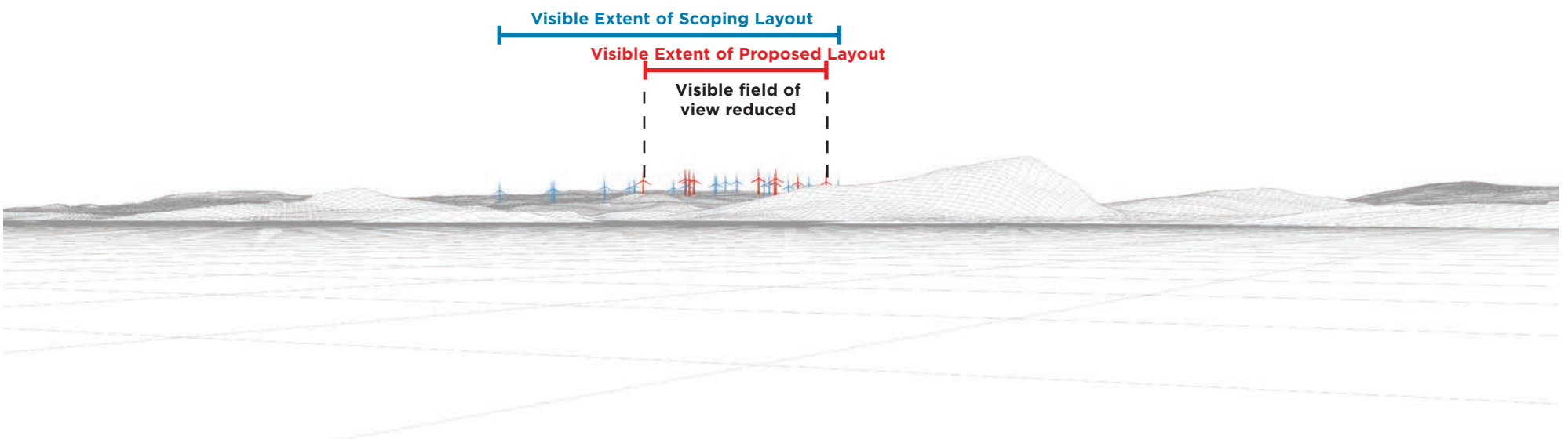




BASELINE PHOTOGRAPHY

53.5° (planar projection)



COMPARATIVE WIRELINE: Proposed Layout in red, Scoping Layout in blue

53.5° (planar projection)



PHOTOMONTAGE: Proposed Layout

53.5° (planar projection)

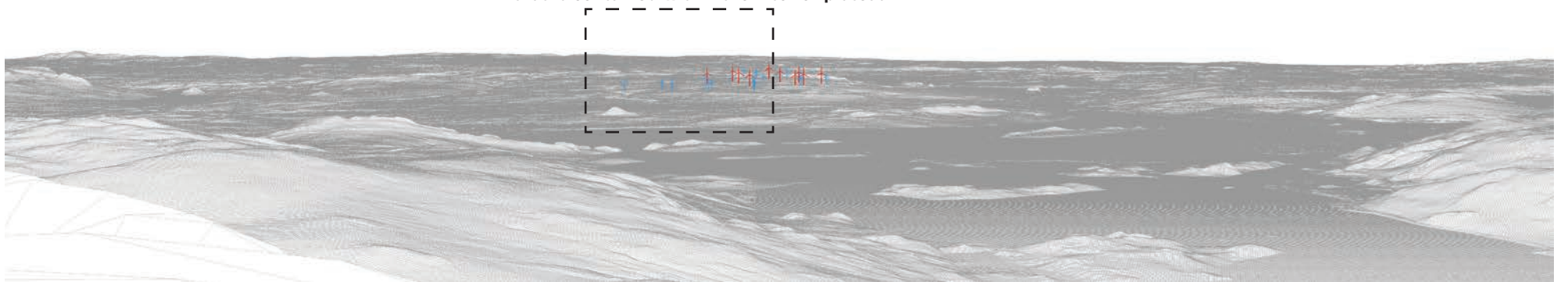


BASELINE PHOTOGRAPHY

53.5° (planar projection)

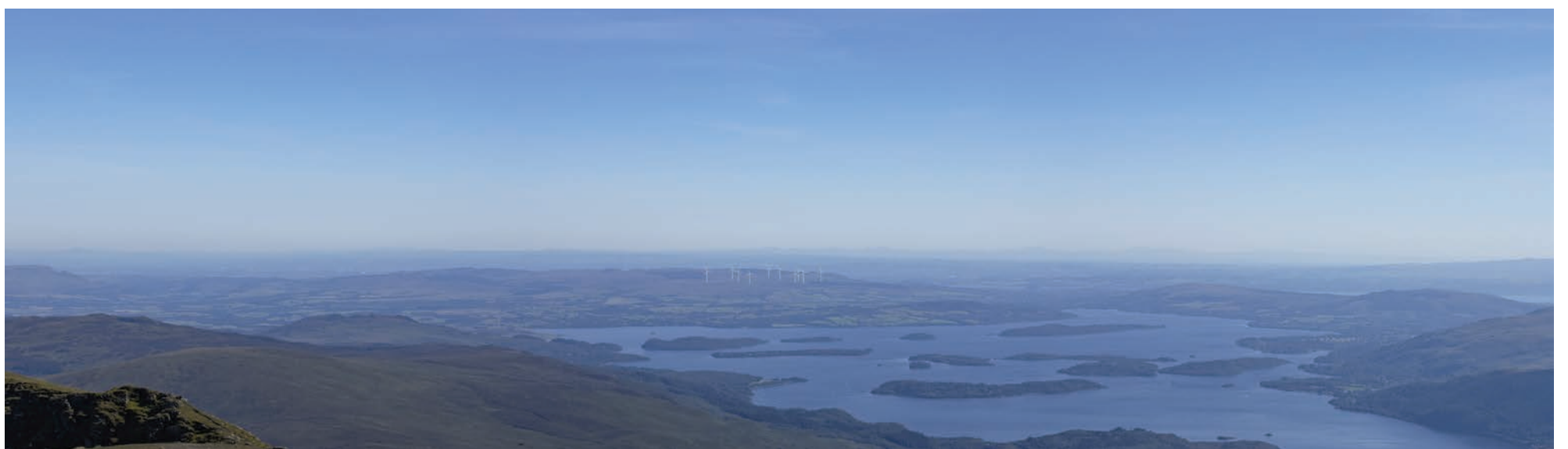
Visible Extent of Scoping Layout
 Visible Extent of Proposed Layout

Peripheral turbines removed, resulting in a balanced, compact and cohesive layout that is contained within the interior plateau



COMPARATIVE WIRELINE: Proposed Layout in red, Scoping Layout in blue

53.5° (planar projection)



PHOTOMONTAGE: Proposed Layout

53.5° (planar projection)

Figure 31: Layout Comparison: VP29 Ben Lomond

8. Residential Properties





Baseline Photography: Viewpoint 4: Balloch Country Park access road

8. Residential Properties

Residential properties that lie in the vicinity of the Site are considered to be highly sensitive to visibility of the Proposed Development, and views gained from properties have been an important consideration in the design iteration of the Proposed Development. Guidance produced by the Landscape Institute (2019) indicates that it is relevant to consider the effects that the Proposed Development may have on views from residential properties that lie within a 2 km radius of the nearest turbine in the Proposed Development.

Figure 32 shows the location of residential properties that lie within a 2 km radius of the Scoping Layout and the Application Layout. This shows that the number of properties within a 2 km radius of the nearest turbine has dropped considerably:

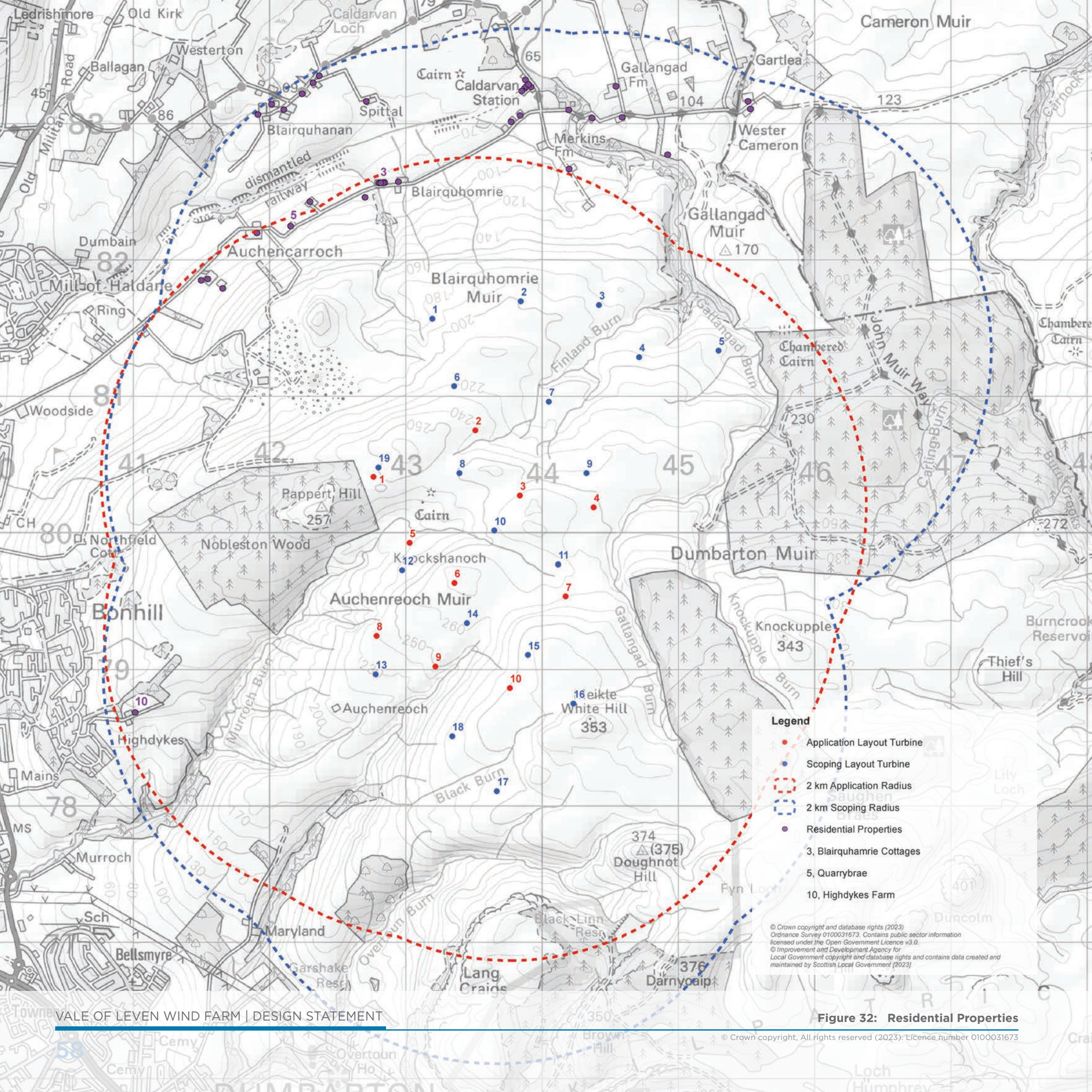
- **Scoping Layout - 34 properties**
- **Application Layout - 12 properties**

A Residential Visual Amenity Assessment (RVAA) that evaluates the likely effects of the Proposed Development on residential visual amenity on the 12 relevant properties is included as part of the LVIA. The purpose of the RVAA is to identify any properties where the magnitude of change could result in an ‘overbearing’ or ‘dominant’ visual impact on the amenity of a residential property, referred to in the Landscape Institute Guidance as the ‘RVAA threshold’. The ‘threshold’ infers a level of impact which would become a material planning consideration.

The RVAA indicates that seven of the 12 properties included are likely to experience a significant visual effect as a result of the Proposed Development. Of these seven properties, one would have a high magnitude of change, four would have a medium-high magnitude of change, and two would have a medium magnitude of change. In accordance with the methodology, a Step 4 Assessment is required for the one property that has a high magnitude of change (Property 10, Highdykes Farm). The Step 4 Assessment found that the effect on this property would not reach the RVAA threshold due to the location of the turbines in a peripheral aspect of the view, so that the key open view from the property would not be directly affected.

Design iteration has been instrumental in both the limited number of properties that lie within the 2 km radius and the fact that no effects on views from residential properties will cross the threshold that would become a material planning consideration.

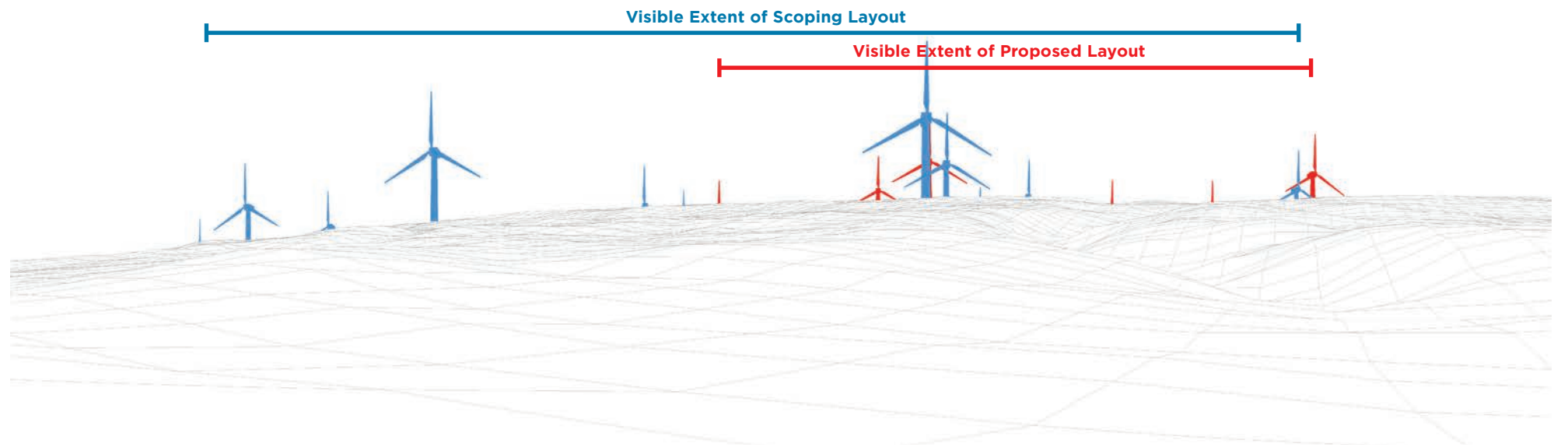
The design process is shown in relation to three properties in Figure 32, which shows wireline views from three of the properties. The wirelines show the Scoping Layout of the Proposed Development as well as the Application Layout in order that the benefits of the design process can be clearly seen.



- Legend**
- Application Layout Turbine
 - Scoping Layout Turbine
 - ⬢ 2 km Application Radius
 - ⬢ 2 km Scoping Radius
 - Residential Properties
 - 3, Blairquhanan Cottages
 - 5, Quarrybrae
 - 10, Highdykes Farm

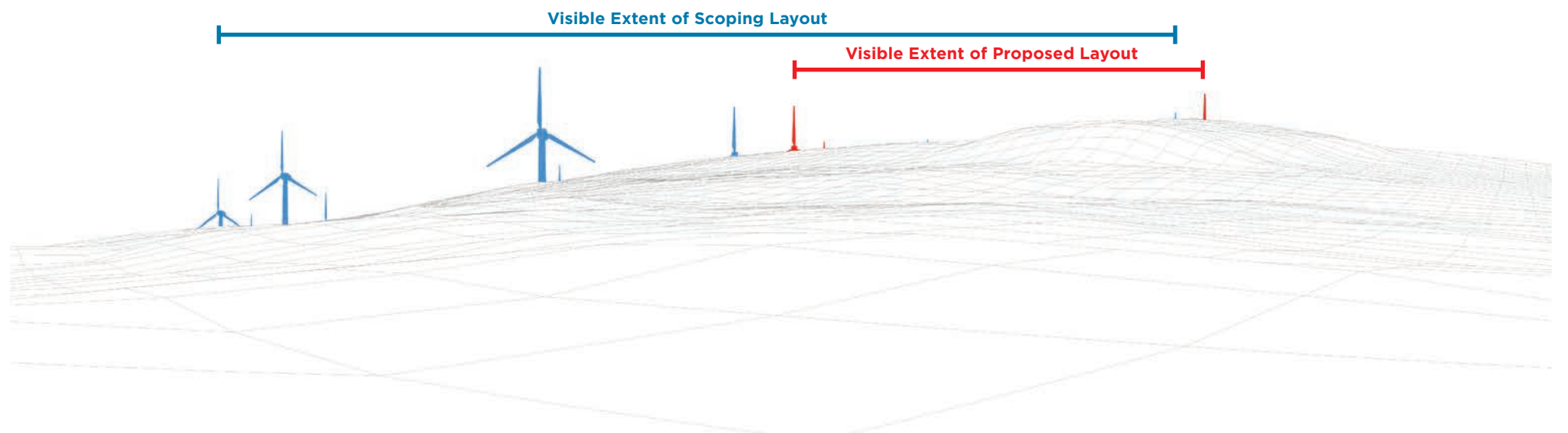
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 © Improvement and Development Agency for Local Government copyright and database rights and contains data created and maintained by Scottish Local Government (2023)

Figure 32: Residential Properties



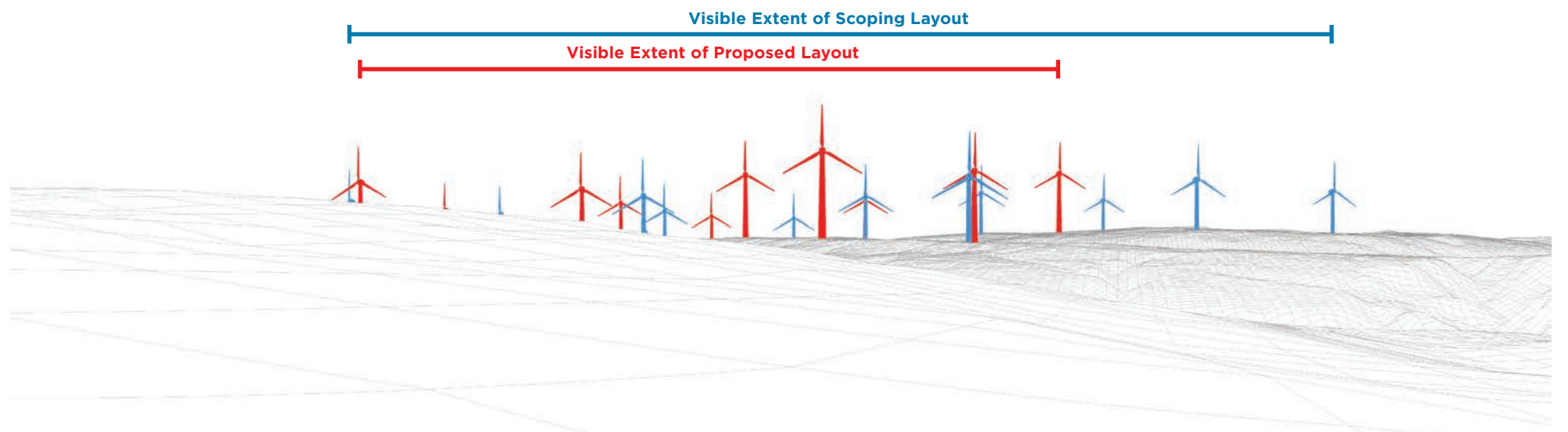
COMPARATIVE WIRELINE: Residential Property: 2 Blairquhamrie Cottages. Proposed Layout in red, Scoping Layout in blue

90° (cylindrical projection)



COMPARATIVE WIRELINE: Residential Property: Quarrybrae. Proposed Layout in red, Scoping Layout in blue

90° (cylindrical projection)

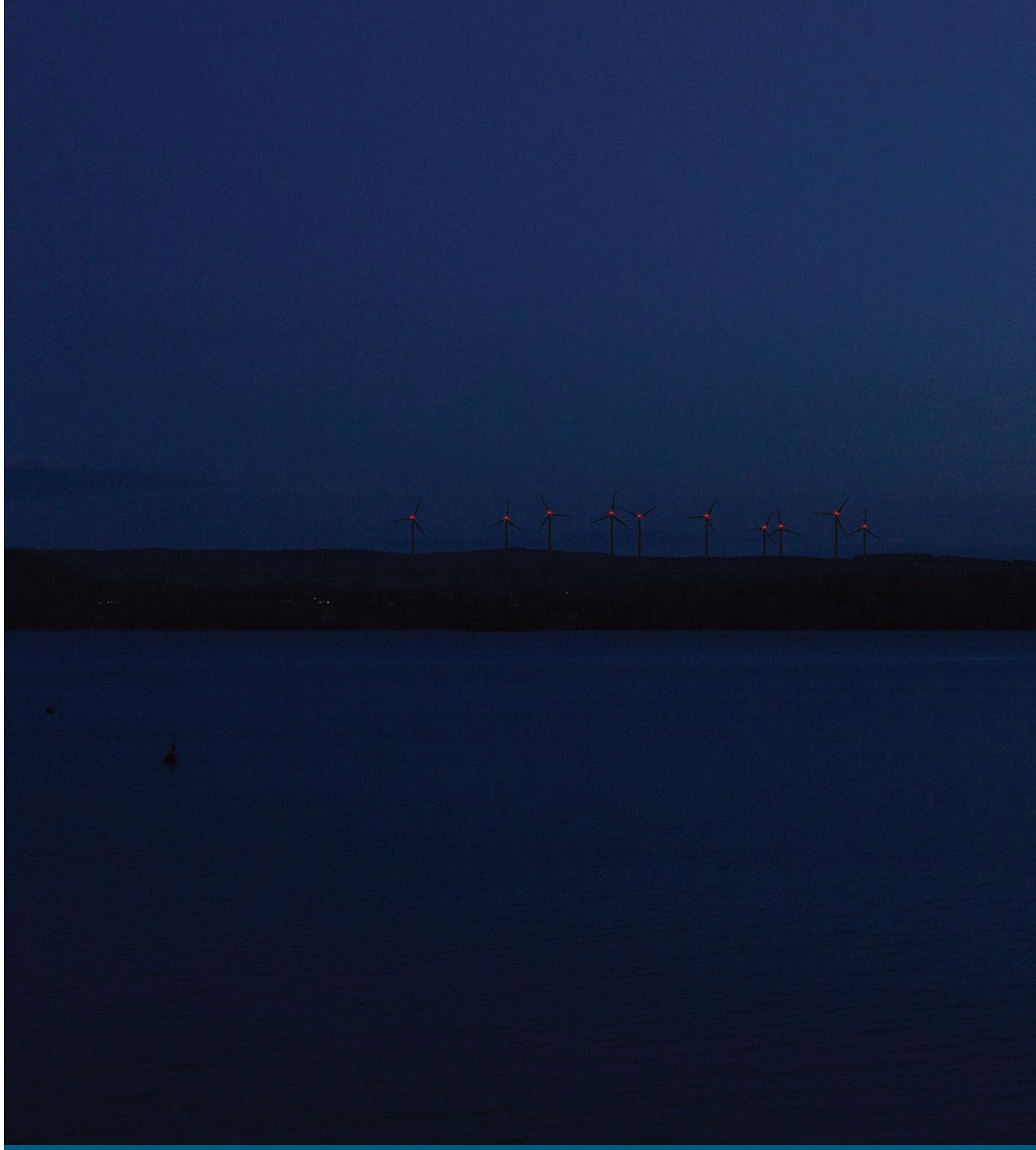


COMPARATIVE WIRELINE: Residential Property: Highdykes Farm. Proposed Layout in red, Scoping Layout in blue

90° (cylindrical projection)

Figure 33: Layout Comparison: Residential Viewpoints

9. Other Considerations



9. Other Considerations

Aviation Lighting Effects

The Civil Aviation Authority (CAA) requires that ‘en-route obstacles’ at or above 150 m above ground level are lit with visible lighting to assist their detection by aircraft. As the turbines in the Proposed Development are 250 m to tip height there is a requirement for the turbines to display medium intensity ‘steady’ (e.g. not flashing) red aviation lights (emitting 2,000 cd) at night. These would be fitted to the nacelles of the turbines in the Proposed Development and mid-level tower lights would not be required. All nacelles would also be fitted with infra-red lighting, which is not visible to the human eye and is therefore not relevant to visual impact. While the light source on nacelles is steady, the lights may appear to flicker on and off with blade rotation when the turbine blades pass between the lights and the observer, dependent on wind direction and the position of the observer. The impacts of visible aviation lighting of the Proposed Development are assessed and illustrated in the LVIA.

It is proposed that all ten of the Application Layout turbines will be fitted with lights on their hubs. A lighting scheme was not produced for the Scoping Layout, and it is therefore not possible to draw direct conclusions as to the benefits arising from design iteration. However, it may be assumed that more than ten of the 19 scoping turbines would have required lighting, and the reduction in turbine numbers to ten is therefore beneficial. The relatively uniform level of the turbine hubs is also beneficial as it ensures visibility of an even row of lights across the view.

Night-time visual effects have been reduced through the removal of the meteorological mast that was proposed as part of the infrastructure of the Proposed Development. This would require to be fitted with visible lights due to its height, and the lighting would have differed in appearance from the turbine lights due to the constant appearance of the lights, with no flickering apparent. The mast was removed from the Proposed Development in the final infrastructure iteration in order to mitigate these night-time effects.

The night-time photomontage for Viewpoint 17 (Balmaha Harbour), shown to the left, illustrates the relatively uniform appearance of turbine lighting across the skyline.

Cultural Heritage

Historic Environment Scotland (HES) and West of Scotland Archaeology Service (WoSAS) were consulted at Scoping stage in relation to the 19 turbine Scoping Layout. In its Scoping Response, HES outlined five assets as being “...*particularly vulnerable to setting impacts*”:

- SM90107 Dumbarton Castle
- SM2911 Knockupple, long cairn
- SM2329 Lang Cairn, chambered cairn and cairn, Gallangad Muir
- GDL00306 Overtoun House & LB24907 Overtoun House and Garden Walls
- GDL00042 Balloch Castle & LB123 Balloch Castle

In addition, HES identified a further seven assets which they believed may be subject to setting impacts as a result of the Proposed Development.

- LB823 Dovecot, Strathleven
- LB115 Strathleven House
- LB1125 Woodbank House with Garden Building
- LB7625 Ross Priory & its associated GDL: Ross Priory (GDL00329)
- LB7628 Catter House
- SM6576 Inchmurrin Castle, castle and kiln-barn
- SM3385 Balloch Castle, earthwork, Loch Lomond Park

HES also highlighted the importance of waterbodies as a significant historic transport route in the wider area of the Proposed Development, identifying the importance of the River Clyde, Loch Lomond and their tributaries as having an important relationship with assets such as SM90107 Dumbarton Castle, SM3385 Balloch Castle, earthwork, Loch Lomond Park SM6576 Inchmurrin Castle, castle and kiln-barn.

Following HES’s Scoping comments, the detailed design work that was carried out to reduce the Proposed Development from 19 to ten turbines significantly reduced the potential for significant effects on the cultural significance of the assets listed by HES by causing change in their setting. In particular, the revised design significantly reduced the level of visibility from and to:

- SM90107 Dumbarton Castle
- SM2911 Knockupple, long cairn
- SM2329 Lang Cairn, chambered cairn and cairn, Gallangad Muir
- GDL00042 Balloch Castle & LB123 Balloch Castle

As a result of the design iteration, the Cultural Heritage and Archaeology chapter has predicted operational effects of no higher than minor significance on the cultural significance of these monuments. The reduction in visibility of the Proposed Development is such that no significant effects on the cultural significance of the other assets listed by HES is predicted. The reduction in turbine numbers also ensures that the role the waterbodies played in relation to the assets noted by HES would remain fully appreciable.

WoSAS agreed with the proposals set out in the Scoping Report regarding avoiding any direct impacts on heritage assets by ensuring these are avoided by design. The reduction in turbine numbers led to a reduction in the potential for direct or indirect impacts on heritage assets which would have been in close proximity to the originally proposed turbine locations.

The revisions to the layout have therefore had a number of benefits in adequately maintaining the integrity of the setting of the heritage assets in the wider area of the Proposed Development and in reducing the potential for direct impacts on heritage assets within the Site boundary.



PHOTOMONTAGE: Cultural Heritage Viewpoint 5: View towards SM90107 Dumbarton Castle from Langbank

53.5° (planar projection)

Ecology

Extensive ecology surveys, including protected species, habitats, fisheries and bat activity surveys, were undertaken across the Site between 2020 and 2022, and covered an area far in excess of the Application Boundary. The EIAR has identified potential impacts on ancient woodland, blanket/wet modified bog habitats and high-collision risk bat species, with mitigation measures proposed to reduce the potential impact to not significant in the context of the EIA Regulations.

The reduction in turbine numbers from the Scoping Layout to the Application Layout of the Proposed Development was beneficial in terms of sensitive habitats as it reduced the area of disturbance/ removal of sensitive blanket bog/wet modified bog habitats that would have been required to construct the Proposed Development. The reduction in turbine numbers has also reduced the collision risk for bat species. Specifically, the removal of turbines from the northern part of the Site has served to beneficially increase the separation between the Proposed Development and watercourses hydrologically connected to the Endrick Water SAC.

Ornithology

Ornithology surveys following NatureScot guidance were undertaken across the Site and a 2 km buffer between March 2019 and August 2022. Surveys included flight activity, scarce breeding birds (including raptor, owl and diver and species listed on Annex 1 of the EU Birds Directive or Schedule 1 of the Wildlife and Countryside Act 1981), breeding birds (waders), black grouse and winter-walkover surveys. As agreed with NatureScot, additional ornithology survey data collected within the Site between September 2008 to August 2009 was also used for the baseline assessment. The EIAR identified potential impacts on osprey, goshawk and black grouse, but unmitigated, the effect on the Natural Heritage Zone (NHZ 17, West Central Belt) populations were assessed to be not significant in the context of the EIA Regulations.

The reduction in turbine numbers from the Scoping Layout to the Application Layout of the Proposed Development was beneficial in terms of reduced disturbance and collision risk to birds. To minimise the likelihood of significant effects on ornithological features, the design process has avoided locating infrastructure within at least 500 m from any known nest site of a Schedule 1 breeding species and black grouse lekking location. The Outline Biodiversity Enhancement Management Plan (OBEMP) includes plans to maintain/restore/enhance habitat for black grouse.

Noise

Noise and vibration from the Proposed Development is considered to cause minimal effect when assessed against applicable UK standards. This is due to the closest relevant element of the Proposed Development (the substation) being located at least 1.5 km (1 mile) from the nearest residential property.

Ten turbines are proposed for the Proposed Development, which results in lower noise levels in comparison with higher numbers of the same candidate turbine.

The large distances between the Proposed Development and residential properties during the construction phase indicate that construction noise from the main Site works will be inaudible, with haul road traffic up to the site being below criteria specified within UK standards.

Baseline noise monitoring was completed at surrounding receptors, and the results of the surveying against the operational noise levels show no exceedances of the noise criteria.

10. Conclusion





Photomontage: Viewpoint 7: Duncryne Hill

10. Conclusion

The design process for the Proposed Development, as described in this Design Statement, has led to an Application Layout of ten turbines with a blade tip height of up to 250 m. This layout was developed from the 19-turbine Scoping Layout (with a 200 m blade tip height) as a result of several stages of design iteration that have allowed issues that arose in relation to the Scoping Layout to be addressed and mitigated. The Application Layout has therefore been developed on the basis of a thorough understanding and appreciation of the environmental and technical investigations carried out as part of the EIA process, including landscape and visual considerations, and in response to feedback from the community and consultees.

Consequently, as well as satisfying environmental and technical requirements, the Application Layout of the Proposed Development is considered to be acceptable in landscape and visual terms. It appears as a balanced, compact and logical arrangement of turbines when seen in key sensitive views, and its setting in the interior of the upland plateau landscape provides an appropriate receiving environment that can accommodate the Proposed Development. Potential effects on residential visual amenity have also been considered in the design process, and have been mitigated to a notable degree in the Application Layout through the removal of the turbines in the Scoping Layout that lay at closest proximity to residential properties and the reduction in the field of view affected by the Proposed Development.

The nature of wind farm development means that effects on landscape character and visual amenity are likely to remain after mitigation, and these effects have been identified and assessed within the LVIA. Overall, OPEN is of the view that the Proposed Development is appropriate and acceptable in terms of its design relationship within the landscape context.

The DS demonstrates that environmental effects associated with the Proposed Development have been avoided or minimised through the application of the identified design considerations within the design evolution process. The potential environmental effects from the Proposed Development are detailed in the EIAR and where possible, mitigation measures have been proposed to eliminate or reduce these effects.

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