



Enoch Hill Wind Farm

Further Environmental Information Landscape Design Statement

January 2017

Contents

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1 Landscape Design Statement	3
2 Design Objectives	4
3 Design development	9
4 Revised design for FEI assessment	11
5 Viewpoint 4: New Cumnock Cemetery	12
6 Viewpoint 5: Highpoint north of site (near Auchinross)	13
7 Viewpoint 7: Lochside Hotel	14
8 Viewpoint 12: Corsencon Hill	15

1 Landscape Design Statement

1. Introduction

The production of a Design Statement is encouraged by the Scottish Government (PAN 68) and SNH through their document 'Siting and Design of Wind Farm in the Landscape, Version 2' May 2014. SNH explain that Design Statements help to communicate the decision making processes behind the wind farm design and explain why a particular design has been chosen and how this will relate to the underlying landscape and other wind farm development in the area, which may have influenced the design process.

The Landscape Design Statement has contributed to the wider environmental and technical design for the Proposed Development which is set out in its entirety in ES and FEI Chapter 3. This statement has drawn from the advice of SNH and EAC during the application process and other technical non-statutory guidance including the EALCS. The design concept has taken account of the SNH 'Guidance on Siting and Designing Windfarms' aiming to achieve a simple, rational, and cohesive design that limits overlapping turbines and gaps within the visual composition to a reasonable degree avoids overlapping turbines and gaps within the visual composition.

The inherent nature of wind turbines as tall, modern structures means that the form of the wind farm as a whole is important, and a clear design strategy is necessary. The design strategy therefore considered the appearance or visual composition of the wind farm as an 'object' in the landscape, such that the positioning of the turbines in relation to each other, and the wider landscape setting is a factor in generating the layout.

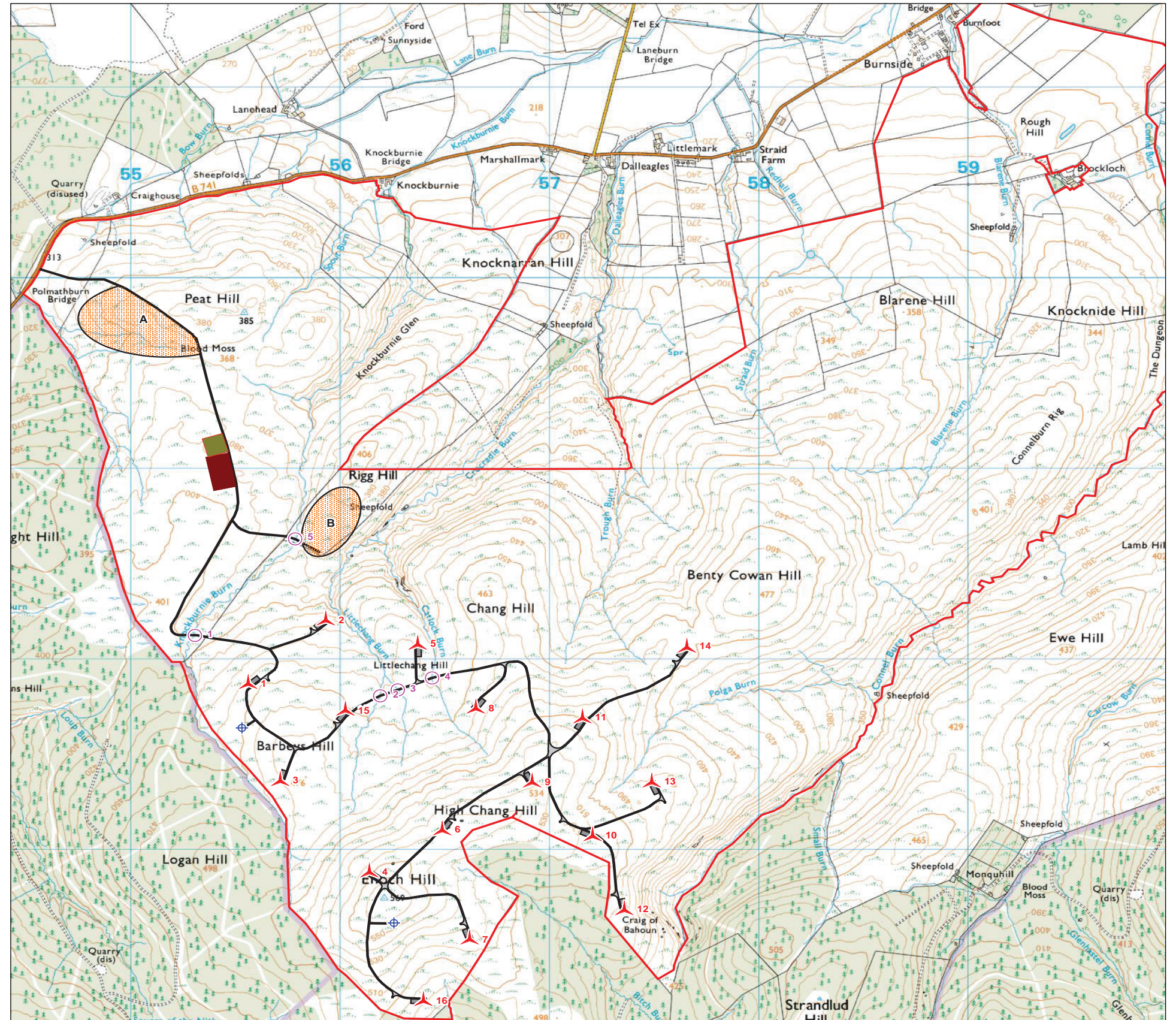
2. Landscape Design Objectives

FEI Figure 4.1 (opposite) illustrates the revised layout and a comparison between the original and revised layouts is shown on page 10. Part of the Design Statement is the establishment of Design Objectives which can also be referred to in future if the scope or circumstances of the proposed wind farm change.

The design objectives which were developed for the original design, and set out in the ES were considered by Ironside Farrah as part of their audit of the LVIA on behalf of EAC. They considered that the principles and objectives of the Design Statement generally reflected "the sensitivities, opportunities and constraints identified in the EALCS". For these reasons the design objectives have been retained.

In response to the comments on design from the EAC audit and SNH the revised design has sought to achieve the following:

- ▶ Continue with a clustered layout avoiding north facing slopes and hill shoulders;
- ▶ Produce a simpler and more compact layout with reduced horizontal spread; and
- ▶ Remove an outlying turbine (numbered turbine 16 in the ES).



Right: FEI Figure 4.1

2 Design Objectives

- ▶ *“Achieve a simple, rational, and cohesive design from most viewpoints avoiding turbine stacking, gaps and outlying turbines so the scheme can be accommodated on a stand-alone basis or cumulatively.*
- ▶ *Turbine development should avoid the ‘front’ north facing hill slopes overlooking settlements, roads and residential receptors within the Upland Basin. The hill tops and visually less sensitive interior hills would be preferable in order to maintain a sense of separation between the lower lying areas and the more elevated Southern Uplands / Southern Uplands with Forestry which are most capable of accommodating wind farm development.*
- ▶ *Ensures that the scale of the Proposed Development is proportionate to the expansive scale of the underlying Southern Uplands with Forestry landscape and in terms of the perceived scale of development when viewed from residential properties, settlements, roads and footpaths within the New Cumnock Upland Basin LCA to the north.*
- ▶ *Achieve a design proposal that would be broadly compatible or co-existent with other existing and consented wind farm development within the LVIA Study Area. In this respect the design should adopt a clustered layout that is broadly similar to neighbouring wind farm developments in terms of perceived turbine height, number, proportion, three bladed turbine design, colour and lighting.*
- ▶ *The Proposed Development has a maximum turbine height of up to 130m, which compares reasonably well with the maximum turbine height consented at nearby schemes such as Sanquhar (130m), Dersalloch (125m) and Afton (120m & 100m).*
- ▶ *Maintain the simple landscape character of the Development Site by siting ground based infrastructure in the least visible locations when viewed from receptor locations to the north and north east including New Cumnock, the B741 and the A76.*
- ▶ *Limit landscape and visual effects on the visual receptors including local residents, roads, recreational routes and visitor / tourist destinations including Glen Afton.”*

3. Landscape Design Considerations

Both the EALCS in East Ayrshire and the DGLCS(2) in Dumfries and Galloway provide sensitivity analysis of the Southern Uplands and Southern Uplands with Forestry LCTs, which may be considered relevant to the Development Site and collectively they record a ‘*high to medium*’ and ‘*medium*’ inherent landscape sensitivity to large scale turbine development, concluding that the perceived landscape capacity for large scale turbines ranges from ‘*no scope*’ to ‘*very limited*’ within East Ayrshire, with further capacity identified in Dumfries and Galloway. However, neither study refers to the Development Site directly and both refer to other named locations within these LCTs in order to explain and justify their conclusions.

Both documents do however refer to the *large or expansive scale and simplicity of the landscape character as an opportunity for large scale wind farm development*, noting that the general lack of settlement and presence of nearby forestry are factors that indicate some capacity for large scale wind turbines.

It may be noted that within East Ayrshire, none of the LCTs are assessed as below Medium sensitivity to large scale wind farm development and only one LCT (Foothills with Forest and Opencast Mining: 17a) is assessed as of Medium sensitivity to large scale wind farm development. In total six of the twelve LCTs are assessed as being of High sensitivity and five of the twelve LCTs are assessed as being of High-Medium sensitivity to large scale wind farm development withing the EALCS.

Particular references to Glen Afton and Loch Doon / Doon Water and Dalmellington as potential constraints are not relevant to the Proposed Development, due to the limited potential visibility of the Proposed Development from within these areas. Concerns about visual effects on the views towards the land mark hill summit of Blackcraig Hill and cumulative

development close to Hare Hill Wind Farm are also not relevant in this case as indicated by the viewpoint analysis and visualisations which demonstrate that views of the Proposed Development would not interfere with views towards Blackcraig Hill or Craigbraneoch Rig on the eastern edge of Glen Afton.

A general reference to the *potential visibility of wind farm development from the Upland Basin as a constraint* is however a relevant consideration for this Proposed Development and one of the reasons for establishing a northern limit or ‘turbine exclusion’ zone across the north facing hill slopes of the Development Site. The establishment of a northern limit or ‘turbine exclusion’ zone across the north facing hill slopes of the Development Site was also developed in response to feedback obtained as a result of public consultation and Community Liaison Group meetings. This turbine ‘exclusion area’ ensures that turbines would not be positioned on the ‘front’ north facing hill slopes (as illustrated on page 9). This constraint also had the benefit of minimising potential visual effects on the views from the closest receptors, including residential properties located to the north of the Development Site and more general views from New Cumnock and the Upland Basin area to the north and northeast.

3.1 Cumulative Landscape Design Considerations

The Proposed Development could be accommodated within the cumulative baseline of other existing and consented development, as well as the South Kyle and Pencloe applications, in the event that either one or both of these are also consented. This is because the design of the Proposed Development has taken account of these possible cumulative scenarios to ensure visual compatibility in terms of turbine layout and scale.



Above: View of the Upland Basin from Northern edge of Site.

3.2 SNH Wind Farm Design Guidelines

The SNH guidance (Sitting and Design Wind Farms in the Landscape, May 2014) provides wind farm design guidance under a number of topics, each of which is considered, where relevant, as follows.

► Relating to Landscape Character

SNH suggest that, “if windfarms already exist within a particular character type, further windfarm development should be limited to the same or similar types within the neighbouring area”. A key aim of the design evolution has been to locate the Proposed Development within the same or similar Southern Uplands / Southern Uplands with Forestry LCTs and to ensure that the relationship of the Proposed Development to the underlying landscape character is similar to other existing and consented wind farms. In this respect the cluster turbine layout of the Proposed Development compares favourably with other wind farm development within the Southern Uplands and Southern Uplands with Forestry LCTs with proposed turbines limited to the southern part of the Development Site, avoiding northern facing hill slopes. The importance of avoiding these hill slopes is indicated by the existing single turbine at Hill Park Farm, on Dalhanna Hill which is prominently visible against the northern facing hills slopes of Hare Hill, despite its smaller scale size. In comparison the Proposed Development is set back on an area of the skyline or horizon that is broad and simple and avoids landmark topography.

► Complementing landform

Through the design process the proposed turbine locations have been ‘pushed back’ to the south of the Development Site, within an extensive and large scale landscape with an open and simple landscape pattern. As noted above, the Proposed Development would not adversely affect the general visibility and prominence of landmark hills such as Blackcraig Hill, Cairnsmore of Carsphairn and Corsencon.

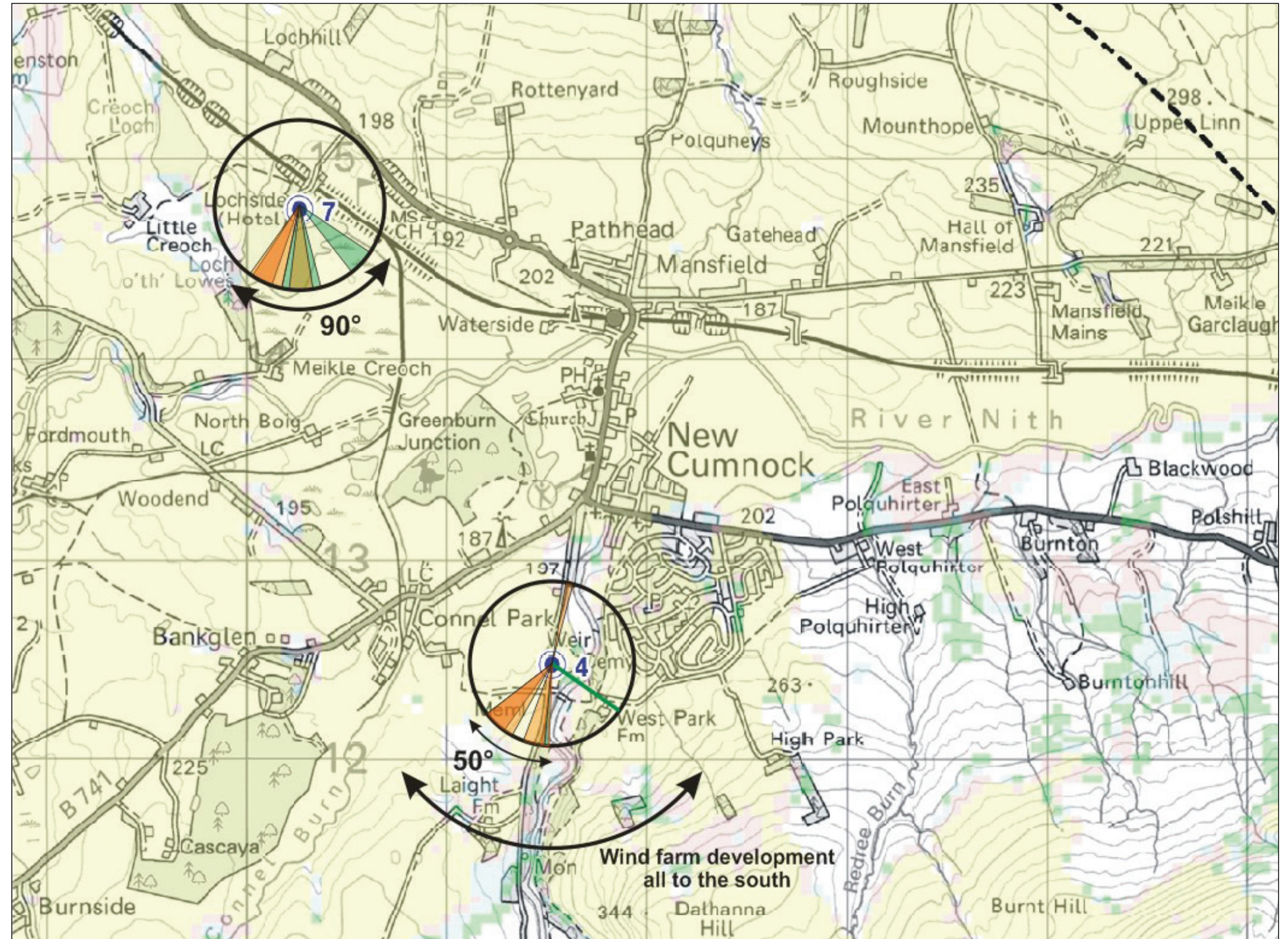
The Proposed Development would avoid the “lower, interlocking ridges to the west” and the landmark hills to the east of Glen Afton which are identified as a sensitive landform within the EALCS.

► Settlements

There is no settlement within the host landscape or within 3km of the Proposed Development.

Viewpoint analysis during the design evolution process has ensured that views from those settlements beyond 3km have been minimised as far as possible.

Cumulative effects of New Cumnock and the approach from the A76 to the north are noted in association with other existing and consented development also visible from this area. Although there would be an ‘intensification’ of development visible to the south, this would be located in the south and as such would not ‘surround’ or ‘enclose’ New Cumnock.



Above: Pie chart for viewpoints 4 and 7 showing extent of visible wind farm development, taking account of buildings from each location.

- The existing and consented windfarms (Hare Hill and Windy Standard Groups and the High Park Turbine) are shown in green.
- The applications (South Kyle, Pencloe and Garleffan) are shown in orange.
- The Proposed Development is shown in Red.

There would be an intensification of wind farms to the south, but not an ‘encirclement.’

► Focal point, pattern and scale

As stated above, the nearest 'focal point' is the 'landmark hill' of Blackcraig. Viewpoint assessment and site survey have confirmed that the Proposed Development would not compete with or diminish the landmark hill qualities of Blackcraig.

The Proposed Development would be located to the lea of outer hill summits (Chang Hill, Benty Cowan Hill, Rigg Hill and Peat Hill) and set within a large and expansive scale landscape capable of accommodating large scale turbines. The pattern of coniferous forestry 'cups' around the area of the proposed turbines to the west, south and southeast, characterising the area as Southern Uplands and Forestry.

► Relationship between wind farms

The design of the Proposed Development has been mindful of the existing and consented development as well as the South Kyle and Pencloe planning applications close to the Development Site, ensuring that the turbine composition of the Proposed Development would appear visually compatible with either or both of these wind farm applications.

The proposed clustered layout and turbine number would be comparable with other existing, consented and application wind farm development in the area with a clustered turbine layout. The proposed maximum blade tip height of up to 130m is comparable with the turbine proportion and height of turbines at recently consented schemes such as Sanquhar (130m), Dersalloch (125m) and Afton (120m & 100m).



Above: View of the Upland Basin from above the open cast site, Auchenross.

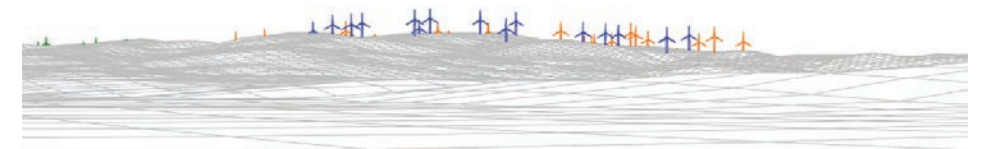
4. Design Evolution

The design evolution is illustrated further in of the Landscape Design Statement (FEI **Appendix 9.A**) and comparative wireframes are provided from some of the key viewpoints to illustrate the main improvements of the design evolution as follows:

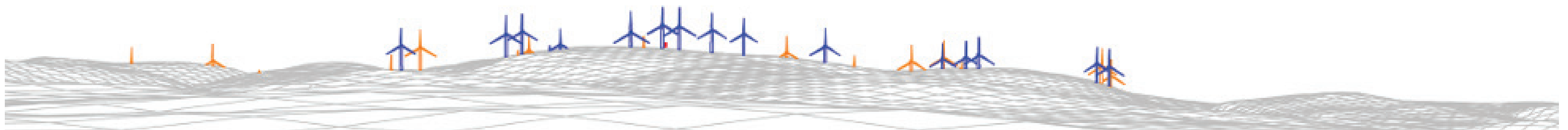
- ▶ Removal of an outlying turbine (numbered turbine 16 in the ES).
- ▶ The revised turbine positions avoid north-facing hill slopes where possible, reducing their potential prominence in the view. In this respect, the proposed turbines appear on or beyond the horizon, avoiding 'front' or north facing hill slopes.
- ▶ The proposed turbines have also been designed to appear in scale with the proposed South Kyle Wind Farm, should this be consented, or equally to appear as a balanced, cohesive group in the case that the South Kyle Wind Farm was not consented.

- ▶ Further design work has been undertaken to reduce the horizontal field of view (FoV) affected by the proposed turbines, creating a more cohesive and even composition with reduced turbine stacking and number of visible turbine hubs as follows:
 - ▶ Viewpoint 4: New Cumnock Cemetery - Horizontal FoV reduced from 23° to 14° and turbine numbers from 17 to 15.
 - ▶ Viewpoint 5: High point north of site near Auchinross - Horizontal FoV reduced from 29° to 18° and turbine numbers from 19 to 16.
 - ▶ Viewpoint 7: Lochside Hotel - Horizontal FoV reduced from 23° to 15° and turbine numbers from 19 to 15.
 - ▶ Viewpoint 12: Corsencon Hill - Horizontal FoV reduced from 12° to 10° and turbine numbers from 19 to 16.

There has been limited change to the visual composition viewed from the summits of Blackcraig Hill and Cairnsmore of Carsphairn and the integrity of the design and visual composition as it would appear from those locations has been preserved.



Above: Viewpoint 7: Lochside Hotel



Above: Viewpoint 4: Cemetery, New Cumnock

5. Mitigation Inherent in Proposed Development

A full description of the mitigation included with the Proposed Development is described in the ES and updated, as required in the Landscape Design Statement.

Particular design mitigation measures include the location of site infrastructure: anemometer masts, Scottish Power Energy Networks (SPEN) substation compound, temporary construction compounds, borrow pit search areas and Development Site access / access tracks have all been located to areas of the Development Site where there would be limited visibility from the main receptors to the north and northeast in the Upland Basin. In particular the SPEN substation compound, borrow pit search areas and access tracks have been located as far as possible to the lee of hills or southern and southwest positions and summits to reduce visibility. The success of this design approach can be seen in the visualisations prepared for those viewpoints within 5km where the proposed infrastructure has been rendered onto the photomontages where visible (Viewpoints 1, 2, 3, 4 and 5). As can be seen from these viewpoints, there would be limited visibility of the associated infrastructure from these locations.

▶ Wind Turbines

The proposed turbines would have a maximum turbine height of up to 130m to blade tip (based on an indicative hub height of up to 80m and a rotor diameter of up to 100m, which will be adjusted to ensure that maximum tip height will not exceed 130m). The turbine dimensions would produce a well-proportioned turbine design, constructed from steel and fibreglass producing a smooth and sophisticated aerodynamic form. The turbines would be uniform in colour (pale grey) with a semi-matt finish to reduce their contrast with the background sky, landscape and minimise their reflectivity.

Once erection of the wind turbines is complete, the adjacent crane pad and hard standing (approximately 25m by 50m) would be partially restored with turves or excavated soil and re-seeded to match the existing landscape.

▶ Turbine Transformers

Turbine transformers would be located externally adjacent to the turbine base in a small kiosk (5m x 3m x 3m high), unless a turbine is selected with an internal transformer. These would be of a neutral colour to reduce contrast with the background landscape and specifically located as far as possible to the lee of the turbine, or positioned for least visibility from the B741 minor road in the north. Landscape designed earth modelling would also be employed to 'bed' this development into the hillside as necessary to secure partial screening and grade the construction earthworks into the surrounding contours.

▶ Turbine Lighting

The turbines may require infrared lighting (the latter would not be visible to people without night vision equipment). It is however likely that a small amount of directional security lighting would be required during the construction and decommissioning phases. This lighting would conform to the institute of lighting professionals guidance for Zone E1 (Guidance Notes for the Reduction of Obtrusive Light GN01:2011) and would use a shielded downwards pointing installation.

▶ Turbine Delivery Route to Site

The 'turbine delivery route' (or route for abnormal loads) is illustrated in ES Appendix 14.A. Minor road-works or alterations to this route are required to allow access and no significant landscape or visual effects are anticipated.

▶ Anemometer Mast

The Proposed Development includes 2 No. anemometry masts, up to 80m high which would be located within the proposed clustered turbine layout, also located south of the 'northern turbine exclusion area' previously referred to in the Landscape Design Statement. The proposed anemometry masts have been modelled in each of the viewpoint visualisations within 5km, ensuring that where visible they would appear as a holistic component of the proposed wind farm design.

▶ Site Entrance and Access Tracks

A new Development Site entrance and junction would be provided off the B741, a short distance to the northeast of Polmathburn Bridge on the north western edge of the Development Site boundary.

The proposed new access tracks have been routed to minimise visibility from the north where road users and residential receptors are located, accessing the turbines and associated infrastructure from the north so as to limit the visual impact of new access tracks on the open landscape. On completion, the Development Site entrance and access tracks would be cleared of any construction signage and left in a tidy and co-ordinated condition.

▶ Grid Connection: Control Building, Substation and Electrical Cables,

The new onsite control building will sit within a compound with maximum dimensions of approximately 180m x 110m and a single storey building approximately 30 x 20m, which will house switchgear, metering, protection, control equipment, as well as welfare facilities. The details of the substation form part of the conditions agreed with Local Energy and Consents formerly the Energy Consents and Deployment Unit (ECDU).

The point of grid connection will be located at the Development Site where the system operator Scottish Power Energy Networks (SPEN) will establish a transformer arrangement with associated switchgear in a substation. This is likely to be connected by ~4km of underground cable to the New Cumnock 132kV substation. Figure 4.9 shows the potential grid connection location and possible cable route. All on-site electrical cables linking the turbines, transformers and switchgear building would be underground and buried within a trench alongside the proposed access tracks to minimise ground disturbance.

▶ Temporary Construction Compound

The temporary construction compound and laydown areas would be fully re-instated with stored turfs or excavated soil/peat and re-seeded to match the local contours and existing vegetation. The aggregate forming the compound surface shall be removed from the Development Site.

▶ Borrow Pits

Two potential borrow pit search areas have been identified. Upon completion of construction, the borrow pits will be restored to fit with the surrounding landscape and a detailed reinstatement programme will be developed, drawing upon the advice of a landscape architect and an ecologist, and will be implemented in agreement with EAC, SEPA and SNH. This will ensure that proposed reinstatement materials and techniques are suitable and it may identify appropriate environmental enhancement opportunities. It is anticipated that steep faces would be reduced where possible to fit with the surrounding topography, and disturbed surfaces would be covered with soil and re-seeded or re-turfed.

5.1 Construction Mitigation

The development of the wind farm would draw upon the guidance set out in SNH guidance 'Good Practice during Wind farm Construction'. The key measures that would be implemented, as part of the Construction Method Statement (CMS) and the supporting Construction Environmental Management Plan (CEMP) in order to avoid or reduce potential construction effects include:

- ▶ Using designated routes around the Development Site for construction vehicles and operation of construction plant such as cranes. Avoiding the creation of any wheel ruts and subsequent clear up of these.
- ▶ Implementation and monitoring of site management procedures, such as regular litter sweeps of the immediate environs to ensure the removal of all litter arising from the construction activities.
- ▶ Removal, reinstatement, and clear up of the Construction Compound and any related construction arisings.

5.2 Operational Mitigation

The operation of the wind farm would cover a period of 25 years and include site management to ensure the adequate maintenance of site facilities and landscape features such as access tracks, field boundaries, gates, and signage.

5.3 Decommissioning Mitigation

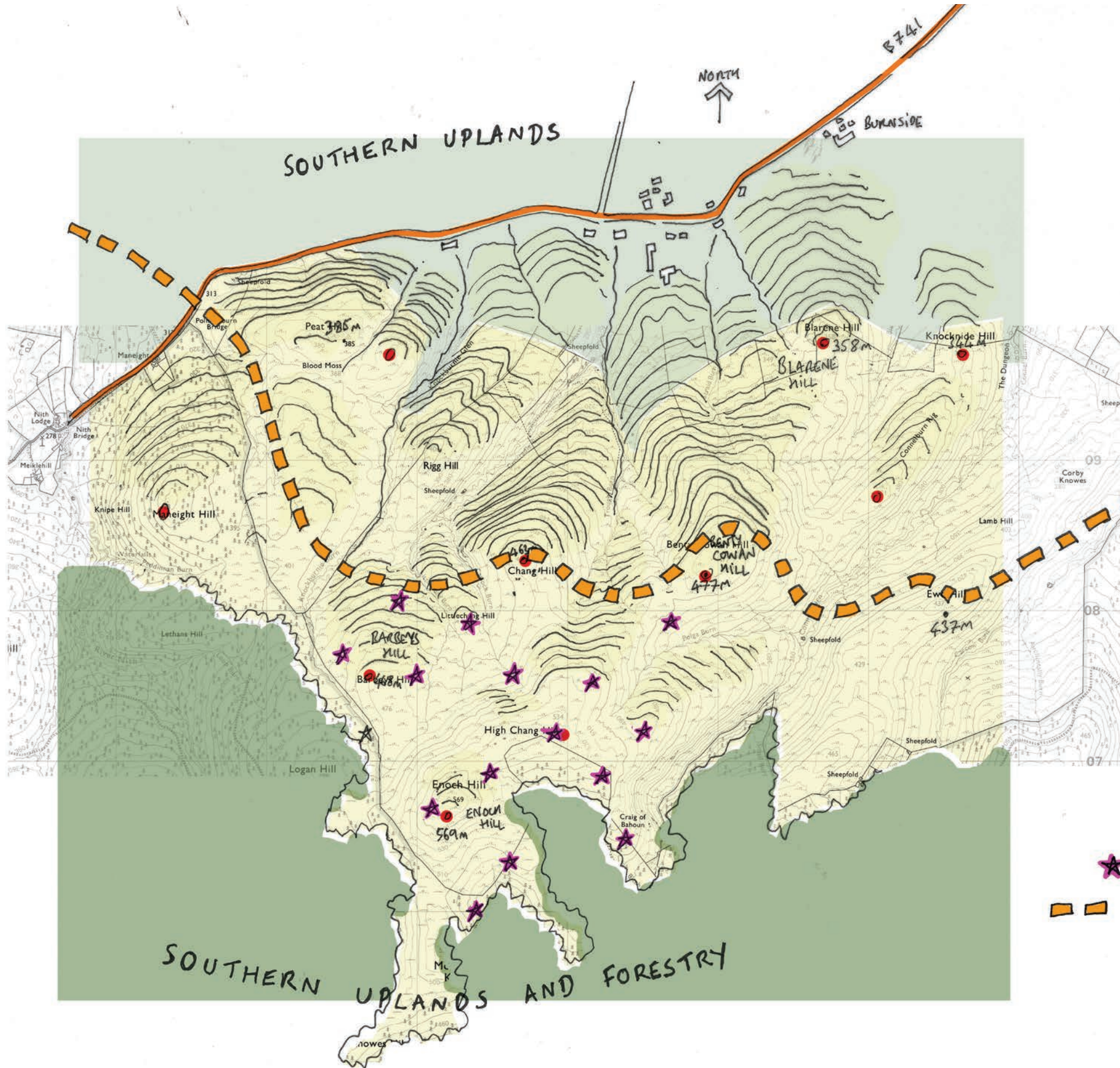
As part of the decommissioning process all of the visible, above ground structures (turbines, transformers, substation and control building) would be removed, thereby rendering the vast majority of the landscape and visual effects as reversible. The Development site access tracks would remain as permanent features, and would gradually vegetate according to the level of use and or maintenance by the landowner.

3 Design development

Another look at the site

In developing the design, a repeat visit to the site was made. This visit underlined the opinion that there exists - between the Southern Uplands and Southern Uplands with Forestry Landscape Character Areas - a transition zone that is influenced by the neighbouring areas and is an area inherently influenced by forestry and existing wind farm development. Open cast mining operations at Auchinross are audible from this area.







What has the design development sought to achieve?

- ▶ Ensuring turbines are located in the 'transition zone' between the Southern Uplands with Forestry and the Southern Uplands Landscape Character areas.
- ▶ Elimination of outlying turbines in order to ensure the Proposed Development is recognised as a coherent and cohesive single grouping.
- ▶ Positioning of the turbines on slopes and summits that avoids the 'outer' north facing slopes immediately to the south of and enclosing the Upland Basin.

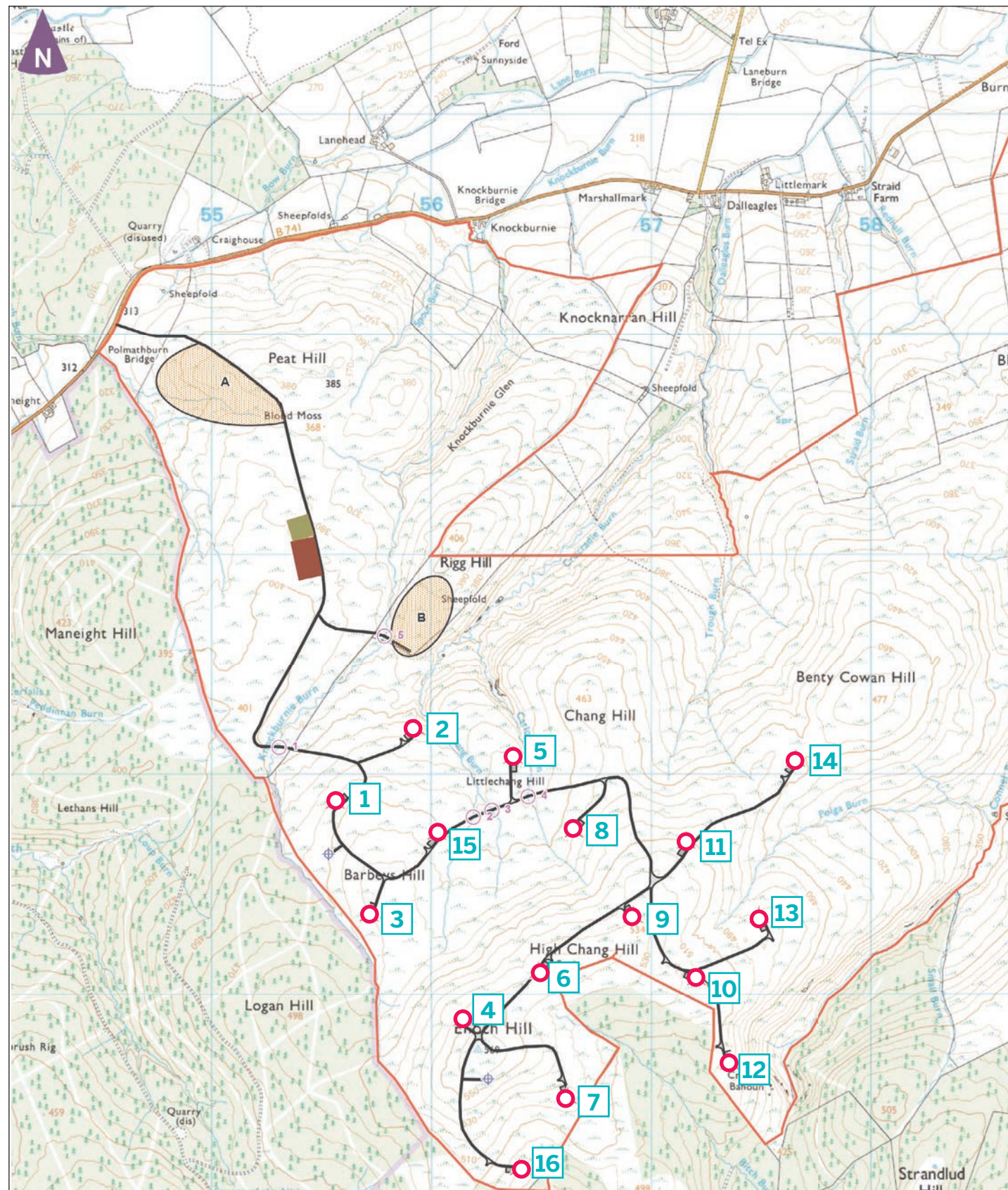
Left: design development sketch with north facing slopes highlighted and proposed locations of turbines highlighted in transition zone.

Key:

-  Turbine
-  Transition between Southern Uplands and Southern Uplands and Forestry

4 Revised design for FEI assessment

Revised layout for FEI assessment

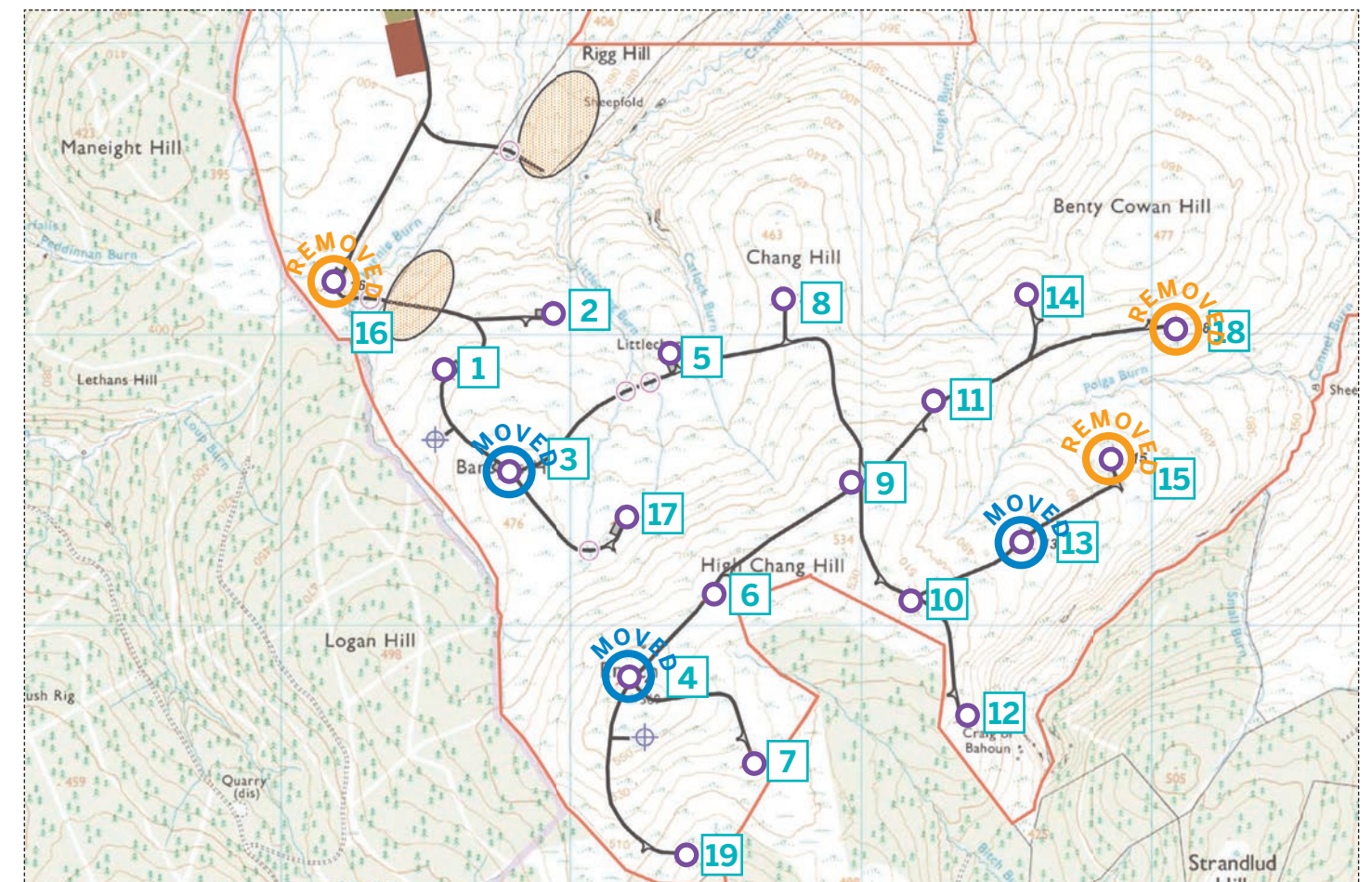


Improvements

The following improvements have been made to the original layout submitted in September 2015:

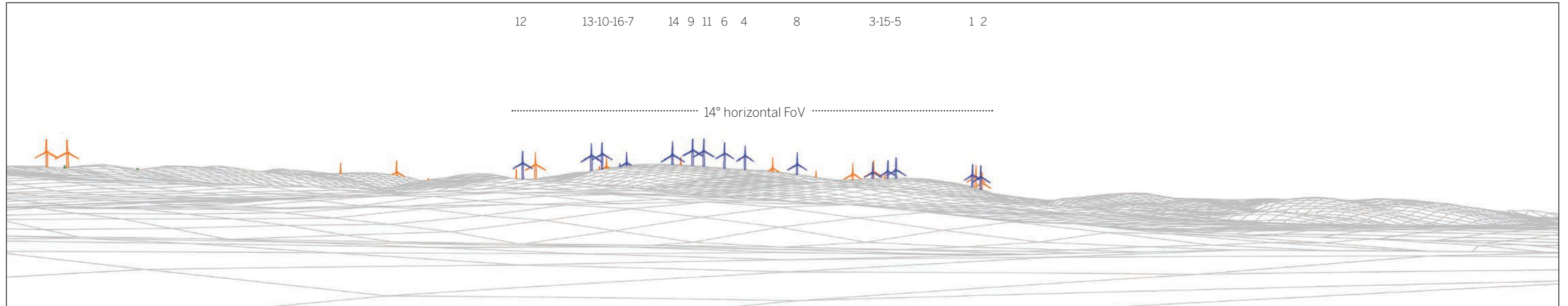
- ▶ Number of turbines reduced from 19 to 16;
- ▶ Outlying turbine (16) removed;
- ▶ A tighter and more cohesive layout;
- ▶ Turbines are located on more even ground; and
- ▶ Reduced number of borrow pits (from 3 to 2) and access tracks.

Original layout for September 2015 assessment with changes indicated

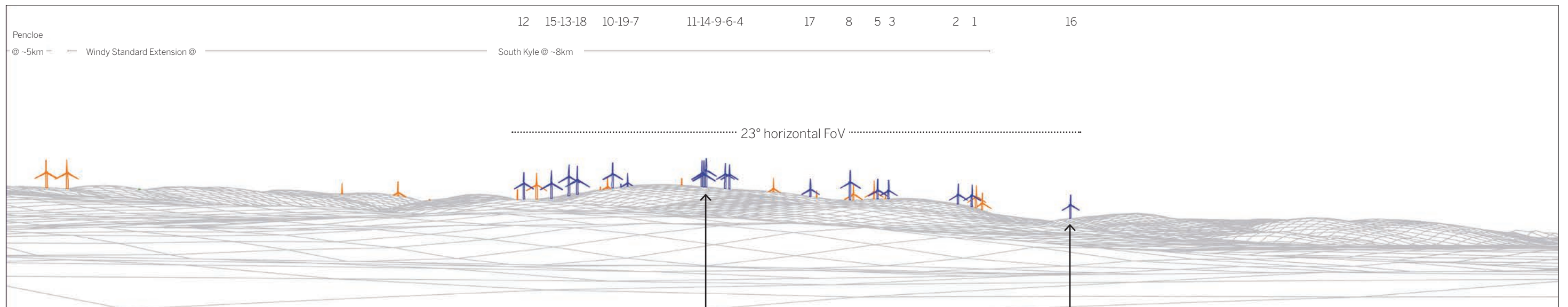


5 Viewpoint 4: New Cumnock Cemetery

Revised: December 2016



Original: September 2015



Reduced stacking

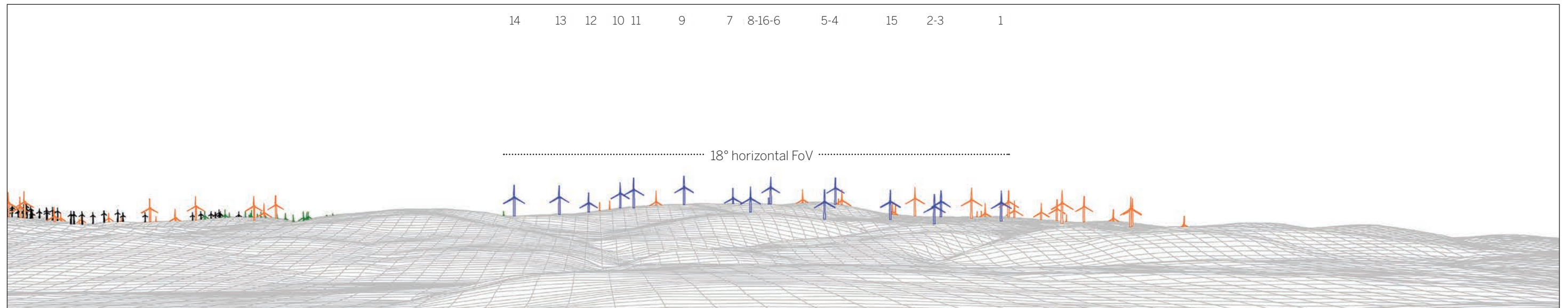
Outlying turbine removed

Comments

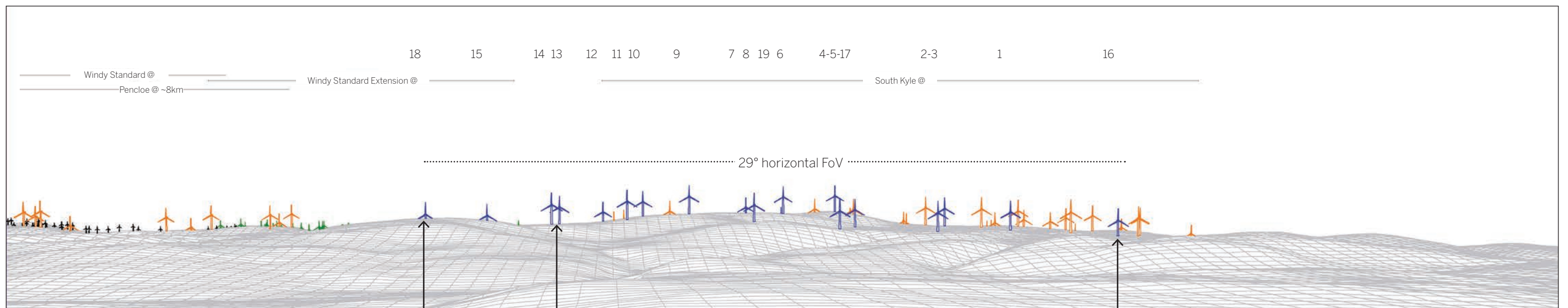
- ▶ Reduced horizontal field of view from 23° to 14°;
- ▶ Less stacking of turbines, and more even composition;
- ▶ Reduction in visible hubs from 17 to 15; and
- ▶ Outlying Turbine 16 removed.

6 Viewpoint 5: Highpoint north of site (near Auchinross)

Revised: December 2016



Original: September 2015



Fewer turbines

Reduced stacking

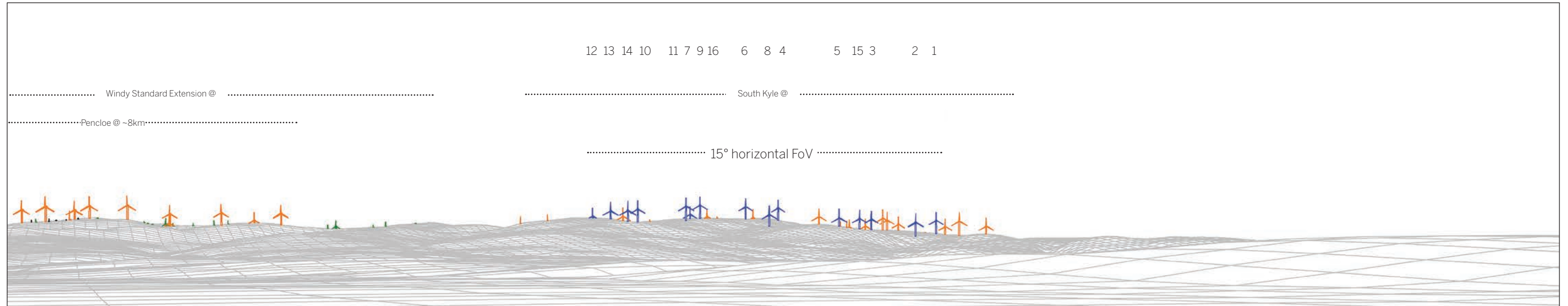
Outlying turbine removed

Comments

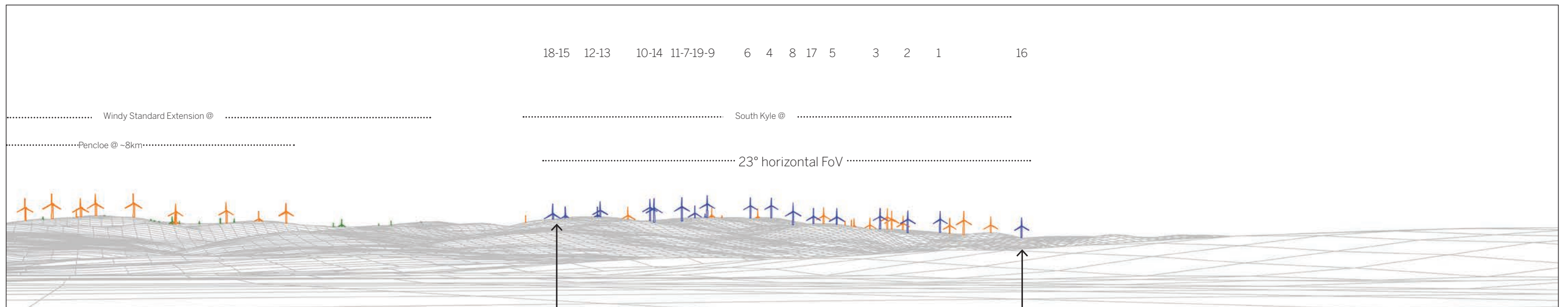
- ▶ Reduced horizontal field of view from 29° to 18°;
- ▶ Less stacking of turbines and more even composition;
- ▶ Reduction in visible hubs from 19 to 16; and
- ▶ Outlying Turbine 16 removed.

7 Viewpoint 7: Lochside Hotel

Revised: December 2016



Original: September 2015



Reduced stacking

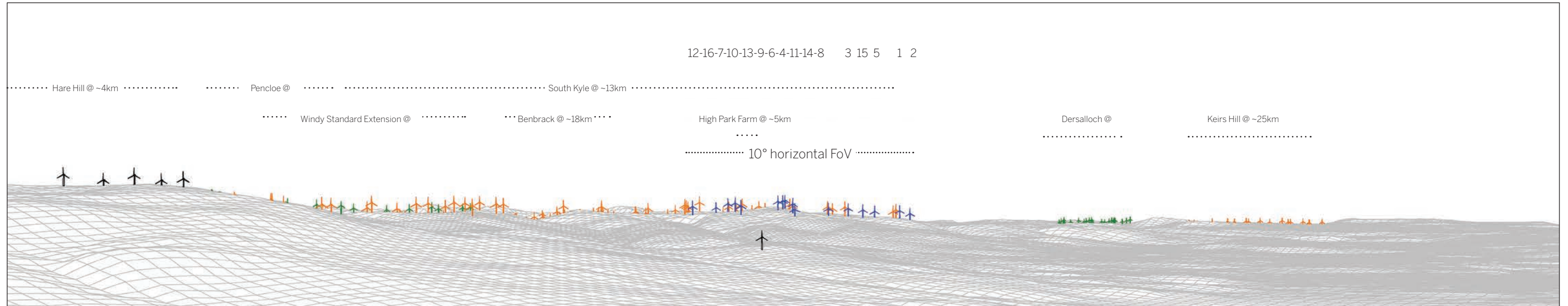
Outlying turbine removed

Comments

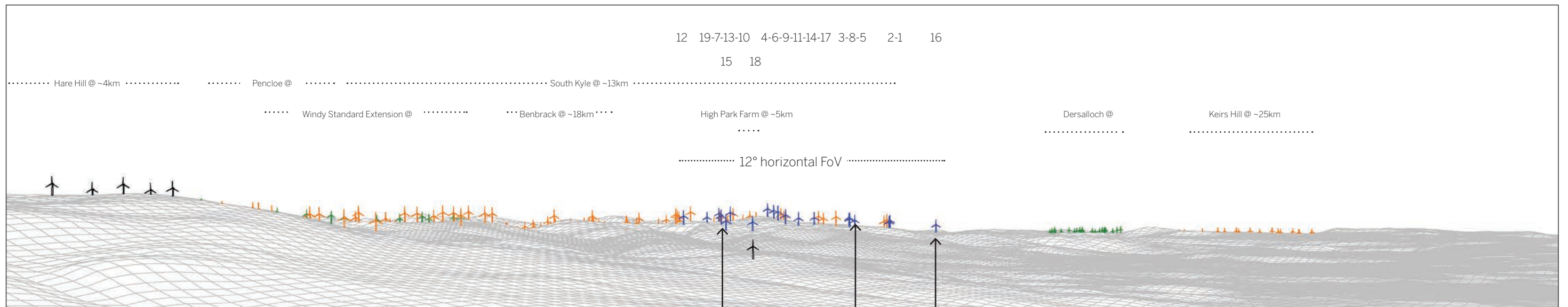
- ▶ Reduced horizontal field of view;
- ▶ Less stacking of turbines; and
- ▶ Reduction in visible hubs from 19 to 15.

8 Viewpoint 12: Corsencon Hill

Revised: December 2016



Original: September 2015



Fewer turbines Reduced stacking Outlying turbine removed

Comments

- ▶ Reduced horizontal field of view;
- ▶ Less stacking of turbines; and
- ▶ Reduction in visible hubs from 19 to 16.