

Accurate Visual Representations – eb7 ltd
method statement

Ax.1
All views in this study have been prepared as an Accurate Visual Representation (AVR), following the broad principles set out in the Guidelines for Landscape and Visual Impact Assessment 3rd edition (GLVIA3) and in particular following technical guidance outlined in Landscape Institute Technical Guidance Note 06/19.

Appendix C of the London View Management Framework: Supplementary Planning Guidance (March 2012) provides useful guidance for large-scale urban development’s outside of Greater London – identifying what it refers to as ‘AVR types’ (0-3).

Appendix C of the London View Management Framework: Supplementary Planning Guidance (March 2012) defines an AVR as

“An AVR is a static or moving image that shows the location of a proposed development as accurately as possible; it may also illustrate the degree to which the development will be visible, its detailed form or the proposed use of materials. An AVR must be prepared following a well-defined and verifiable procedure so that it can be relied upon by assessors to represent fairly the selected visual properties of a proposed development. AVRs are produced by accurately combining images of the proposed building (typically created from a three-dimensional computer model) with a representation of its context; this usually being a photograph, a video sequence, or an image created from a second computer model built from survey data. AVRs can be presented in a number of different ways, as either still or moving images, in a variety of digital or printed formats”.

Ax.2
The baseline condition will be defined by full frame digital photography and in this study will adhere to certain key principles including:

- be sufficiently up to date to reflect the current baseline situation.
- include the extent of the site and sufficient context – Field of view.

- be presented at a size and relative position, on a corresponding sheet, to allow like-for-like comparison with the visualisation.
- be based on good quality imagery, secured in good, clear weather conditions wherever reasonably possible
- avoid foreground clutter

The proposed condition is defined by accurate photomontage visualisations, these are a combination of computer-generated imagery and photographic context. Proposed visualisations should provide a fair representation of what would be likely to be seen if the proposed development is implemented.

Ax.3
Field of View (FoV)

Lens / camera combinations result in images which capture a Field of View (FoV). The Horizontal Field of View (HFoV) is the angle between the left and right edges of the image. The Vertical Field of View (VFoV) is the angle between the top and bottom of the image.

The proposal under consideration and its relevant landscape context will determine the FoV (horizontal and vertical) required for photography and photomontage from any given viewpoint. This will, in turn, determine whether a telephoto, standard, wide-angle lens is used.

Base photography is carried out with a Full Frame Sensor (FFS) camera and 50mm Focal Length prime lens, unless there are exceptional conditions where wider-angle lenses are required to fully capture the scene.

If a 50mm FL lens cannot capture the view in landscape or portrait orientation (for example, if the highest point of the development is approaching 18° above horizontal) the use of wider-angled prime lenses will be considered, working through the following sequence of fixed lenses in this order: 35mm FL > 28mm FL > 24mm FL > 24mm FL Tilt-Shift.

Lens	Angle
50mm	39.6° HFoV
35mm	54.4° HFoV
28mm	65.5° HFoV
24mm	73.6° HFoV

Ax.4
Visualisation Types

LI TGN 06/19 introduces visualisation types 1 – 4.

Type 1	Annotated Viewpoint Photograph
Type 2	3D Wireline / Model
Type 3	Photomontage / Photowire
Type 4	Photomontage /Photowire / Scale Verifiable

Ax.5
Classification of AVR’s

AVR’s are defined by four main classification types, this classification is a cumulative scale in which each level incorporates all the properties of the previous level.

AVR Level 0	Location and size of proposal
AVR Level 1	Location, size, and degree of visibility of proposal
AVR Level 2	As level 1 + description of Architectural form
AVR Level 3	As level 2 + use of materials

eb7 create Type 2, 3 and Type 4 visualisations for the majority of projects, these being 3D modelled context, photomontage and scale verifiable views. Each visualisation type is further specified to an appropriate AVR level.

e.g. Type 4 visualisation (scale verifiable) | AVR Level 3 (Photoreal)

Ax.6
Common requirements

Photomontage | AVR Level 3

A digital photomontage consists of a base photograph composited digitally with a computer-generated image of the proposal under consideration.

AVR level 3 is a fully rendered photomontage, usually photo-realistic with texture, shading and reflections that represent the proposed development under the lighting conditions found in the photograph.

The compositing process will typically include digitally blending the base photography with the computer-generated image, taking into account any masking by foreground features.

Photowire | AVR Level 1

A visual presentation which is an overlay of wireline upon the photograph is known as a photowire.

A photowire does not replace a photomontage where rendered texture and detail is required but is sufficient to indicate the scale and placement of the proposed development. Where the site cannot be seen from a viewpoint, a photowire could indicate the site’s relative size and location within the view.

In AVR Level 1 the proposed development is represented by a single line profile, sometimes key edges are displayed to help understand the massing.

The thickness of the profile line is selected to ensure the diagram is clear, the stroke of the line will be drawn inside the building profile. An appropriate line colour is chosen to contrast the background.

In cumulative view images different line colours will be used to differentiate between schemes or proposed and consented developments.

Ax.7
Framing | Capturing the View

The general requirement is to capture enough of the scene to represent the landscape / townscape setting and the likely visibility of the proposal. Where a single image can capture an appropriate HFoV, the view should be aligned to the centre of the development.

Generally, AVR images are composed with the camera looking horizontally, giving the maximum horizontal field of view.

In some cases, a tilt shift lens will be used. The 24mm Tilt shift lens is increasingly being used for architectural photography in urban locations. The shift function allows for the lens to be offset vertically or horizontally so that the axis of the lens remains perpendicular to the plane of the sensor but no longer passes through its centre point. This allows the lens to capture the full extent of the proposed development, whilst avoiding converging verticals. Horizontal shift and the tilt function will not be used.

Images that use the shift function will be stated as such and presented with clear markings on the image to identify the point of perspective.

Portrait photography may be used if the result is that the proposal is wholly visible in the AVR and will not exclude any relevant existing buildings.

In circumstances where the proposed development would extend off the top of the photograph, the image may be extended vertically to ensure that the whole height of the proposal is shown. Images will only be extended where the addition of sky is required and not any existing built structures.

Ax.8
AVR Annotation

Visualisation type 4 | Photomontage /Photowire / Scale Verifiable images will be annotated with border markings.

White arrows indicate the vertical and horizontal points of perspective (optical axis) whilst ‘graticule’ markings will represent the horizontal and vertical fields of view.

Methodology for production

Ax.8
Overview

The methodology applied by eb7 limited to produce the verified views or images contained within this document is described below. Our methodology for creating Verified views is compliant with the relevant sections of Guidelines for Landscape and Visual Impact Assessment 3rd edition (GLVIA3) and in particular following technical guidance outlined in Landscape Institute Technical

Guidance Note 06/19 and The London View Management Framework SPG (March 2012): Appendix C.

The number of representative viewpoints and their locations are defined by the project team. Typically, a location plan is supplied and a brief outlining the visualisation type | AVR level required for each viewpoint.

At each location, a digital representation of the view is produced using an accurate base 3D context model. Preliminary views are produced by eb7 and distributed to the project team for approval. The digital representations mimic the real-world camera settings (Location, Focal Length, HFoV and Shift).

Ax.9
Photographic Context

The agreed viewpoint locations are visited by our photographer, they ensure that the camera is tripod mounted and levelled. Images are captured at an approximate height of 1.6m. The camera specification, lens focal length and direction of view are recorded. The photographer will note the date, time, weather, and lighting conditions. All efforts will be made to capture excellent quality imagery secured in good, clear weather conditions wherever possible.

A unique reference is assigned to each viewpoint location. eb7 use an array of prime and tilt-shift lenses ensuring optimum image quality at capture. The centre point of the tripod is located using a plumb line, the photographer marks this point on the ground. A supplementary reference photograph is taken showing the camera and tripod in situ, allowing for a surveyor to return to its location.

Digital Camera

Eb7 use a Sony a7Riii full frame high resolution digital camera for the digital photography.

Ax.10
Survey of viewpoint locations

For each visualisation type 4 viewpoint location an information pack is supplied to an appointed survey team. This includes a high-resolution copy of the chosen captured backplate photograph, viewpoint reference imagery and location map.

The survey team undertake the survey of each viewpoint and camera location. Surveys are co-ordinated onto the Ordnance Survey National Grid (OSGB36) by using Global positioning system (GPS) equipment and processing software. The Ordnance Survey National Grid was chosen as it is the national co-ordinate system used within the United Kingdom and allows for the captured data to be incorporated into other digital products such as Ordnance Survey Master Map. Between 15 and 20 clearly defined fixed control points are chosen that are visible within the reconnaissance photo. These are then surveyed and marked clearly and annotated with descriptions of their location on the reconnaissance photo. The chosen points must be fixed and permanent and should cover a wide and even spread of points within the photo.

Surveyed points are provided to eb7 in the form of a 3D AutoCAD file and excel spreadsheet outlining target positions and camera locations.



Ax.11
Image post processing and correction

Photographs are captured in a RAW format at the maximum resolution and quality that the camera allows. RAW formats store the contents of the sensor unaltered hence 'raw' together with a series of parameters recording the camera's current settings. Thus, post-processing stages, such as white balance and sharpening, are recorded as parameters but not actually applied to the image. When capturing the images, a series of 3 bracketed images were taken. With 0EV as the middle exposure two images were taken at -1EV AND +1EV. Images were post processed using Adobe Lightroom where

the 3 bracketed images were combined to create an HDR (High dynamic range) image which was output as a .TIFF image file.

Image Correction

The HDR images are then colour corrected and adjustments made to exposure levels ensuring optimum image clarity. Despite advances in digital photography and the use of the most advanced photographic equipment circular lenses will always result in a degree of distortion on the perimeter of images. Therefore, the outer edges of an image are not taken into consideration, thus eliminating the risk of inaccuracy. The adjusted or corrected image, known as the backplate is now saved ready for use within the camera matching phase of our flowline.

Ax.12
3D modelling of proposed development

A CAD 3D model of the proposed development is either supplied by the project Architect or modelled from final drawings and plans. The level of detail in the model is determined by the visualisation type and AVR level required in the final images. The 3D model of the proposed development is positioned to OSGB co-ordinates using reference information supplied by the architect. Renders of the model are supplied back to the Architect so that model accuracy and position, including plan and AOD height can be checked and confirmed.

Ax.13
Camera matching

The camera matching process is designed to ensure that the 3D computer generated model sits accurately relative to the photograph. The virtual camera’s position, bearing and focal length within the 3D computer space accurately matches the equivalent real-world parameters used on the day of the photographic shoot. As all these positions are relative to the proposed 3D model of the scheme, a rendered image can be created and accurately superimposed over the digital photograph.

To accurately position the virtual camera in the scene, the following data is required:

- The 3D model of the proposed scheme
- 3D co-ordinates from the surveyor of the viewpoint marker point(s) relative to OSGB co-ordinate system and AOD (Above Ordnance Datum)
- 3D co-ordinates from the surveyor of several key fixed points of buildings visible within the photograph relative to OSGB co-ordinate system and AOD
- Photographic information of the camera's focal length and sensor size.
- The height of the camera AOD.
- The digitally corrected background photographic image.

Use of eb7's extensive 3D context model library can further ensure the accuracy of the camera match, by checking that existing buildings match the image backplate.

The following steps cover most of the processes involved in camera matching.

- The 3D model of the proposed development is opened within the 3D software.
- The digitally corrected photographic backplate image is opened within the 3D software and added as a background within the software's viewport.
- The dimensions of the backplate image are input into the software render settings.
- All 3D points captured by the surveyor are imported into the 3D software relative to the proposed 3D model or OSGB.
- A virtual camera is placed exactly at the recorded location of the real-world camera.
- The virtual camera is raised in the vertical axis to match the height from the backplate image was captured above ground (approx. 1.6m)
- The real-world camera information (focal length and sensor size) are inputted into the virtual camera's parameters
- Fine adjustments are made so that all the key fixed points align with their equivalent points on the background photographic image.

All viewpoint matches are quality checked by a senior member of the visualisation team.



Ax.14

Creating wireline AVR Level 1 images

For representative viewpoints where the proposed development is to be visualised at AVR level 1 simple renders of the proposed massing are produced. Using these render masks outlines of the proposal are created and overlaid onto the camera matched backplate photography. The style and colour palette of these visualisations are agreed with the design team. This includes stroke colour and the addition of opaque fills to show visible and occluded areas.



Ax.15

Creating photoreal renderings AVR Level 3 images

For representative viewpoints where the proposed development is to be visualised at AVR level 3 a more complex rendering approach is required.

The first step is to apply material finishes and textures to the 3D model of the proposed development. Material specifications are taken from technical documents supplied by the architect. All

due care and attention is applied to the texturing process, a single 3D model is used for all views – near and far ensuring material consistency throughout the study. For each view lighting is set to replicate the daylight conditions of the backplate photograph. Render engines can create daylight systems where geographical location, time of day and weather conditions can be accurately set.

Once correctly lit the virtual camera settings can be matched to the real-world camera settings and the model can be rendered.

Ax.16

Post processing

The final rendered image of the proposed scheme is overlaid and positioned correctly against the captured image backplate. Eb7 use Adobe Photoshop to edit the final images, typically layers and masks are used to make sure the proposed scheme sits correctly within its context.

Ax.17

Presentation of the study

For each representative viewpoint a location plan is created from map data. Using coordinates supplied by the surveyor the camera location is plotted onto the map.

Existing and proposed images are presented for comparison. Supplemental descriptive information and the location map is displayed along with the visualisation type, AVR level and any additional information.

The proposed view is presented at a size of 390 x 260mm on an A3 sheet. The image is annotated with border markings indicating the 'optical axis' and FoV graticules. Information regarding image shift or cropping may be displayed.

Additional cumulative views may be presented showing the proposed development in the context of other proposed and consented schemes.