Tween Bridge Solar Farm

Environmental Statement
Appendix 6.8: Photomontage Methodology

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Document Reference: 6.3.6.8

May 2026

Revision 1

PHOTOMONTAGE METHODOLOGY

Overview

Pegasus Planning Group use methodologies compliant with relevant sections of the current guidelines for photography, photomontage and TYPE 3 production included within:

- The Landscape Institute Technical Guidance Note 06/19
- Scottish Natural Heritage (SNH) Visual Representation of Wind Farms (February 2017, Version 2.2).

The Type 3s within this document have been produced using a consistent methodology using Camera Matching techniques. Camera matching is the process of replicating real-world camera parameters (position, orientation, projection and focal length) in a 3d virtual environment, enabling the production of mass models and photo-realistic renders of development proposals to be overlaid on baseline photography to the correct scale and orientation.

Definition and Classification of TYPE 3s

Landscape Institute Technical Guideance Note: Visual Representation of Development Proposals (17 September 2019) defines an Type 3 as:

Type 3 visualisations are photomontages or photowires (photographs with wireline overlays) where site photography forms the basis of the imagery, which is then overlaid by a 3D wireframe, massing or rendered model. Type 3 are suitable for representing proposals where precise perception of scale of the printed image, and the highest levels of locational accuracy, are not necessary. If the key criteria for Type 4 cannot be guaranteed, then the visualisation will be classified as a Type 3. 'Type 3' should be clearly stated on all visualisations.

Site Visit and Viewpoint Locations

Each viewpoint is carefully chosen based on a combination of information, these include; zone of theoretical visibility (ZTV) analysis, strategic importance, open dialogue with local authority, and site walkover. Once the project team had agreed the exact locations, a photograph was taken which formed the basis of the study. The surveyor established the precise location of the camera.

Site photography for the Winter document was taken in January and February 2024 by Pegasus Planning Group.
Site photography for the Summer document was taken in April and May 2023 by Pegasus Planning Group.
The viewpoint locations were recorded using photography and the exact GPS data of the position of the camera was recorded.

Photography

For each agreed viewpoint location, a high resolution photograph was taken with a 35mm (full frame) digital SLR camera, The camera was set up at a height of 1.5m to replicate an eye level view from the specified position. The location at which the photograph was taken and GPS positions recorded and photographed. The camera was levelled horizontally and vertically by means of a tripod mounted levelling base and two camera mounted spirit levels.

Lens Selection

In order to capture the full extent of the proposed development and an appropriate amount of contextual built form a 24mm lens (73.7° horizontal field of view), or a 50mm lens (39.6° horizontal field of view), were used.

Photography Equipment

- Canon EOS 5D MkIII digital SLR camera (35mm)
- Canon EF 24mm f/1.4 USM Lens
- Canon EF 50mm f/1.4 USM Lens
- Tripod indexed pan head
- Levelling base with spirit level

Photography stitch

The frames are stitched in PTGUi software to the fied of view required and specified in guidance documents. The detail is documented in the footer of each presentation page.

Photography Post Production

Where necessary standard image post production techniques were used, including curves, sharpening and levels. Should post production be required to a baseline viewpoint image the details of such are included in the Viewpoint Information table.
Any exceptions to the applied policies or deviations from the methodology are clearly described.

The Development Proposal

Pegasus Planning Group created the models using 2D elevations/ site plan drawings provided by the project architect.

Landscape masterplan version:
P21-3484_52B-1 Landscape Strategy

Layout drawing:
J343_1000_05

Ancillary information with equipment elevations:
J343 - Ancillary Drawing Pack - 20250129

Equipment modelled to heights and angles as set out in drawing and representing worse case visibility where features are more likely to be seen, including angles of panels shown 30 degree for fixed panels and 60 degree for tracker panels.

Documentation

The images are annotated with the following information:

- Unique identification code (Viewpoint Reference Number)
- Textual description of viewpoint location and direction of view
- Method
- Co-ordinates of camera position, height and tripod height
- Camera model and lens
- Focal length
- Image orientation
- Image horizontal field of view (HFOV)
- Time of day and date for any source photography
- Map and site photography showing location of camera position
- Peripheral annotation to the image to confirm the direction of view in the original photography (the optical axis)
- Definition of the field of view depicted each side of the optical axis, either in the form of peripheral annotation, textual description or more sophisticated maps

Photographic Alignment within the 3D Environment

The 3D model is combined with Environment Agency Lidar data where available into one file, this is then imported to 3ds Max, a 3D visualisation software package.

A virtual camera is created within 3ds Max using the real-world camera location and field of view (FOV) based on the camera and lens combination selected for the shot .

The annotated photograph is inserted as a background to the view, to assist the Visualiser in aligning the surveyed data to each corresponding background point, based on the Camera Matching Technique.

Using this virtual camera, a render is created of the aligned model at a resolution to match the baseline photograph. This is overlaid onto the baseline photograph to assess the accuracy of the alignment.

Final Rendering and Post-Production

The final render is exported to the same resolution as the baseline photography. Multi pass renders are exported to give the visualiser more control in enhancements of the final image. These multi passes may included but not limited to Selection Mattes, Reflections, Refractions, Shadows, Lighting, Ambient Occlusion and Global Illumination.

The multi pass renders are layered within Adobe Photoshop and blended together to produce the correct level of detail and photo-realism. Finally masking is applied to the image. Endless aesthetic effects can be applied to the rendered image to enhance the realism of the final image and/or make adjustments as a result of proposed material changes. However, the visualiser always attempts to be faithful to the proposed design within it's chosen site.

The final images are then saved in an appropriate format for inclusion within the visual document.

Photowire Output

When shown in Photowire output, the process is the same as fully rendered with exception presentation in the photo. The 'wire' is produced using the alpha chanel of the render, this uses the most outerlying edge of the model form. This edge is marked with a solid line where it appears visible in the view, and a dashed line where the view is mitigated by foreground elements present in the view including vegetation, terrain, existing and proposed structures.

Software Used

- AutoCAD
- 3ds Max 2024
- V-Ray 6 for 3ds Max
- PTGui 12.2
- Adobe Photoshop
- Adobe InDesign