

Downloading and Reviewing:

- 1. Downloaded *.CR2 RAW files from CF card using a CF card reader. The files were saved to the appropriate project folder on the network.
- 2. The tripod and marker shots were downloaded to the same location and deposited in a 'documentation' folder.
- 3. Shots were reviewed with Adobe Bridge, and selections were made based on sharpness, composition, suitability for stitching and exposure.

Processing:

- 4. Using Adobe Camera Raw, simple and standard digital photo processing techniques were applied ie sharpening, noise reduction and chromatic aberration correction. Settings were adjusted as necessary to achieve the best exposure, shadow detail and clarity.
- 5. Using Adobe Photoshop, the processed RAW files were stitched to form a panorama of cylindrical projection.
- 6. The completed baseline panorama was saved as an 8bit PSB file.

AVR Control (Survey)

A full AVR control survey was not performed for this project, however GPS coordinates were recorded for camera position.

In addition to the data recorded on site, Environment Agency DSM LiDAR (2022 First Return 1m resolution) data was used as control data.

**AVR Production
Modelling of the Proposals**

A full set of CAD (DWG) Parameter drawings were made available by the project architect. The proposed scheme parameters (building heights) model was produced in 3D using Autodesk 3Ds Max 2023. See screen grab below.

The building heights parameters were extruded from existing ground levels to design height. The existing ground model was prepared using Environment Agency Composite DTM (2022) 1m resolution data.

Autodesk 3DS Max was used to bring together the proposed parameter model, and photo control LiDAR DSM data to generate a master 3D environment.

Autodesk 3DS Max has poor floating point performance and requires that OSGB36 coordinate based drawings and models need to be reprojected nearer to scene origin (0,0).

A project global shift value (x and y axis) was designated when modelling was started. This value was a coordinate for the centre of the site. All drawings were corrected by the global shift value.

Importing of AVR Control Survey Data

The camera GPS location data was in 12 digit OS grid format and delivered as a *.csv. This data was imported in to 3DS Max using a script and was also corrected to the global shift value. When imported, virtual cameras were created where specified in the data. The DSM LiDAR was imported using a script to build a 3D Mesh.

Aligning the 3D Scene to the Baseline Photography

3DS MAX was used to generate high resolution *renders from the virtual cameras set up in the 3D environment

**Rendering is the process of generating an image from a model (or models in what collectively could be called the 3D environment), by means of computer programs - specifically, in this case Chaos Group V-Ray 7.0 for Autodesk 3Ds Max 2023.*

The virtual camera was configured to match a similar field of view to that of the panoramic baseline photograph.

The render from each camera shows the DSM LiDAR Mesh as a shaded terrain. In order for the render to match the cylindrical projection of the photograph it was necessary to render the LiDAR DSM Mesh to a cylindrical projection (using the spherical camera type in V-Ray 7 by specifying exact horizontal and vertical field of view parameters)

This render of the photo control DSM LiDAR Mesh was taken into Adobe Photoshop converted to a smart object and overlayed on to the baseline photograph. The smart object was scaled (uniformly) so that the LiDAR DSM Mesh aligned with features (significant trees, buildings, field boundaries), and topography in the photograph. The position of the smart object was locked so that it could not be moved.

The baseline photography was then effectively aligned to the 3D environment, and when the proposed model was rendered (in cylindrical projection) from this environment and placed in to the smart object it is therefore automatically correctly positioned in the photograph.

Output of the finished AVR

The style of AVR was discussed with the client and it was agreed that wireframe AVRs were required.

To finalise the visualisations a render was generated from the 3D model, and subsequently inserted in to the aligned smart object. Using the DSM to calculate intervening features, masks were applied to the smart object to hide aspects of the proposed parameters that would be hidden by existing foreground features.

Using the smart object, the field of view of the baseline photography was calculated, measured and subsequently cropped (non destructively) to a fixed field of view of 90 degrees in the horizontal axis for all views.

Using Adobe InDesign, each completed AVR was presented in a document that complies with the relevant guidance. The visualisations produced comply as Type 3 visualisations as set out in the Landscape Institute Technical Guidance Note (TGN06/19) Visual Representation of Development Proposals.

