

Technical Appendix

## Lairdmannoch Energy Park

Technical Appendix 5-2: Visuals Methodology

# Lairdmannoch Energy Park Limited **Wind2**

May 2025

### **Supporting Graphics**

#### Approach

The LVIA is supported by a range of figures including viewpoint photography. These have been prepared in adherence to the principles presented in the GLVIA 3, the Landscape Institute's Advice Note 06/19 'Visual Representation of Development Proposals' (LI, September 2019), and the Visual Representation of Windfarms: Guidance, Version 2.2, (NatureScot, 2017).

#### Data

Topographical modelling is based on the 5m resolution Ordnance Survey (OS) Terrain 5 Digital Terrain Model (DTM), available for the whole of the UK mainland. OS Terrain 5 data has a typical accuracy level greater than 2m Route Mean Square Error (RMSE).

#### Visibility Mapping

Zone of Theoretical Visibility (ZTV) maps have been generated using (Geographic Information Systems) GIS to assist in in identifying areas where visibility would not occur as well as viewpoint selection, illustrate areas from where part or all of the proposed development may be visible and to indicate its potential influence in the wider landscape.

Unless expressly stated, the visibility maps present the extent of potential visibility on the basis of a 'bare ground' scenario: They do not account for the effects of screening and filtering of views as a result of intervening features (e.g. buildings, trees, hedgerows, etc) and so tend to over-estimate visibility, both in terms of the area from which the project can potentially be seen and potentially in terms of the extent of the development visible from a particular viewpoint.

ZTVs which include vegetation and buildings and assumed heights are used which are stated on the ZTV figure. The location and extent of woodland and buildings is derived from OS Open data and assumed heights for these are added to the bare ground model. As a result, the ZTV study does not take account of all above ground features – only those included as woodland and buildings in the OS mapping at the time the ZTV was prepared. These ZTV studies present a more likely visibility pattern than bare ground studies, but do not take account of felling cycles and tree growth. Therefore both ZTVs should be used where available.

#### Photography

All photography was undertaken through the use of a full frame digital Single Lens Reflex (dSLR) (Canon EOS 5d) camera mounted with a 50 millimetre (mm) 'fixed' lens (Canon EF 50mm - f/1.4 USM). The camera was mounted on a tripod with a panoramic head in order to obtain a stable platform for the single frame and panoramic views. The position of the tripod was recorded with a handheld GPS device. In addition to recording the location of the viewpoint, observations with regard to time of day, weather, cloud cover, and visibility were recorded.

Following completion of the fieldwork, the photography was reviewed, and the clearest images selected for the production of panoramic images. In some cases, small adjustments are made to the images through the use of Adobe Photoshop software in order to improve clarity.

The panoramas were then prepared through the joining of multiple images in Photoshop and PTGUI.

#### Visualisations

The visualisations supporting the LVIA have been presented in order to provide a view of the proposed development within its landscape context and assist the assessor in determining the change and resultant effect on the viewpoint location.

The photomontages have been prepared through the use of Adobe Photoshop and Resoft Windfarm software. Additional modelling of ground infrastructure including solar panels, access tracks and earthworks was undertaken using LSS Vista software.

Use of Windfarm allows wind turbines to be accurately positioned in the photograph/panorama and rendered so as to account for cloud cover, sun position and colour of the proposed wind turbines. While every effort is undertaken to render the turbines to account for the prevailing lighting conditions, where they may appear indistinct against the background, manipulation of the rendering has been applied in order to make the turbine appear more distinct.

The presentation of graphics material requires careful consideration in order to prepare a visualisation that provides an accurately scaled depiction of the Proposed Development for use at the viewpoint location. In this instance, where a photomontage has been prepared for a viewpoint, the photomontage has been presented in accordance with the NatureScot standards. These comprise:

- The following images at A3 height and A1 width
  - 1) Baseline panorama and matching wireline. A panorama, using an angle of view of 90°, illustrating the existing view presented alongside an identically sized matching wireframe. The size of the image and matching wireframe is 820 mm by 130 mm, with a 90° horizontal field of view and a 14.2° vertical field of view. To accommodate the required field of view the image is presented as a cylindrical projection. To facilitate the verification process, the horizontal extent of the central 50mm frame is indicated beneath the image, along with the extent of the 53.5° panorama. This format shows the wider landscape context within which the Proposed Development will sit and allows direct comparison of the changes to be made in addition to providing a useful aid memoire. The recommended viewing distance for these visualisations is at a comfortable arm's length, as set out on the visualisation figure.
  - 2) An illustration of the proposal using an angle of view of 53.5° at the equivalent of a 50mm lens. The image size is 260mm high by 820mm wide. The horizontal field of view is 53.5° and the vertical field of view is 18.2° in the centre of the image. The image is presented as a planar projection. The recommended viewing distance for these visualisations is a comfortable arm's length. This format allows for direct comparison of the effects in the field at a comfortable viewing distance as recommended by NatureScot.

In views where a photomontage has not been prepared, a wireframe view has been submitted. As with the photomontages, the turbines have been accurately positioned and the wireframe outputted so as to match the field of view to the panorama/photograph.

It should be noted that the LVIA has not been solely conducted on the visualisations presented within the EIA Report (Volume 3) but has included analysis of a range of wireframe views and other visualisations in addition to review of computer modelling of the Proposed Development Site in addition to other materials not presented in this assessment.

#### Aviation Lighting

Additional aviation lighting photomontage sheets have been created for selected viewpoints to illustrate proposed turbine lighting.

Low light photographs, captured approximately 30 minutes after sunset, are stitched in PTGUI and photomontages created in Resoft Windfarm using the same processes as daytime photographs described above. Lighting is then modelled within Resoft Windfarm.