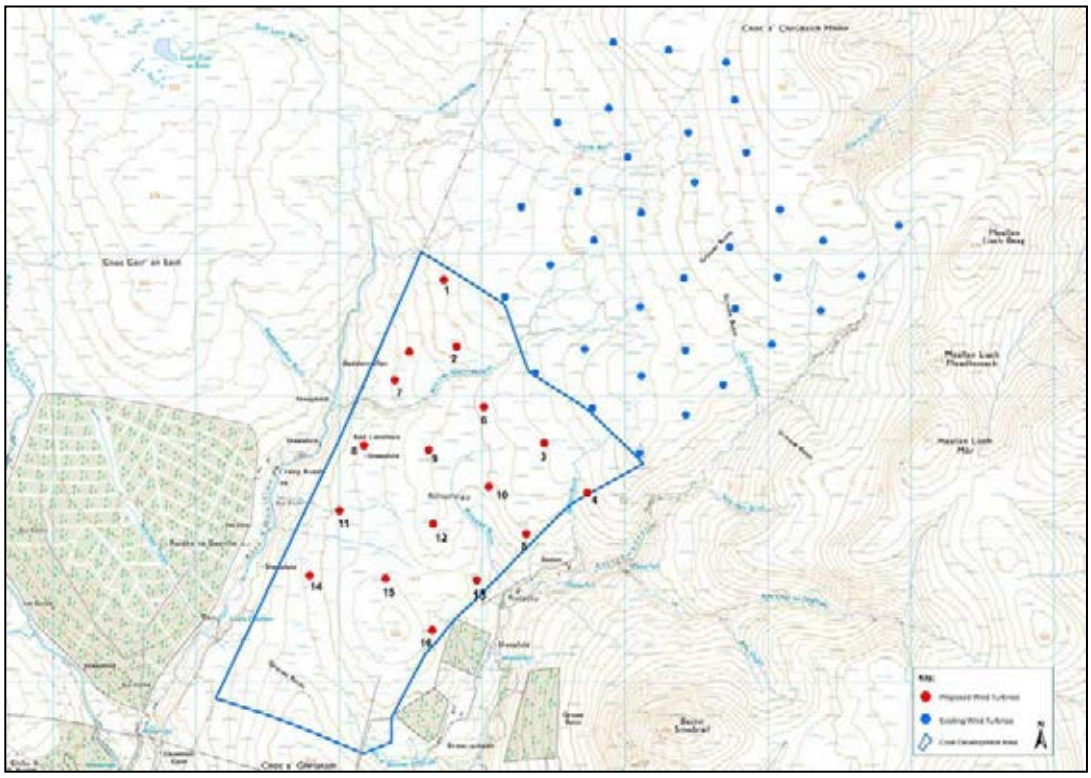
Design 3 (July 2014)

3.1.8 Following collation and preliminary analysis of the environmental survey data, as well as review of the scoping opinion responses, a first iteration constraints meeting was held in July 2014 with the EIA team to outline and discuss preliminary findings. Potential issues raised by the EIA team included:

- Landscape & Visual – Key design issues outlined in Section 3.1.6 were taken into consideration. The concept of the turbine design aimed to develop the visual coherence with the existing Gordonbush Wind Farm, where turbines are arranged in a series of arched rows. In addition, the Development should aim to reduce coalescence with Kilbraur Wind Farm which is located on the opposite side of Strath Brora glen, to avoid the perception of encroachment. Potential views of the Development from the minor road that runs through the glen were also considered.
- Noise – Noise modelling carried out on Design 1 indicated that there was a potential for noise impacts on nearby receptors as a result of the Development.

3.1.9 Following consideration of the above, it was determined that the most southerly turbines had the potential to result in adverse landscape, visual and noise impacts. As a result, it was decided that these turbines should be removed from the Development and the total number of turbines was therefore reduced to 16. In addition, to reduce visibility from Strath Brora, the height of the turbines was reduced to a maximum tip height of 130m.

Plate 7: Design 3 (July 2014)



3.1.10 In landscape and visual terms, a number of improvements and several residual issues were identified as a result of these changes, as described below in relation to the Design Principles.

- *Relationship with Baseline Wind Farm Development:*
  - The relocation and removal of turbines throughout the Development results in a considerably higher level of integration with the 'row' design of the operational Gordonbush Wind Farm than Design 1 or 2 (as seen in the wireline for Viewpoint 6, Figure 5);
  - The removal of the southern turbines reduces the north-south extent of the Development by approximately 1km, notably improving its relationship with the operational site and ensuring that it is contained on the moorland slope, enclosed by the landform of Cnoc a' Ghrianain at the southern end of the site (as seen in the wirelines for Viewpoint 6 and 11, Figures 5 and 6);
  - The reduction in turbine height by 2m leads to an increase in integration with the operational wind farm;
  - The appearance of the Development when seen both with and without the operational wind farm is improved by the relocation and removal of turbines throughout the Development, with the layout becoming more compact, cohesive and balanced (as seen in all Viewpoints, Figures 1 to 6); and
  - Physical separation from Kilbraur Wind Farm is increased by a kilometre to just over 5km due to the removal of the southern turbines, and perceived separation from Kilbraur is also increased due to the containment of the Development behind the landform of Cnoc a' Ghrianain (as seen in the wireline for Viewpoint 11, Figure 6).

- *An Appropriate Location in the Landscape:*
  - The removal of the southern turbines reduces encroachment into the more complex and enclosed strath landscape, ensuring that the Development is associated with the large-scale, open uplands (as seen in the wirelines for Viewpoints 2, 3, 4, 5 and 6, Figures 1 to 5);
  - This also avoids potential 'blurring' of landscape types;
  - The removal of the southern turbines ensures that the Development respects the landform of Cnoc a' Ghrianain; and
  - The turbines that form the new southern edge of the Development (T14, 15 and 16) are clearly visible in some views from Strath Brora, so that some perceived encroachment remains.
- *Consideration of Sensitive Receptors:*
  - The removal of the southern turbines notably reduces visibility from Strath Brora and Loch Brora (including parts of the SLA, the Brora to Rogart road and core paths) as seen in the wirelines for Viewpoints 2, 3, 4, 5 and 6 (Figures 1 to 5);
  - Visibility of the Development from the WLA is reduced and the extent of wind farm influence seen in the setting to the WLA (as seen in the wirelines for Viewpoints 11, Figure 6) is also notably reduced;
  - The appearance of the Development when seen both with and without the operational wind farm is improved by the relocation and removal of turbines throughout the Development, with the layout becoming more compact, cohesive and balanced (as seen in all Viewpoints, Figures 1 to 6);
  - The Development is no longer seen in direct relation to the focal point of Beinn Smeorail in some views from Strath Brora, as seen in Viewpoint 6, Figure 5; and
  - The turbines that form the new southern edge of the Development (T14, 15 and 16) are clearly visible in some views from Strath Brora.

Design 4 (August 2014)

3.1.11 Further analysis of the 16 turbine layout resulted in the design being further refined to relocate turbines away from environmental sensitivities found on the site:

- Peat – Turbine positions were relocated to avoid pockets of deep peat across the site identified during a peat probing exercise (see Plate 8a).
- Groundwater Dependent Terrestrial Ecosystems – Initial surveys displayed areas of the site exhibiting high and moderate GWDTEs. Further survey work was carried out to demonstrate that habitat type M15b, classed as moderate GWDTE in Scottish Environment Protection Agency (SEPA) guidance, are not groundwater fed in this hydrogeological setting. The findings were shared with SEPA who agreed that habitat M15b was not groundwater fed at this site. The positions of turbines were adjusted to avoid being directly located within areas of high GWDTE, and outwith moderate areas, where possible (see Plate 8b).

Plate 8a: Design 4 (Peat Constraint) (August 2014)

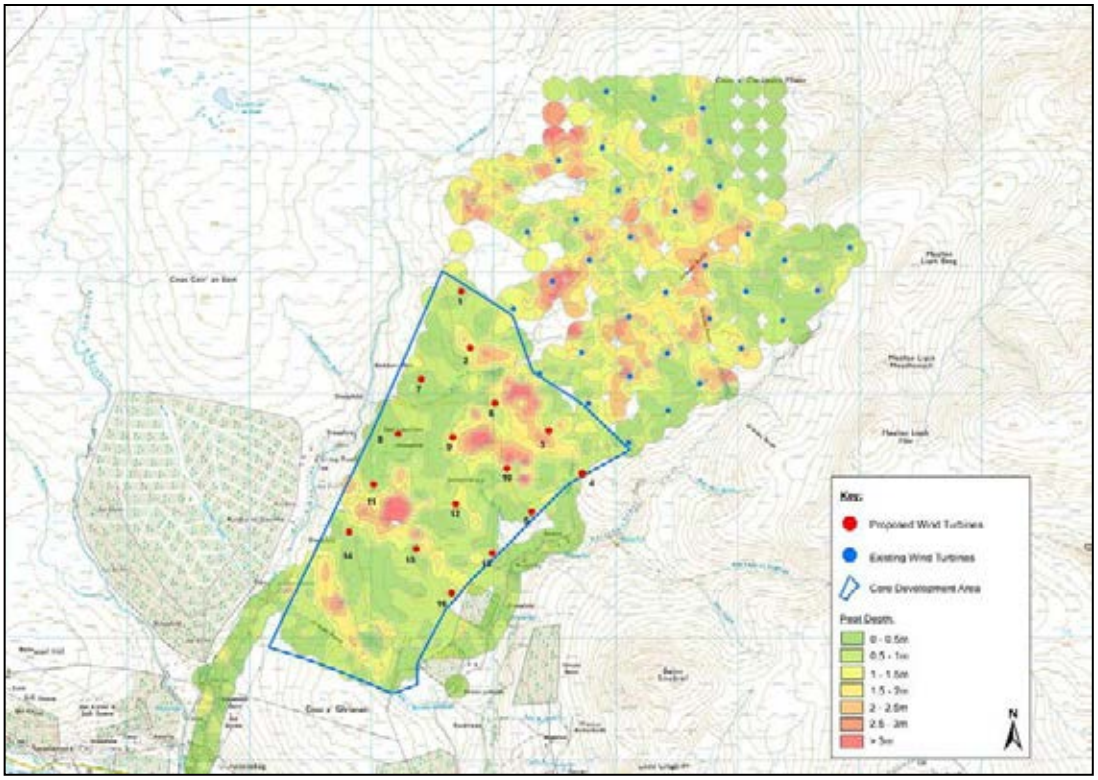
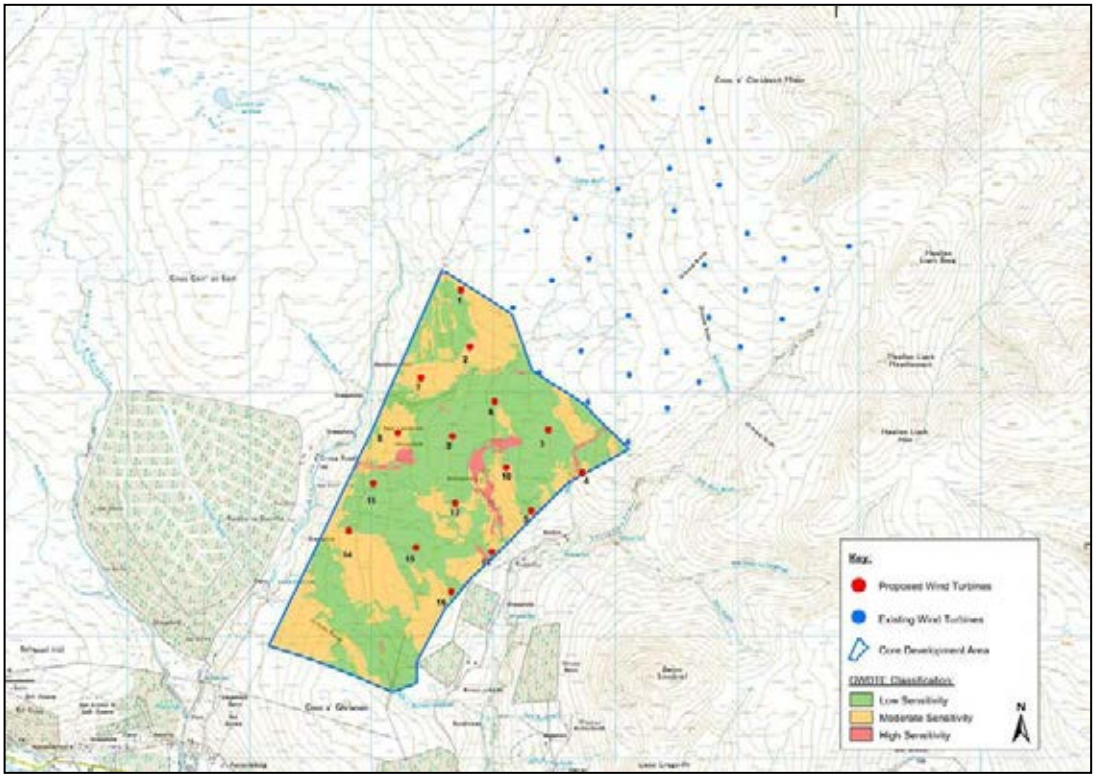


Plate 8b: Design 4 (GWDTE Constraint) (August 2014)



3.1.12 A minor improvement resulted from these revisions in landscape and visual terms due to the relocation of Turbine 14 which moved slightly northwards, further away from Strath Brora.

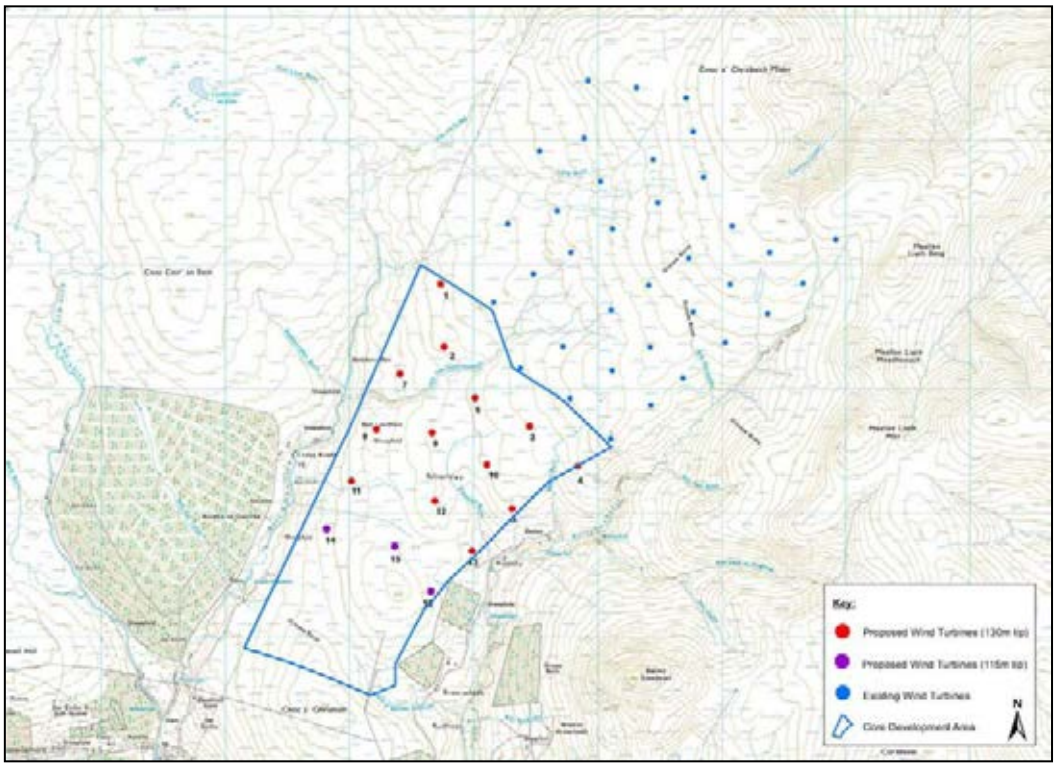
Design 5 (September 2014)

3.1.13 Following a meeting with The Highland Council and SNH, further refinement of the layout from a landscape and visual perspective was undertaken, culminating in a number of minor changes, as follows:

- Landscape & Visual – Further analysis was undertaken from key viewpoints to determine how a reduction in height of some turbines may affect the visual envelope and composition from key views. The most southerly three turbines were positioned on slightly raised ground and appear prominent in certain views, and it was decided that a reduction in height of these three turbines would be of considerable benefit to the Development.
- Topography – Further site investigation was undertaken to assess the technical feasibility of constructing and operating each turbine. These investigations identified that Turbine 4 was positioned on land of relatively steep gradient resulting in potential difficulties in constructing and accessing the turbine. As such, Turbine 4 was repositioned to a location 115m north-east, on land of more suitable gradient.

3.1.14 Following consideration of the above, the three most southerly turbines were reduced in height to 115m to tip (the remaining 13 turbines maintaining a tip height of 130m to tip). In addition, Turbine 4 was micro-sited to a position approximately 115m to the north-east.

Plate 9: Design 5 (September 2014)



3.1.15 Further improvements in landscape and visual terms were identified as a result of these changes, as described below in relation to the Design Principles.

- Relationship with Baseline Wind Farm Development:
  - The reduction in the height of Turbines 14, 15 and 16 leads to an increase in integration with the operational wind farm (as seen in the wirelines for Viewpoints 6 and 11, Figures 5and 6).
- An Appropriate Location in the Landscape:
  - The reduction in height of the southern turbines ensures that the Development respects the scale of the landform at Cnoc a' Ghrianain; and
  - The reduction in height of the southern turbines notably reduces the visibility of the Development in views from Strath Brora, so that perceived encroachment is minimised (as seen in the wirelines for Viewpoints 2, 3, 4 and 5, Figures 1 to 4).
- Consideration of Sensitive Receptors:
  - The reduction in height of the southern turbines notably reduces the visibility and prominence of the Development in views from Strath Brora and Loch Brora (including parts of the SLA, the Brora to Rogart road and core paths), so that the effect on views is notably reduced (as seen in Viewpoints 2, 3, 4, 5 and 6, Figures 1 to 5).

Design 6 (Final Layout) (January 2015)

3.1.16 Further consultation with SEPA was undertaken to discuss the potential impacts on areas of habitats classified as moderate GWDTE's. This was supported by further investigation carried out by the project hydrologist to determine the potential impact of the Development on groundwater flow and groundwater quality feeding the identified sensitive receptors. Results demonstrated that no further changes to the design were considered necessary. This data was shared with SEPA who agreed that the layout design is acceptable in terms of potential impacts on GWDTE.

3.1.17 Subsequent discussions with SEPA also resulted in a minor reconfiguration of the access track leading to Turbine 14 and 16 to minimise potential impacts on peat.

3.1.18 The iteration from Design 5 to Design 6 has negligible implications in landscape and visual terms.

Summary

3.1.19 The final design has evolved over a period of 18 months following identification of key constraints and responding to these through careful design, mitigating potential impacts and avoiding others. The final layout consists of 16 turbines; Turbines 1 – 13 with a tip height of 130m and Turbines 14 – 16 with a tip height of 115m. The final layout is presented in Figure 4.2: Site Layout of this ES.

Table 2: Summary of key stages in the design iteration process

Design Iteration	No. of Turbines	Turbine Height	Effect of Modification
1	20	132m	Maximised energy yield by using all available space.
2	18	132m	Alternative design to maximise energy yield.
3	16	130m	Removed southerly turbines to reduce potential noise impacts and visual impacts from Strath Brora glen.
4	16	130m	Refinement of turbine locations to avoid sensitive ecological habitats.
5	16	Turbine 1 – 13 = 130m Turbine 14 – 16 = 115m	Reduction in tip height of the three southerly turbines to reduce prominence from key views.
6	16	Turbine 1 – 13 = 130m Turbine 14 – 16 = 115m	Final Layout. Minor change to access tracks.

3.2 Infrastructure

3.2.1 The supporting infrastructure was considered during the design process alongside finalisation of the turbine locations, as described below.

Access Tracks

3.2.2 The main element of site infrastructure comprises the access tracks which link the turbines and other infrastructure together.

3.2.3 The design has sought to use as much of the existing infrastructure available as possible. As a result the new access tracks were designed to spur off the existing tracks to keep construction to a minimum. As a result 11km of existing track are to be reused and 7.96km of new track would be required.

3.2.4 New tracks have been designed to follow existing contours and minimise impacts on environmental sensitivities found on the site, such as avoiding deeper pockets of peat and areas of high dependency ground water habitats. Depending on the peat conditions across the site, new access tracks were designed to be either cut design (in areas of <1m peat depth), or floated design (in areas >1m peat depth) that would not require excavation. The benefits of the floating track design are that it allows access track construction on soft terrain and does not require excavation of deep peat as the surface layer is not broken.

3.2.5 During the design iteration process, liaison was undertaken with SEPA whom advised that minor reconfiguration of the access tracks, specifically the track leading to Turbine 16 and

14 could be moved to be within shallower peat. This was taken on board and adjusted accordingly. SEPA also suggested, realigning the track to Turbine 2 as it crosses a deeper area of peat. Further consideration demonstrated that to avoid this area of peat would add a significant length of track to sweep around the deeper peat to get to Turbine 2 and would therefore impact on a larger area of the site. It was decided that to minimise impacts, this section of track would be floated, leaving the peat in-situ.

Borrow Pits

3.2.6 In terms of borrow pits there were several options available, either to reopen and extend existing borrow pits located within the development boundary that were used for the construction of Gordonbush Wind Farm and which have since been reinstated. Alternatively, locate new borrow pits within the development boundary; or import material from off-site locations.

3.2.7 Surveys demonstrated that the original borrow pits on site contained adequate quantity of material for use for construction of the proposed Development, and it was therefore decided that reopening the existing borrow pits was the preferred option.

On-site Substation and Control Building

3.2.8 It was considered appropriate that the Development would connect to the electricity transmission network using the existing substation constructed for Gordonbush Wind Farm, located to the north of the Development. The substation would connect the wind farm to the adjacent existing 275kV transmission line.

3.3 Turbine Dimensions

3.3.1 Turbine dimensions have been a consideration throughout the design process due to the relationship of the Development with the operational Gordonbush Wind Farm as well as the surrounding landform and landscape. The operational turbines are 110m to blade tip, with a 69m hub, an 82m rotor and a rotation speed of 8.5 to 17.1 rpm. Technological advances mean that the turbines used in the operational wind farm are no longer commercially available, and larger turbines with different proportions are now preferred for wind farm development of this scale and location. The initial layouts (Design 1 and Design 2) utilised a turbine tip height of 132m for all turbine locations in the Development. As described above, this was reduced through the design process to 13 turbines at up to 130m to blade tip and three turbines (T14, 15 and 16) at up to 115m to blade tip. These proposed turbines have maximum rotation speeds of approximately 17.5 and 15 rpm respectively.

3.3.2 The proposed turbines therefore have a blade tip height increase of 5m (T14, 15 and 16) and 20m (T1 to T13) over the operational turbines.

3.3.3 The variations in turbine dimensions are considered to be acceptable for the following reasons:

- The variation in overall height is relatively limited, with a maximum difference of 20m;
- The base elevations of the Development turbines (195m AOD to 286m AOD) are consistently lower in elevation than the operational turbines (277m AOD to 399m

AOD) and this location on lower landform ensures that they will not have increased prominence over the operational turbines;

- The integration of the Development with the operational wind farm in aspects such as landscape and landform setting, layout, and shared infrastructure would give a high level of consistency in other areas;
- In views from the closer receptors such as Strath Brora, the Development is generally seen without the operational wind farm, and dimensional comparisons would therefore not arise in these locations;
- In lower level views (such as Viewpoint 6, Brora – Rogart minor road near Sciberscross) where the Development would be seen in conjunction with the operational wind farm, the Development turbine bases are often not visible and a direct height comparison would therefore not be available to viewers;
- There would be very little variation between the rotation speed of the two turbine dimensions in the Development and that of the operational wind farm turbines; and
- The Development turbines have similar dimensions to the turbines at Kilbraur, which have blade tip heights of 115m/125m. This gives consistency between the Development and Kilbraur Wind Farm in views from Strath Brora, where both sites will be visible.

4 CONCLUSIONS

4.1.1 This Design Statement has set out the design of the Development and explained the rationale that has led to the final design. It has carefully considered the site context and reviewed the potential constraints to development.

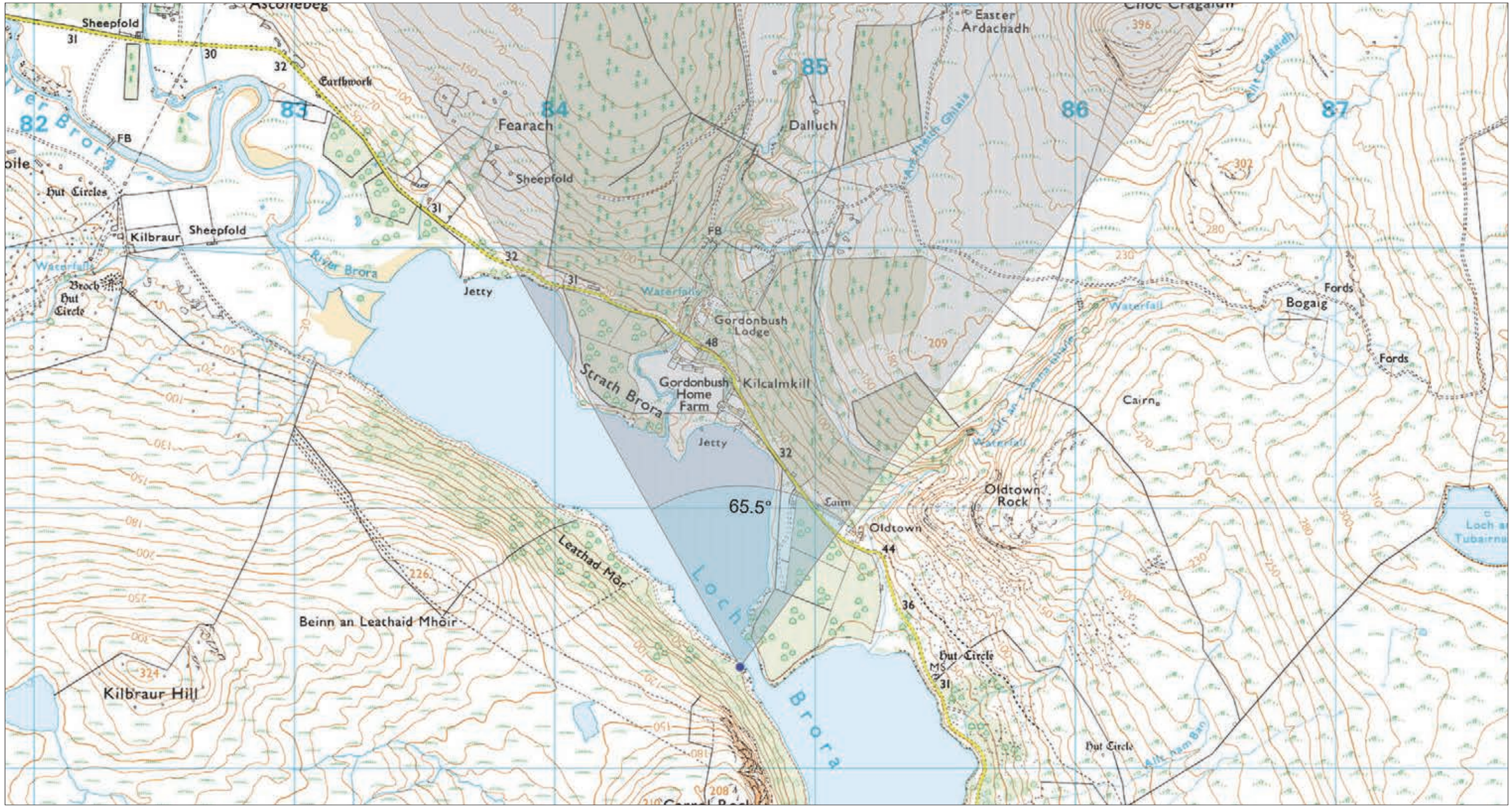
4.1.2 It details how through a thorough design iteration process, an optimum layout of 16 turbines has been reached, which has involved input from a number of specialist consultants and liaison with key statutory consultees.

4.1.3 The final layout reflects the specific site conditions and has taken into consideration the adjacent operational Gordonbush Wind Farm with regards to pattern, to ensure the proposed turbines are compatible to the existing ones, and integrated well in the local landscape.

4.1.4 Existing infrastructure from the operational Gordonbush Wind Farm has been utilised for the Development where possible. This includes the use of the existing substation for the grid connection; existing access tracks and two of the original borrow pits during construction within the site boundary.

4.1.5 Overall, it is considered that the layout presented in the application achieves the best environmental and technical fit for the site, in order to minimise potential environmental and amenity effects on the environment and local community.

Viewpoint 2: Loch Brora (south-west side)



Grid Ref: 284710 908389 Distance to nearest turbine: 3.981km AOD: 30m

0 500 1000m

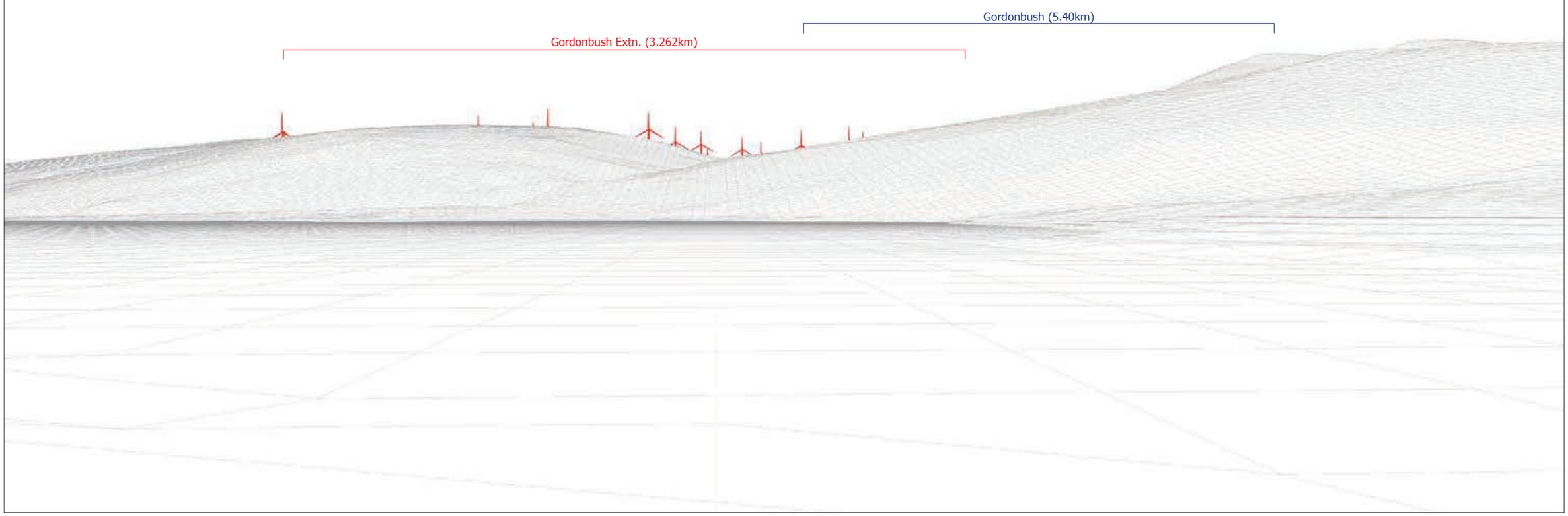
scale in metres 1: 15,000

Follow core path SU06.02 ('Loch Brora - West Track') from either its eastern end at Doll Bridge or its western end at Kilbraur. If travelling from the western end, the viewpoint is approximately 4km along the path and if travelling from the eastern end, it is approximately 5.2km along the path. The viewpoint is located on the path itself.

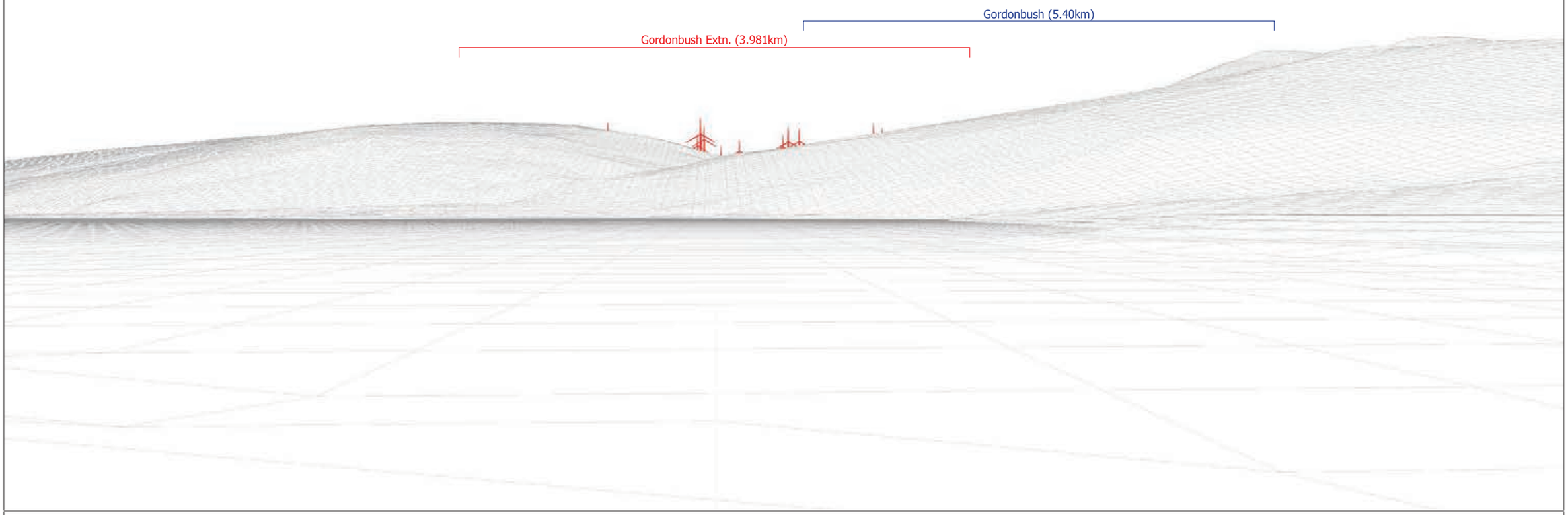
Viewpoint 2
Loch Brora (south-west side)
Fig 1

Gordonbush Extension Wind Farm Environmental Statement

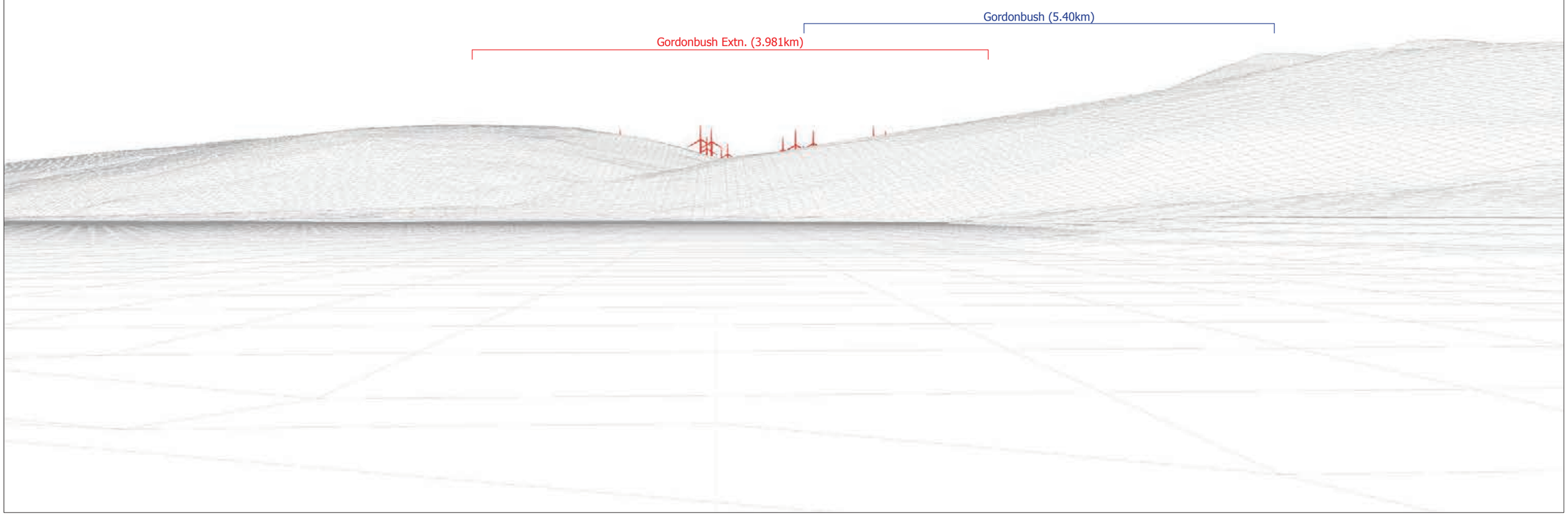
VIEWPOINT 2 Design 2 wireline. Application turbines in red and Gordonbush operational in blue.



VIEWPOINT 2 Design 3 wireline. Application turbines in red and Gordonbush operational in blue.



VIEWPOINT 2 Design 5 wireline. Application turbines in red and Gordonbush operational in blue.



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Viewpoint 3: Brora to Rogart minor road south of Killin

Grid Ref: 285892 905961 Distance to nearest turbine: 6.526km AOD: 31m

0 500 1000m
scale in metres 1: 15,000

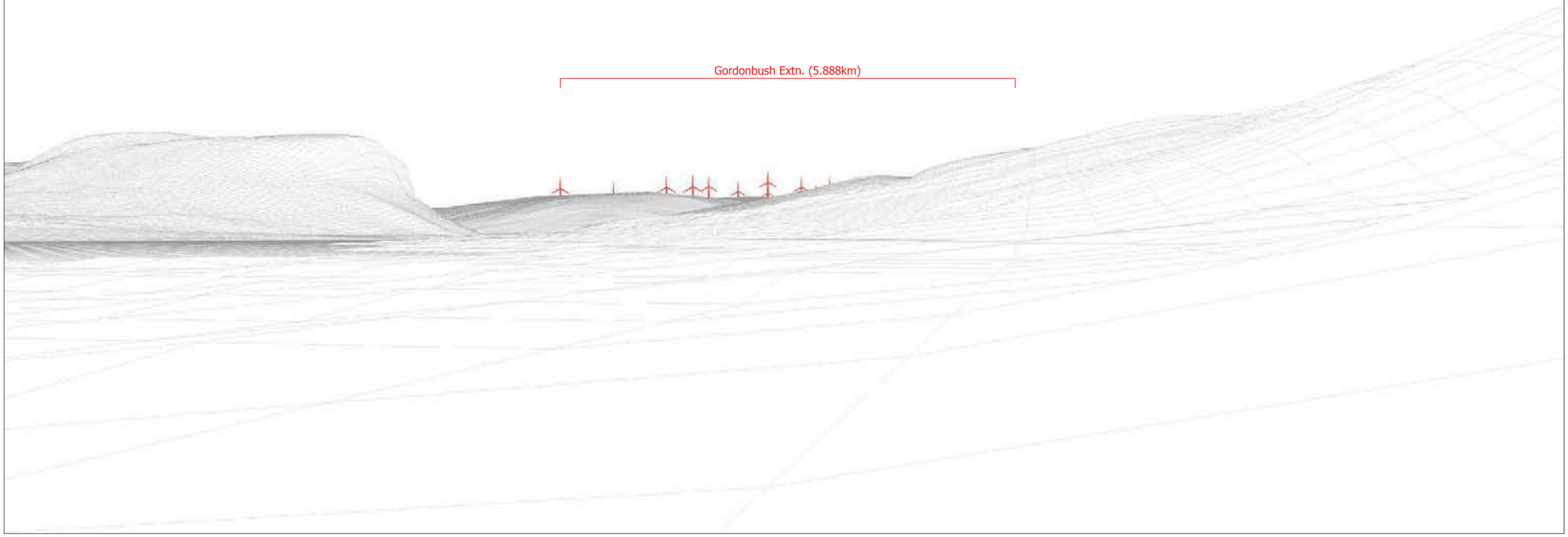
This viewpoint is located on the minor road from Brora to Rogart, at the southern end of Loch Brora. The viewpoint location is in a passing place approximately 100m to the north of the access/parking area at the northern end of the signposted core path SU06.14 ('Doll Bridge – Loch Brora').

Viewpoint 3
Brora to Rogart minor road south of Killin
Fig 2

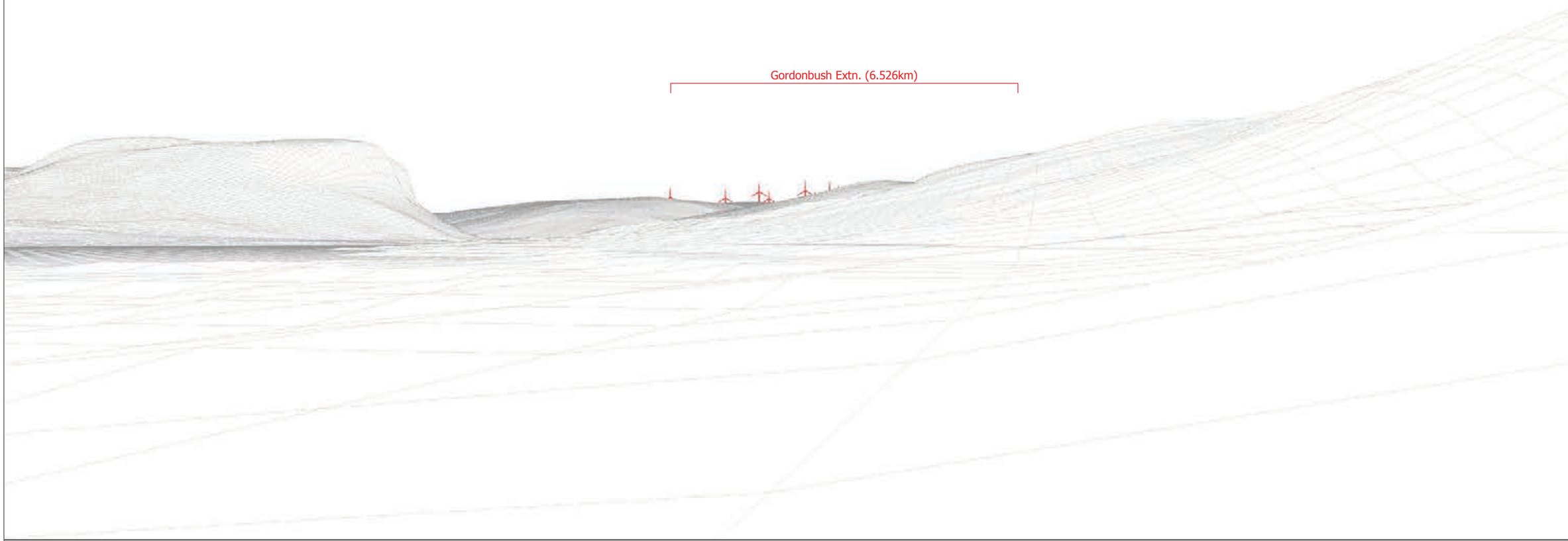
Gordonbush Extension Wind Farm Environmental Statement

VIEWPOINT 3 Existing view

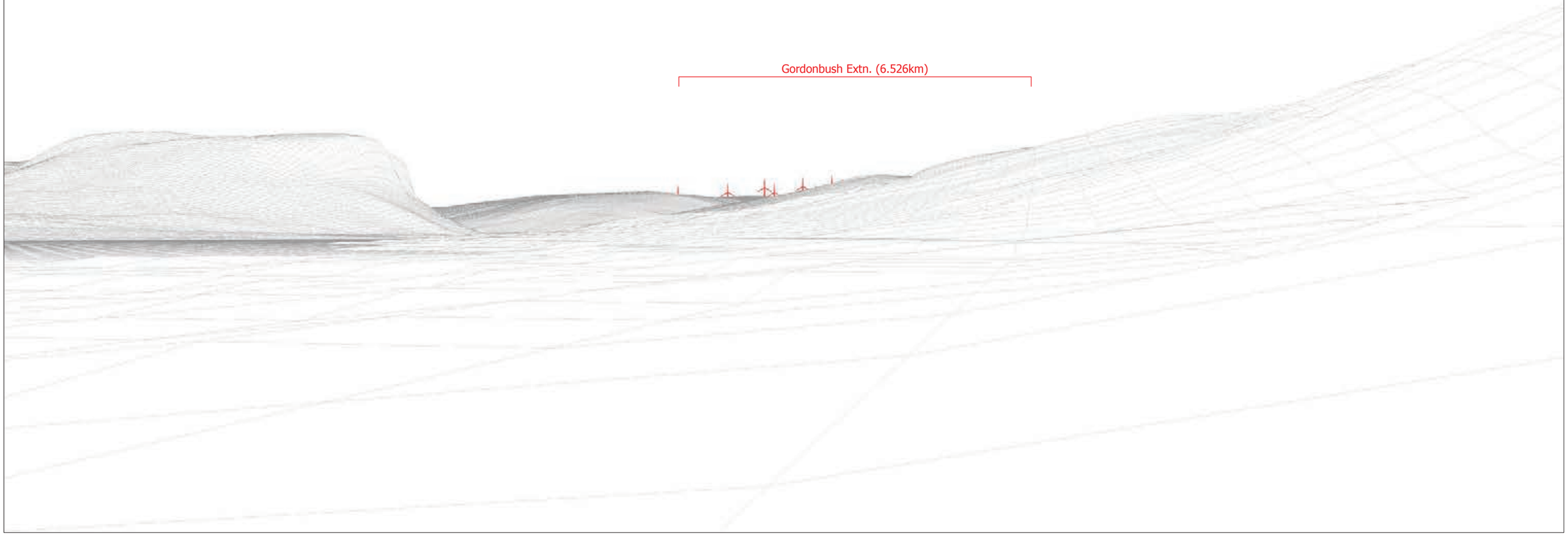
VIEWPOINT 3 Design 2 wireline. Application turbines in red.



VIEWPOINT 3 Design 3 wireline. Application turbines in red.



VIEWPOINT 3 Design 5 wireline. Application turbines in red.



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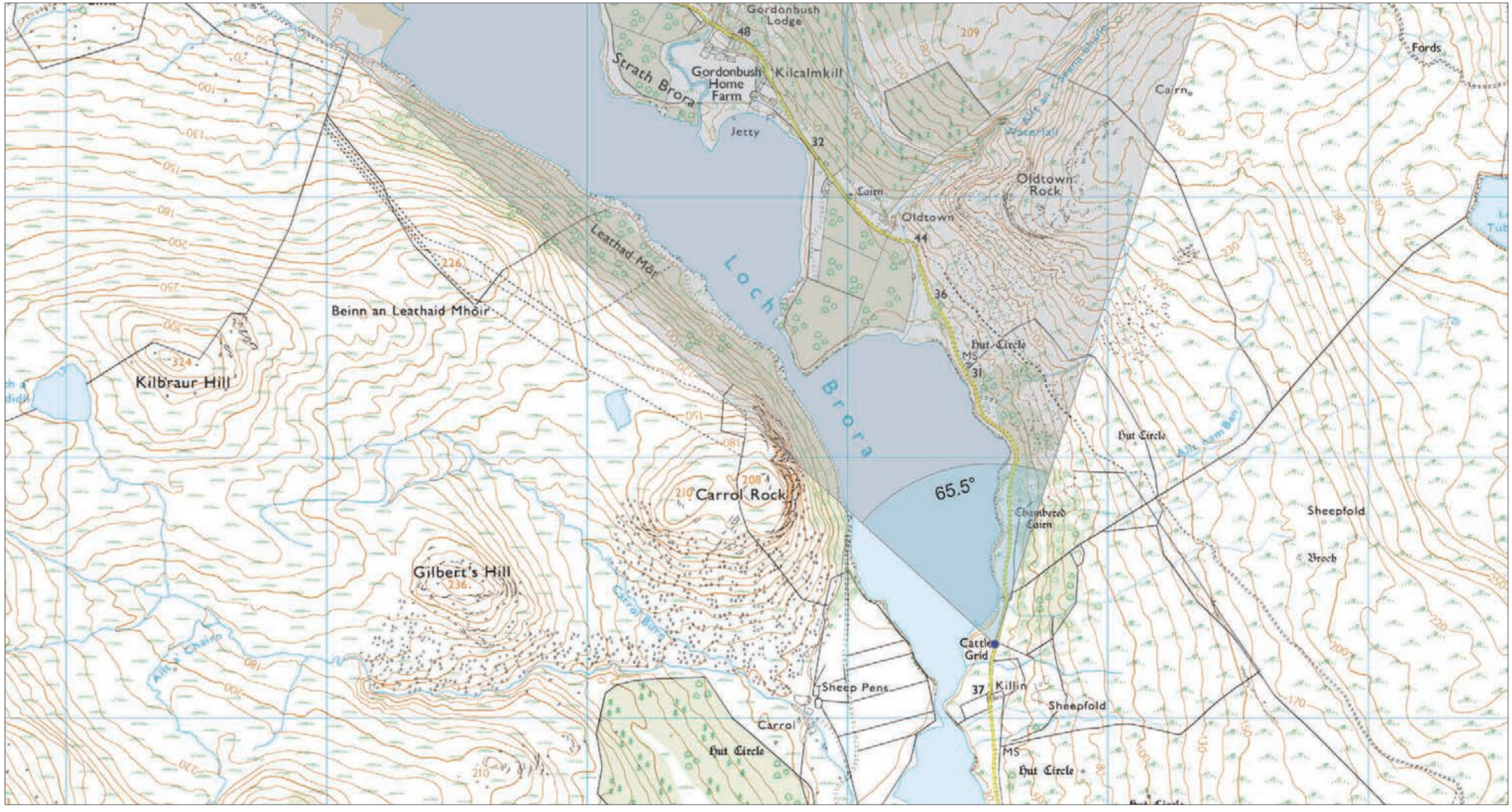
Viewpoint 4: Brora to Rogart minor road north of Killin



Grid Ref: 285565 907283 Distance to nearest turbine: 5.167km AOD: 30m

0 500 1000m

scale in metres 1: 15,000

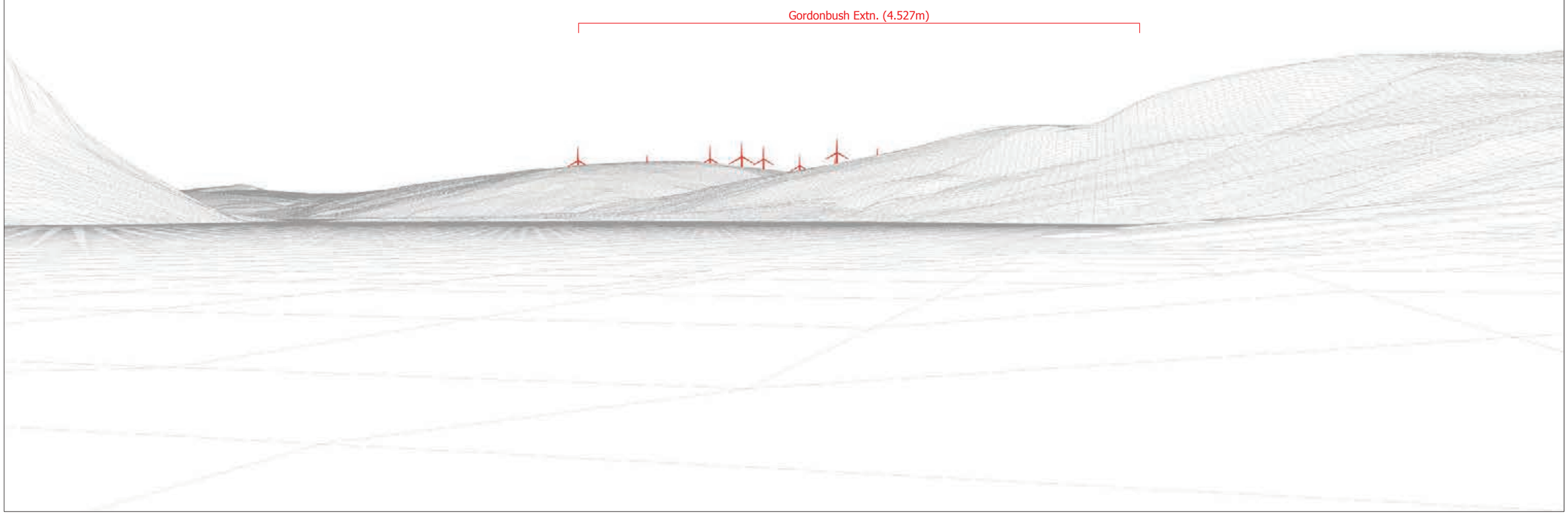
This viewpoint is located on the minor road from Brora to Rogart, approximately 170m north of the property at Killin. The viewpoint location is in a layby/parking area approximately 175m to the north of Killin, and immediately south of the cattle grid.

Viewpoint 4
Brora to Rogart minor road north of Killin
Fig 3

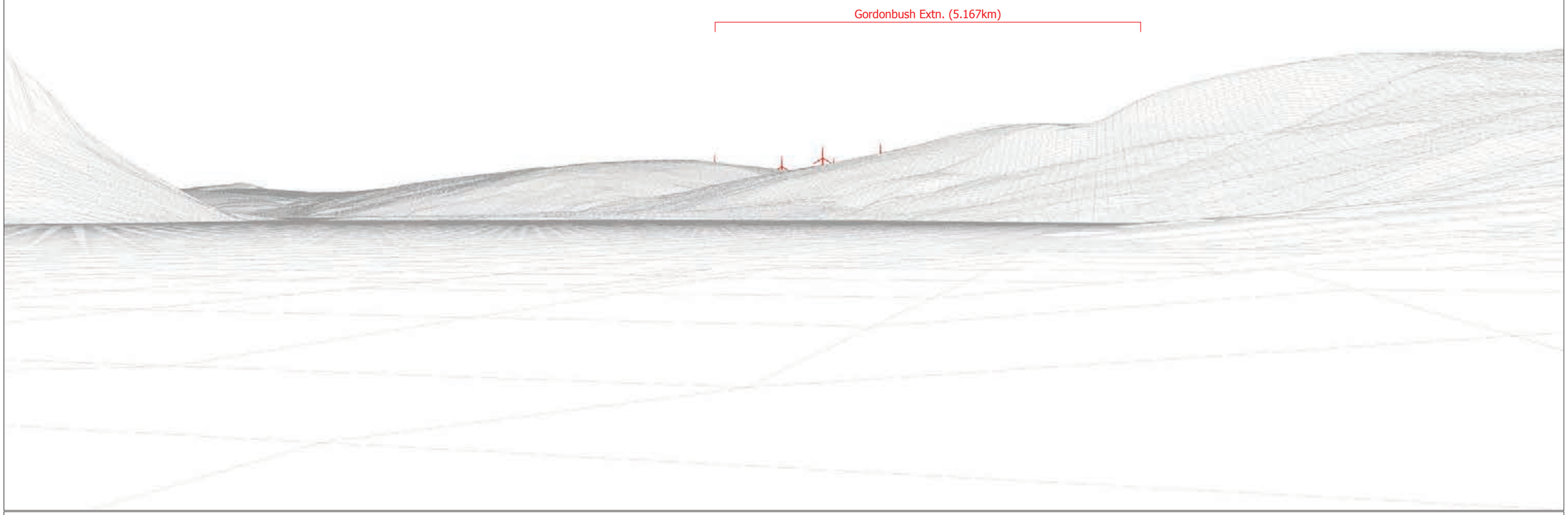
Gordonbush Extension Wind Farm Environmental Statement

VIEWPOINT 4 Existing view

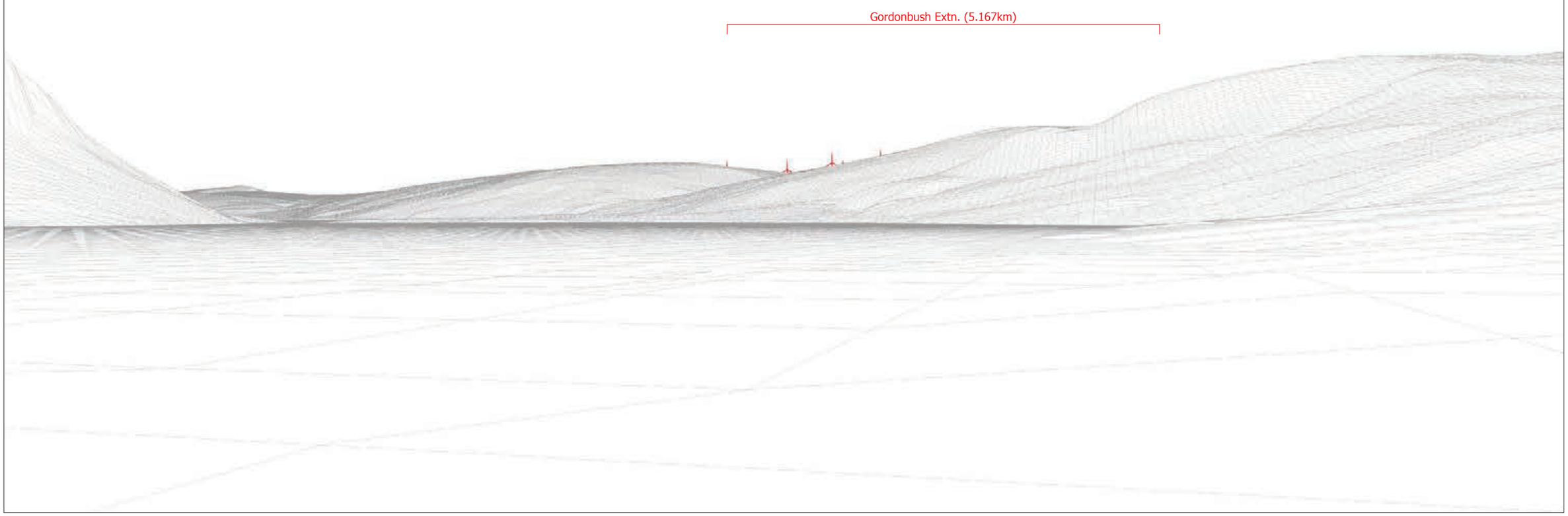
VIEWPOINT 4 Design 2 wireline. Application turbines in red.



VIEWPOINT 4 Design 3 wireline. Application turbines in red.



VIEWPOINT 4 Design 5 wireline. Application turbines in red.



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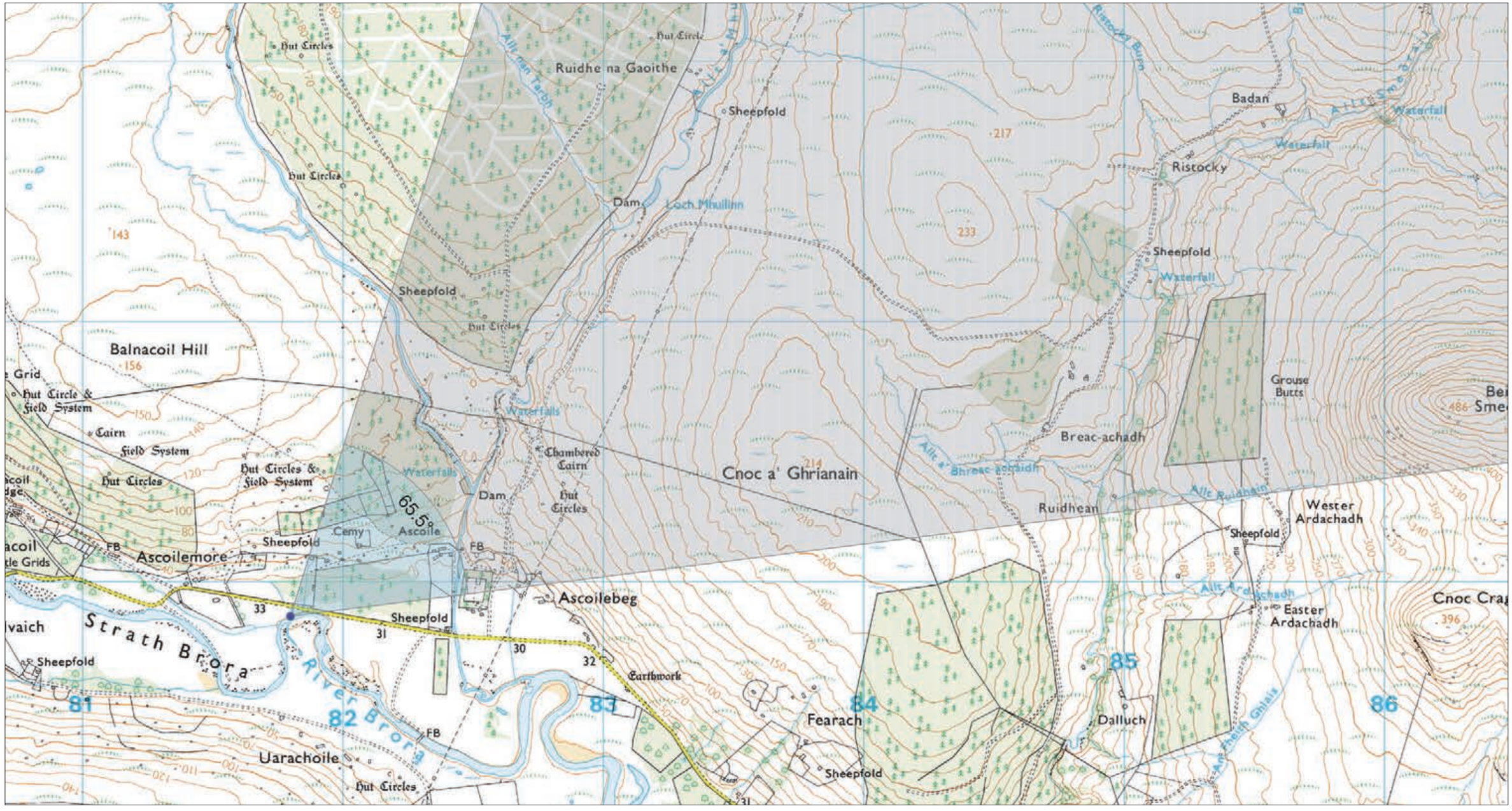
Viewpoint 5: Brora to Rogart minor road near Balnacoil



Grid Ref: 281797 910867 Distance to nearest turbine: 2.848km AOD: 34.5m

0 500 1000m

scale in metres 1: 15,000

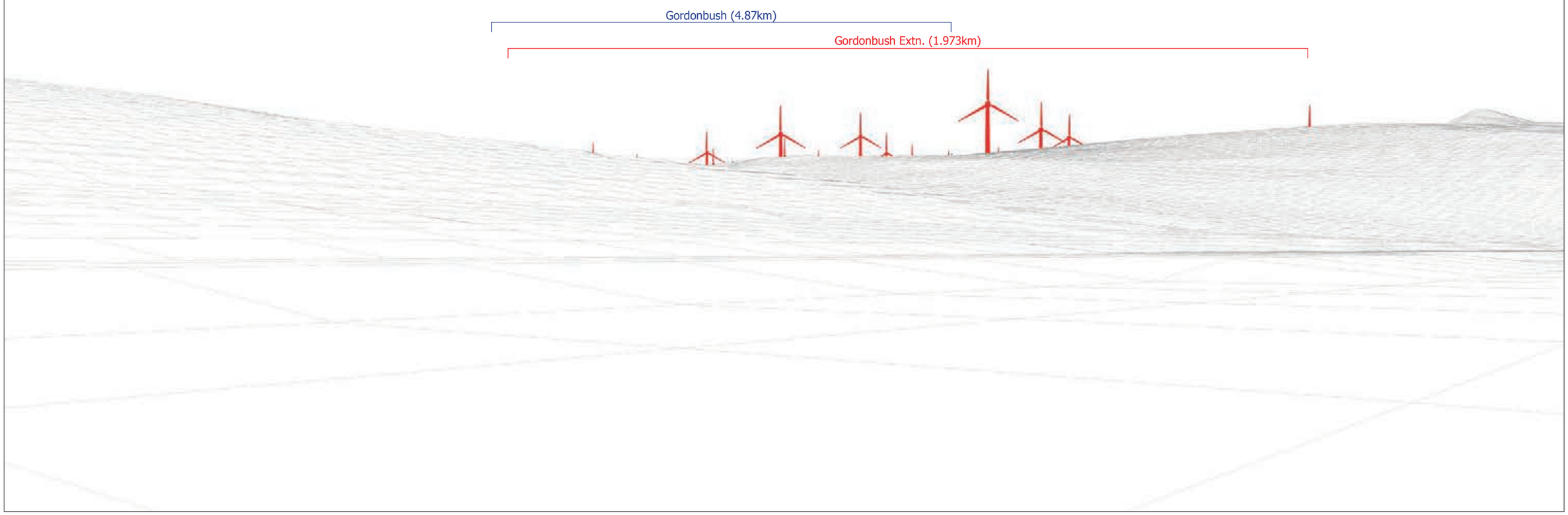
This viewpoint is located close to the minor road from Brora to Rogart, approximately 730m to the west of the Gordonbush Wind Farm access track entrance and 900m to the east of the access to Balnacoil Estate. The viewpoint location is approximately 40m to the south of the minor road, beside the northern bank of the River Brora.

Viewpoint 5
Strath Brora near Balnacoil
Fig 4

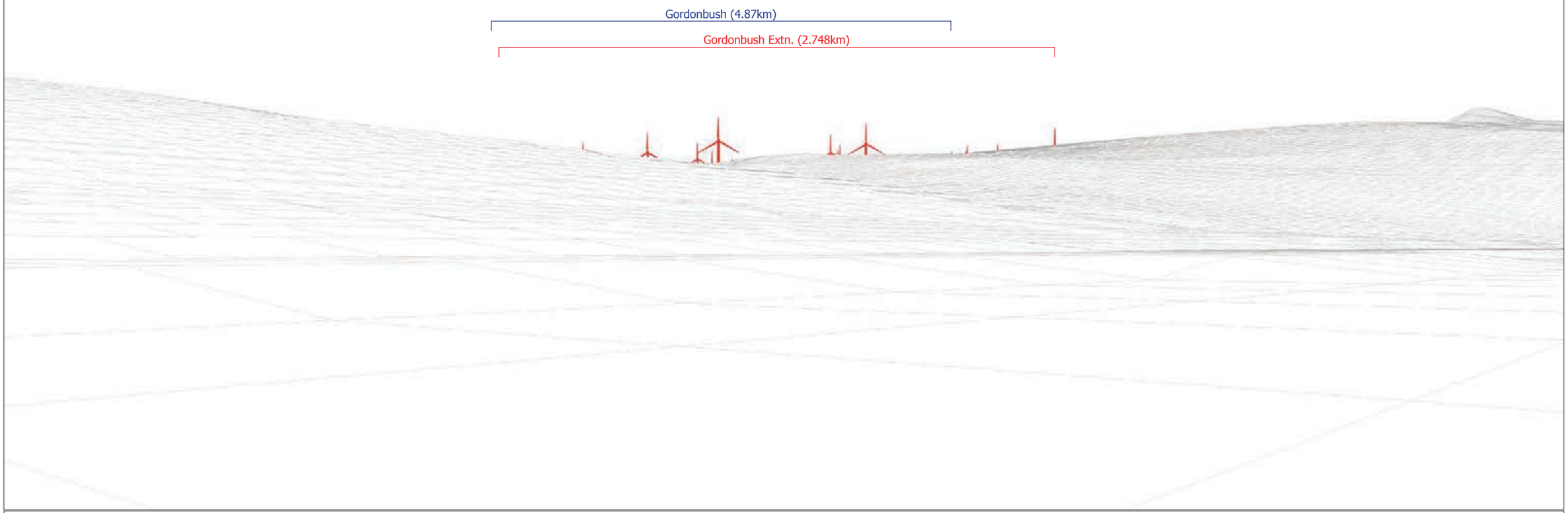
Gordonbush Extension Wind Farm Environmental Statement

VIEWPOINT 5 Existing view

VIEWPOINT 5 Design 2 wireline. Application turbines in red and Gordonbush operational in blue.



VIEWPOINT 5 Design 3 wireline. Application turbines in red and Gordonbush operational in blue.



VIEWPOINT 5 Design 5 wireline. Application turbines in red and Gordonbush operational in blue.

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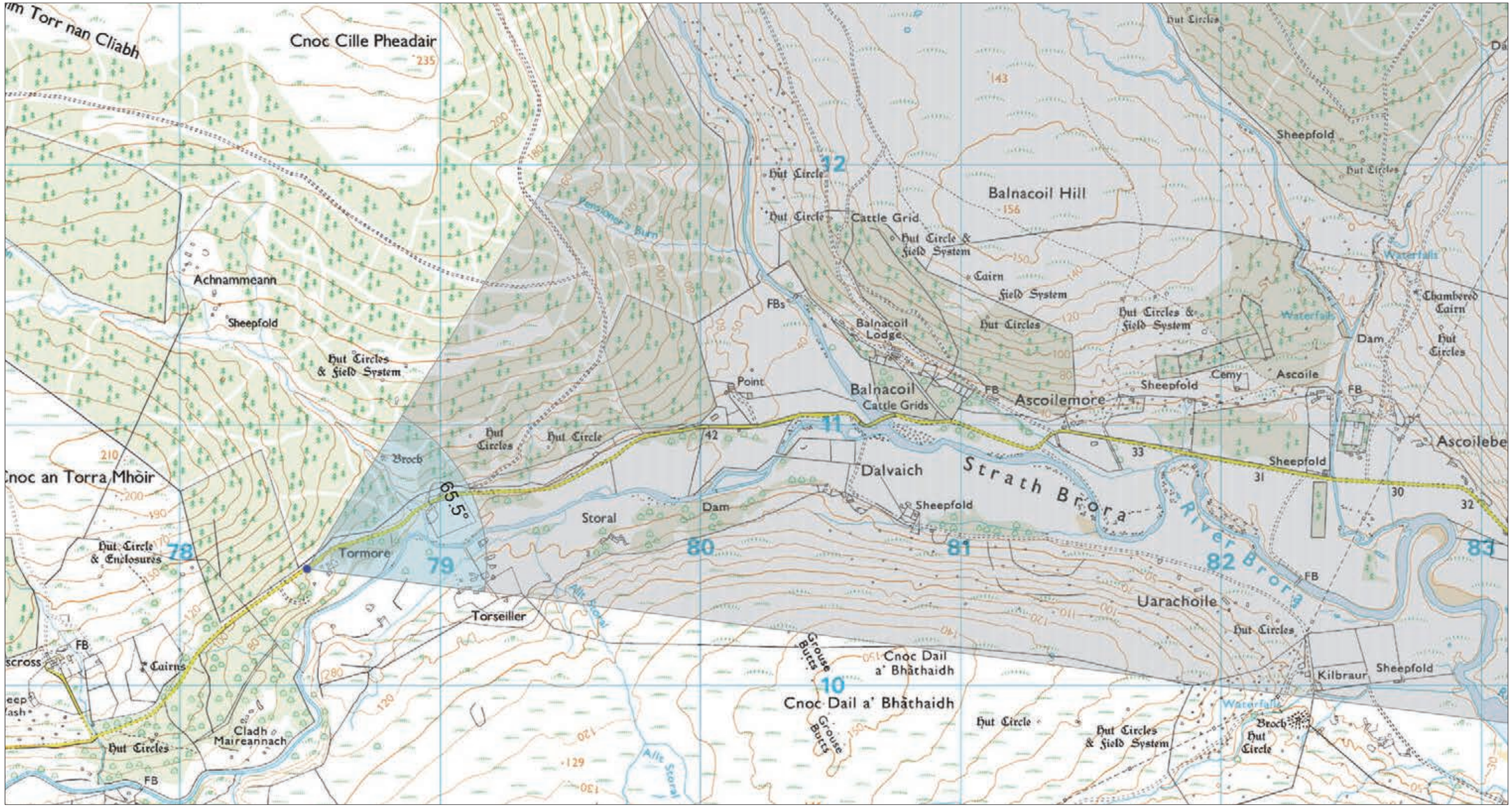
Viewpoint 6: Brora to Rogart minor road near Sciberscross



Grid Ref: 278487 910447 Distance to nearest turbine: 5.858km AOD: 86m

0 500 1000m

scale in metres 1: 15,000

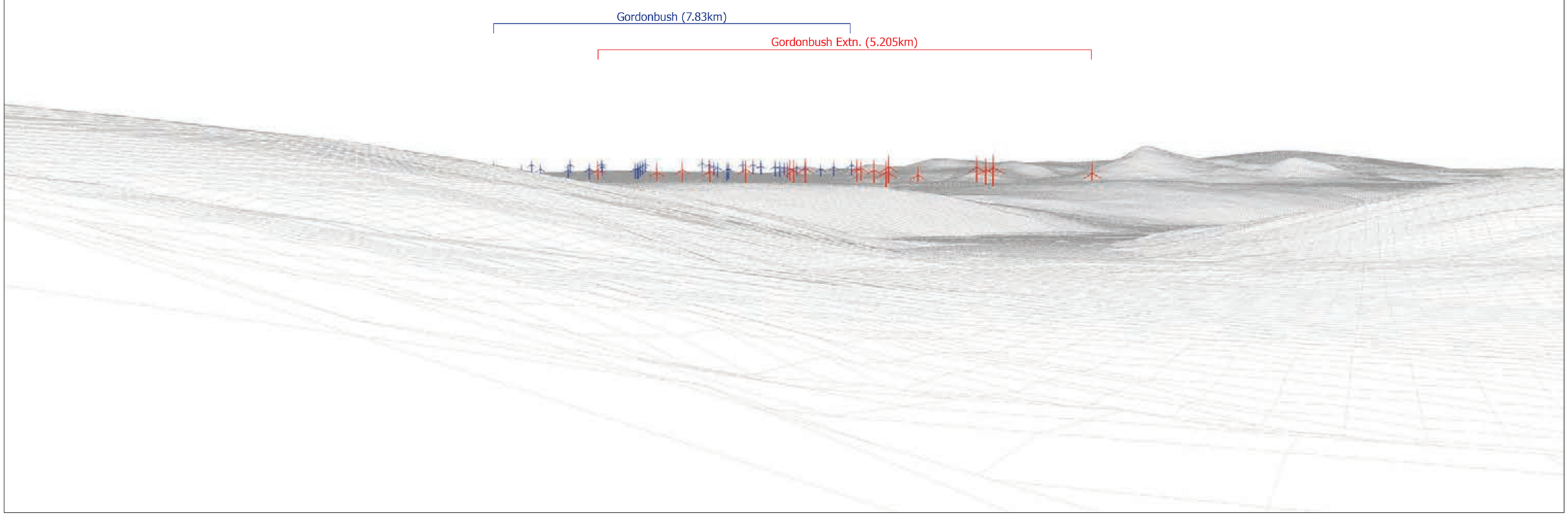
This viewpoint is located on the minor road from Brora to Rogart, approximately 1km east of the turn-off to Sciberscross. The viewpoint location is on the grass verge on the southern side of the road, approximately 30m to the west of a passing place.

Viewpoint 6
Brora to Rogart minor road near Sciberscross
Fig 5

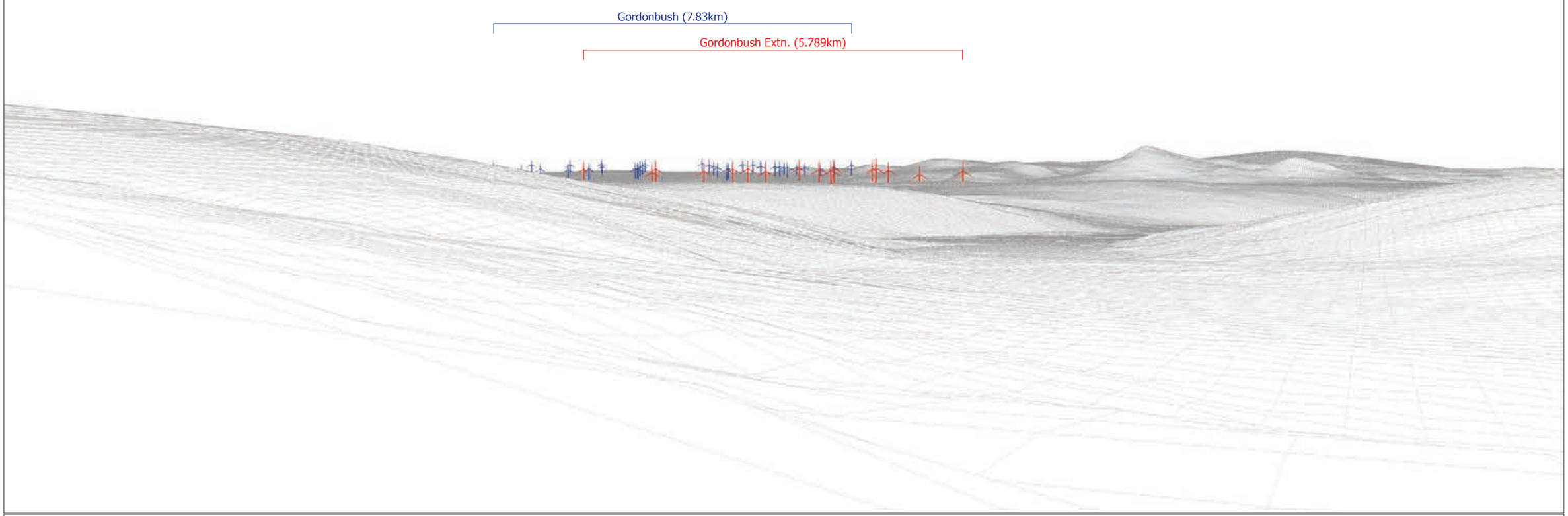
Gordonbush Extension Wind Farm Environmental Statement

VIEWPOINT 6 Existing view

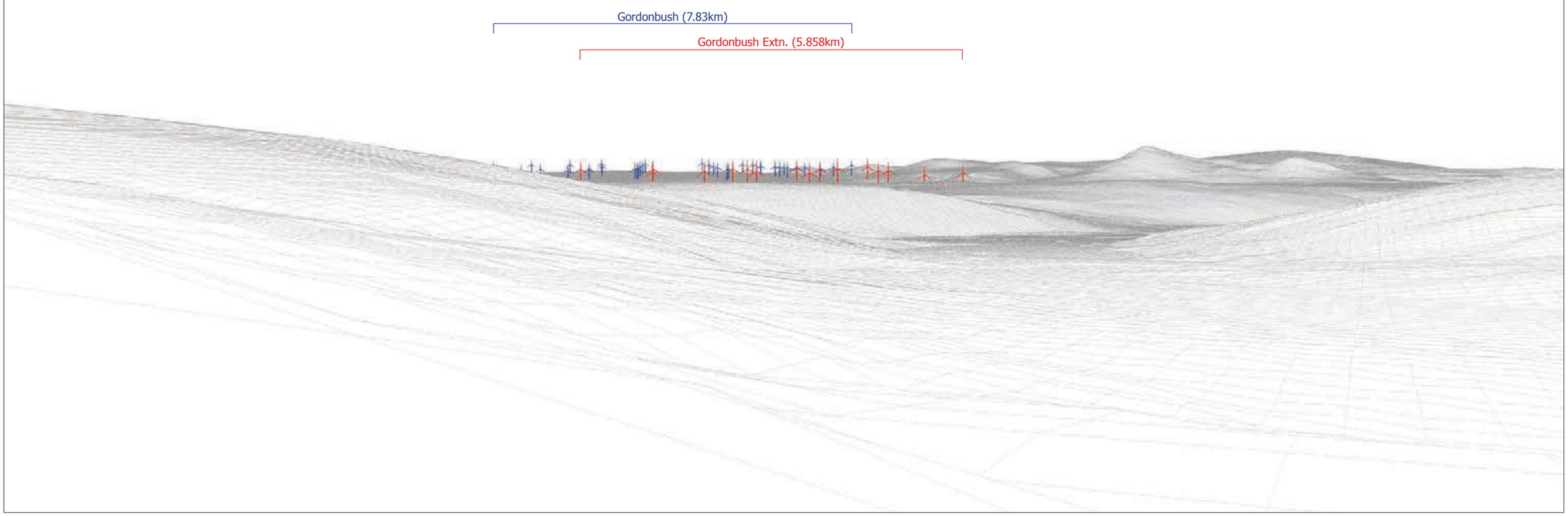
VIEWPOINT 6 Design 2 wireline. Application turbines in red and Gordonbush operational in blue.



VIEWPOINT 6 Design 3 wireline. Application turbines in red and Gordonbush operational in blue.



VIEWPOINT 6 Design 5 wireline. Application turbines in red and Gordonbush operational in blue.



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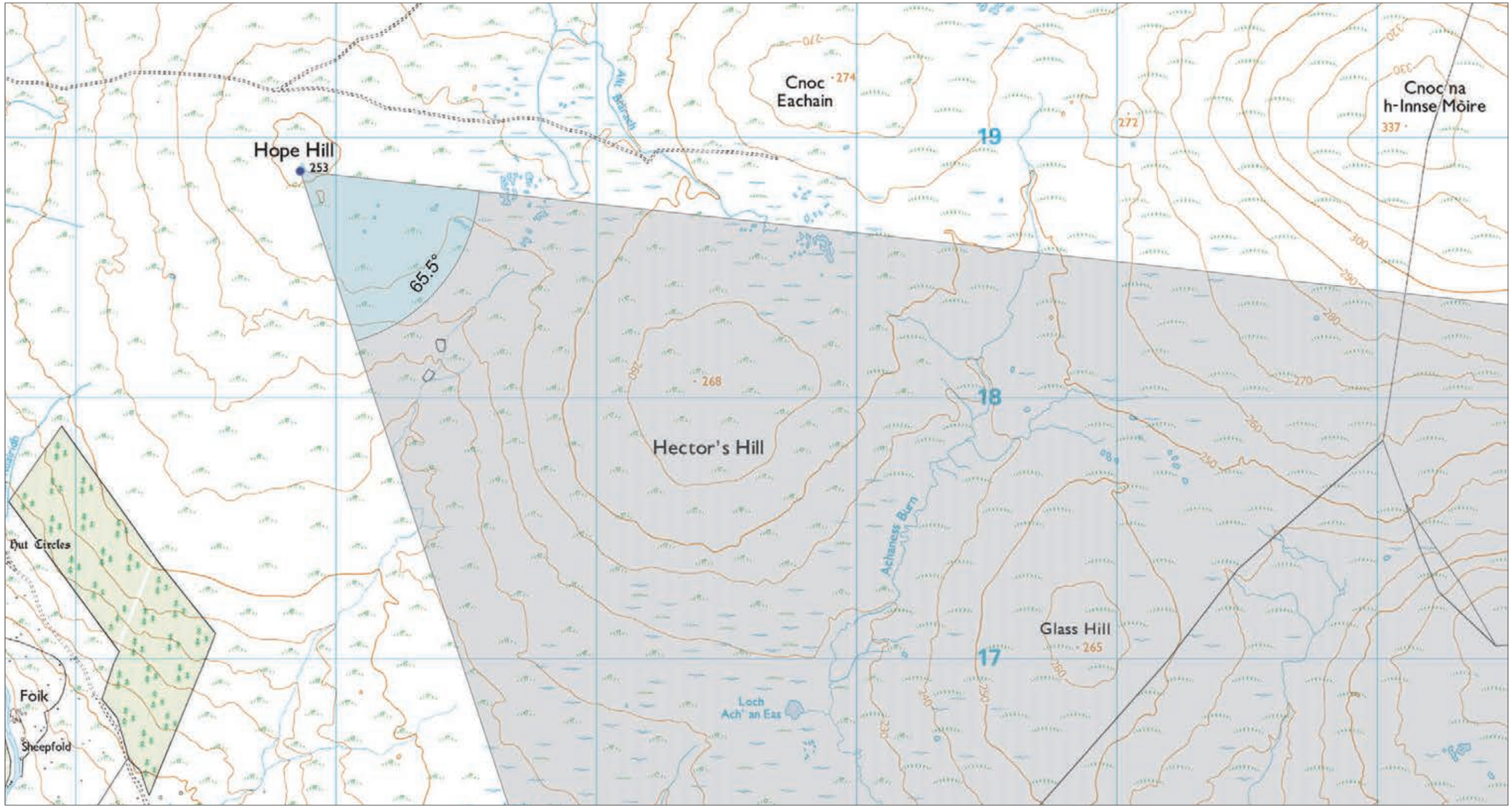
Viewpoint 11: Hope Hill



Grid Ref: 277861 918871 Distance to nearest turbine: 7.968km AOD: 252m

0 500 1000m

scale in metres 1: 15,000

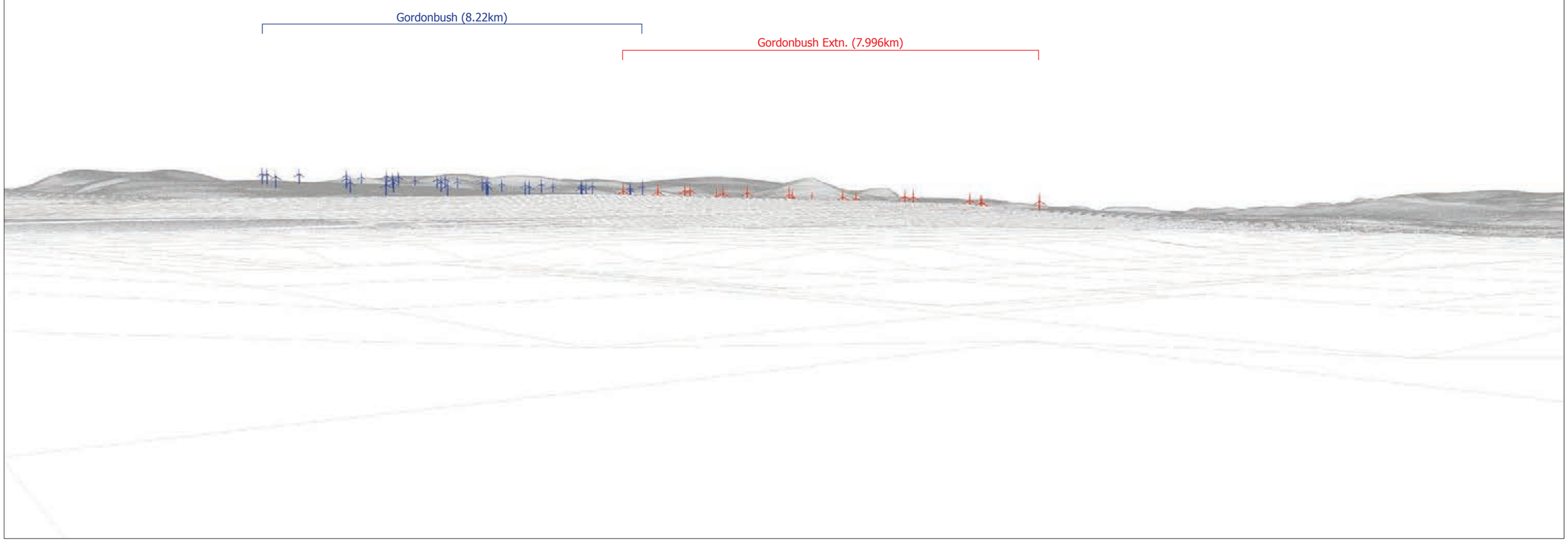
Take the minor road west from Brora, marked Balnacoil. After about 13km, and a few hundred metres before Balnacoil Lodge, follow the track that leaves the road and travels north-westwards across a grassed area. After about 200m, pass through a gate which leads into woodland and follow this track for about 11km, keeping to the main route. This leads to a wooden bothy beneath a couple of large trees. Here, an Argo track leads almost directly east and after about 2km, is within about 150m of the cairn on Hope Hill, where the viewpoint is located.

Viewpoint 11
Hope Hill
Fig 6

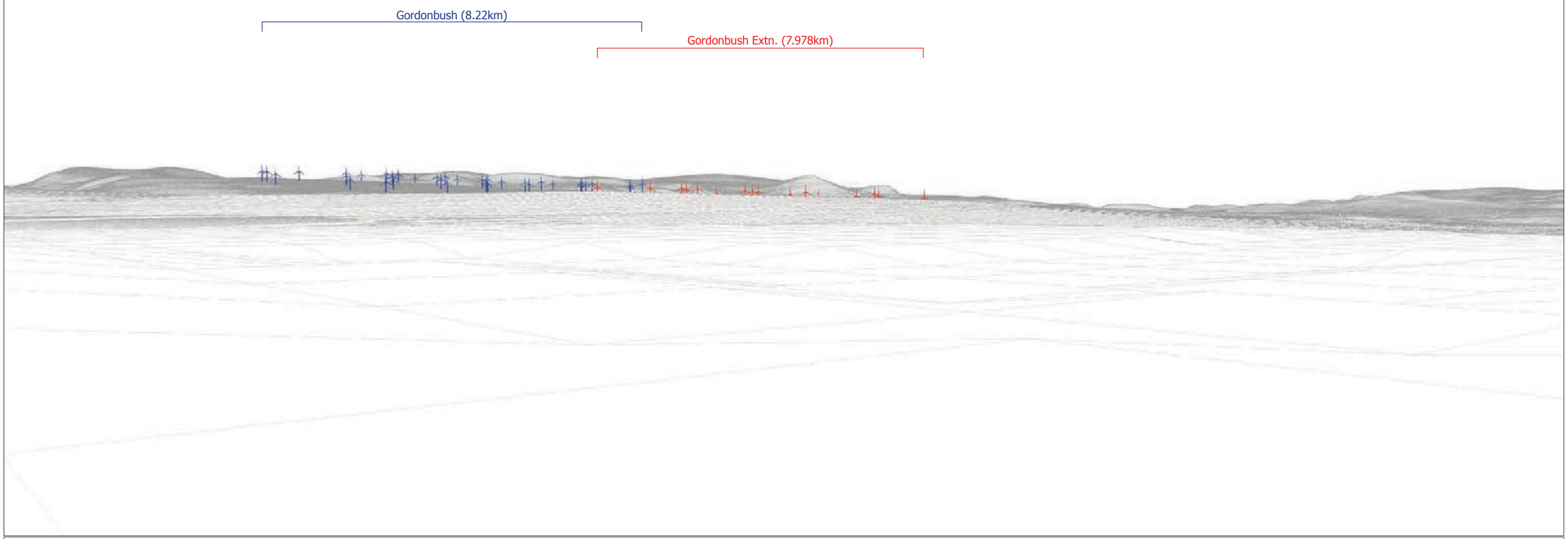
Gordonbush Extension Wind Farm Environmental Statement

VIEWPOINT 11 Existing view

VIEWPOINT 11 Design 2 wireline. Application turbines in red and Gordonbush operational in blue.



VIEWPOINT 11 Design 3 wireline. Application turbines in red and Gordonbush operational in blue.



VIEWPOINT 11 Design 5 wireline. Application turbines in red and Gordonbush operational in blue.