

Appendix B

Zone of Theoretical Visibility and Visualisation Methodology

B.1 This appendix outlines the methodologies for the production of the Zone of Theoretical Visibility (ZTV), Viewpoint Photography and Visualisations.

ZTV Mapping

B.2 Evaluation of the theoretical extent to which the Proposed Project will be visible within a 3km radius, was undertaken by establishing a Zone of Theoretical Visibility (ZTV) using ArcPro 3.0.3 software. This software (Spatial Analyst/Visibility tool) enables the calculation of the theoretical visibility of the Proposed Project from their surroundings.

B.3 The terrain model used was LiDAR Digital Surface Model (DSM) data (1m grid, obtained from the UK Government in September 2023). The DSM accounts for screening objects, including vegetation and buildings.

B.4 Earth curvature and atmospheric refraction have been taken into account.

Visualisations

Viewpoint Photography

B.5 Photographs were taken in December 2023 and March 2024, in compliance with Landscape Institute Technical Guidance Note 06/19[1]. The camera used for the photography was a Nikon D780 full frame digital SLR with a fixed 50mm focal length lens.

B.6 A tripod with vertical and horizontal spirit levels was used to provide stability and to ensure a level set of adjoining images. A panoramic head was used to ensure the camera rotated about the no-parallax point of the lens in order to eliminate parallax errors between the successive images and enable accurate stitching of the images. The camera was moved through increments of 15 degrees and rotated through a full 360 degrees at each viewpoint. 16 photographs were taken for each 360 degree view.

B.7 The Ordnance Survey coordinates of each viewpoint location were recorded with a GPS device and a photograph of the tripod position was taken in accordance with Landscape Institute guidance.

B.8 Weather conditions and visibility were considered an important aspect of the field visits for the photography. Where possible, visits were planned around clear days with good

visibility. Viewpoint locations were visited at times of day to ensure, as far as possible, that the sun lit the scene from behind, or to one side of the photographer. South facing viewpoints can present problems particularly in winter when the sun is low in the sky and the sun is directly in the view, causing glare.

route would remove on a temporary basis, prior to its replacement. The visualisations do not take account of any vegetation lost or replaced as a result of the removal of the 400kV overhead line.

Photograph Stitching, Wireframes and Photomontages

B.9 PTGui© software was used to stitch together the adjoining images to create wider panoramic images of the development site and wider landscape.

B.10 43D Topos© software was used to create an accurate and dependable Digital Terrain Model (DTM) of the site and surrounding topography using Ordnance Survey Terrain 5 height data. The Existing pylon locations and proposed CSEC locations were added to the model as control points.

B.11 Viewpoints were micro-sited using hi-resolution aerial photography alongside the GPS photography positions and on-site tripod photographs. Views were then created within the 43D Topos model which replicated the camera parameters and perspective geometry of the baseline photography.

B.12 Views were exported from the 43D Topos model and accurately aligned with the Panoramic Photography using the topography and control points. These model exports informed the removal of the existing pylons within relevant views using Adobe Photoshop© software.

B.13 The Proposed new route alignment and cable route information was provided to LUC in both 2D and 3D AutoCAD (DWG) format and the CSEC layout provided as a 3D model (OBJ format). The 3D content was geo-referenced and added to a DTM model created in Blender© software along with the visualisation viewpoint camera positions. Blender was used to render the proposed pylons and CSECs from those viewpoint locations where new proposals were visible. The next stage required the Blender view renders to be composited with the baseline photography using Adobe Photoshop© software to create the visualisations. Adobe InDesign© software was used to present the figures. In order to illustrate the wider landscape and visual context the first image of each figure presents the baseline panorama, followed by the visualisation at 90 degree horizontal field of view. For baseline only views, the position of the CSECs, proposed removal of existing pylons extent and vegetation removal have been indicated on an image with a 90 degree horizontal field of view.

B.14 The visualisations do not show any benefits of the proposed landscape mitigation and therefore, represents a Year 0 scenario. The visualisations show the removal of large areas of woodland including Breakheart Plantation and Warrens Farm Plantation, however, they do not show the removal of field boundaries which the underground cabling