



**Land East of Albion Rd & North of Copper Lane,
Marden, Kent.**

**Verified Photomontages:
Methodology and Supporting Evidence**

October 2024

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1.0 Overview

This document has been prepared by Realm Communications to explain the methodology used to create accurate visual representations (AVRs) of the proposed development of land east of Albion Road and north of Copper Lane, Marden, Kent. The visual assessment of the proposed development reflects current best practice in relation to the verification of images, a process which is constantly being refined and improved with advances in technology and industry experience.

The purpose of the photomontages is to present an accurate overview of the proposed development which enables its effect on the landscape and views to be objectively evaluated. Every image contained within this document is verified unless otherwise stated. Final images should not be used as a standalone tool to assess the suitability of a development, but should be used in conjunction with a site visit. This audit trail demonstrates the key stages of production (that can, if required, be checked by a third party) including photography, surveying, 3D modelling and camera matching processes - all critical to ensuring the accuracy of the final photomontages. These methodologies are in accordance with current best practice and follow recommendations from The Landscape Institute’s Technical Guidance Note (TGN 06/19) : Visual Representation of Development Proposals. The entities responsible for the preparation of the views set out in the following pages comprise:

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Photography
Arcminute Ltd
62 Grove Park Terrace
London W4 3QE
Phone: 07774 857627

Survey of existing views and camera locations
Datum Survey Services Ltd
Brickfield Business Centre, Brickfield House
High Road, Thornwood, Epping CM16 6TH
Phone: 07977 111935

Production and checking of verified photomontages
Realm
The Workshop, Old Barn Cottage, Down Lane
Compton, Guildford GU3 1DQ
Phone: 01483 813888

Supply of landscape information
Allen Scott Landscape Architecture
44 Newton Rd
Tunbridge Wells
Kent TN1 1RU
Phone : 01892 544 622

Supply of Building model
OSP Architecture Ltd
Broadmede House
Farnham Business Park
Weydon La
Farnham
Surrey GU9 8QT
01252 267 878

2.0 Methodology

2.1 Photography

The professional architectural photographer employed on this project was briefed by Realm to work to a methodology which conforms to the principles specified in section 1.0 Overview. The following methodology statement has been supplied by Arcminute:

Photography brief The following methodology applies to the production of photographic images originated in April and October 2024 which form the pictorial basis for visual impact assessment photomontages for 11 views for the proposed development of land east of Albion Road and north of Copper Lane, Marden, Kent.

Equipment Images are captured on a 36mm x 24mm 21 megapixel digital sensor in combination with the following shift lenses:

- Focal length 24mm | Horizontal FOV 74° (for close views in built-up streetscapes)
- Focal length 35mm | Horizontal FOV 55° (for close views requiring selective framing)
- Focal length 50mm | Horizontal FOV 40° (for long distance views)

Lenses outside these parameters are also available for use in certain circumstances but these 3 lenses have been found to cover the vast majority of situations required in this type of work.

Choice of lens We prefer to replicate (as far as possible) what may have already been provided in terms of preliminary view studies as typically these would have been generated using pre-considered factors as to what each view would need to illustrate e.g. context, key visual receptors etc. In the absence of a definitive steer, we will generally use a 74° HFOV lens for medium to close views in an urban environment and a 40° HFOV lens for long distance views. However, the actual size and nature of a scheme (single building or large multibuilding development) and its location will also be considered before lens selection. The Landscape Institute’s latest guidelines have been relaxed with regard to lens choice and they are no longer insistent that a ‘standard’ lens be used wherever possible.

Photography The camera is mounted on a tripod at eye level which on level ground is 1.65m within a +/- 100mm tolerance. The camera is then levelled in roll and pitch to a tolerance of 30mm per 100m using a precision spirit level. The point on the lens which coincides with the virtual render

camera is horizontally referenced to a survey mark (nail or paint) to +/- 2mm using a survey standard procedure and the height above this is measured using a steel tape measure to the same tolerance. A photograph is taken of the tripod in its location, the survey point on the ground and the tape measure reading against a reference point on the camera mount. During image capture particular emphasis is placed on the following:

- Rendering all points in the scene as sharply as possible to avoid any sense of selective focus.
- Capturing all tonal detail in the scene and avoiding ‘blown out’ highlights and ‘blocked up’ shadows.

Where a scene’s brightness range exceeds that of the sensors dynamic capture range it may be necessary to combine two or more different exposures to create a final image to overcome this limitation and to maintain a realistic tonal rendering closer to that of the human eye.

Post production The camera images are captured using a native camera or ‘RAW’ format and a software application is used to turn these into universally accessible RGB raster images. At this conversion stage colour and tonal adjustments are made to recreate as honestly as possible the scene as was presented to the photographer at the time of capture. RGB images are corrected using specialist software to remove non-perspective optical distortion in order to create a geometrically accurate 2D projection which can be precisely aligned with CGI renderings and survey data. The image is then placed in a standard sized image template and the calibrated lens axis position is aligned with the documents centre. This accounts for both deliberate offset through lens shift and manufacturing tolerances in lens to camera body alignment. A text file in the image document records camera height above the survey point, lens focal length, film gate, date and time, nominal lens offset and document pixel dimensions. All images are also accompanied with photographic evidence of camera location, survey point location and height above survey point.

Where temporary survey targets have been set up in the scene the before and after images are included as separate TIFF layers to enable both accurate camera alignment and seamless removal of the targets for final output.

For panoramic images, proprietary software creates a seamless and accurate cylindrical projection from an overlapping sequence of images (10 stitched together for a 120° panoramic, 14 for a 180° and 27 for a 360°) which share a single camera coordinate. The image is then placed in a pre-prepared template where the centre of the optical axis is aligned with the image centre to account for any offset used in vertical farming adjustments or mechanical misalignment of the lens’ optical axis and that of the sensor.

2.2 Survey

All of the baseline photographs were taken by a professional architectural photographer. Each viewpoint location is surveyed and identified by Ordnance Survey co-ordinates. The heights and distances of significant points within each view that are easily distinguishable have also been recorded as Ordnance Survey grid and level datum and their accuracy has been checked relative to the fixed camera position. The survey points for each view provide

an effective check for ensuring that the 3D model and existing views are accurately merged together.

The following methodology statement has been supplied by Datum Survey Services:

Survey brief We were commissioned to survey and record co-ordinates (Eastings, Northings and AOD Height) of known points of detail in respect of the proposed development of land east of Albion Road and north of Copper Lane, Marden, Kent. Digital files of the 11 views together with camera point locations were provided by the photographer.

Date of survey April & October 2024

Camera point positioning Network RTK solutions were established using a Leica GPS + GLONASS SmartRover receiver. The equipment was set-up directly over the camera position (survey nail) and multiple observations were recorded. A second (reference) point was taken approximately 100m away from the camera position using the same method.

Data capture Traditional survey techniques were employed to record the points of detail within each view. A Leica TCRA TS15 Total Station with long range reflector-less distance measurement capabilities was set-up directly over the camera point and orientated to Ordnance Survey National Grid using the two sets of co-ordinates determined by the SmartRover receiver.

Deliverables The completed survey data was issued as follows:

- Microsoft Excel Spreadsheet comprising point numbers, coordinate data and descriptions
- PDF copies of each photo with point locations and view specific point numbers clearly marked
- AutoCAD DWG file containing 3D survey points with view specific point numbers

2.3 Model

Supplied by OSP.

2.4 Landscape

Supplied by Allen Scott.

2.5 Camera matching

The verification process confirms the accuracy of the 3D model in relation to each view. The camera matching process involves accurately matching the position of the virtual camera with the real world camera in OS space, and the location of the 3D model of the proposed development within each (existing) view. This is achieved through aligning the imported 3D cloud of survey points within the base photo and 3D environment, creating a virtual camera that replicates the exact position and height of the real world camera to produce an image where the rendered survey points match in visual location those recorded by the survey team and photographer.

The specifications of the lens type relating to each existing view is also entered into 3DS Max to help guide with alignment. An alignment is deemed correct only when all survey points sit exactly over the pixel in the photo that corresponds with the marked-up survey photo. If all points match, the virtual camera must therefore be correctly aligned.

For each view we measure the distance from camera to target and apply respective equations to establish the potential adjustment necessary to compensate for both curvature of the earth and light refraction. Typically, when the real world camera is positioned within 1.5km from the target, the effects of curvature of the earth and light refraction are deemed to be negligible in terms of their visual impact and therefore no adjustment is made to the Z axis of the building model within the view.

2.6 Lighting and rendering

To accurately light the 3D model, 3DS Max's 'daylight system' is set to replicate the solar time, date and geographic location (longitude and latitude) as recorded in the base photograph. The settings used for each base photograph (F stop, shutter speed etc) are replicated in both this 'daylight system' and the virtual camera set-up. This process mimics the virtual sun so that the lighting falls upon the 3D model as it would in real life at the point when the photograph was captured. Fine tuning is sometimes necessary to better match the resultant lighting and shadows to the base photograph. Once the camera matching and lighting processes are complete, the render of the 3D model is output to the same pixel resolution as per each respective base photograph.

2.7 Post production

Block Model Views & Detailed Block Model Views Block model photomontages offer a description of the proposed architectural form and help with appreciation of the massing. The render of the three-dimensional model was superimposed on the existing still views in Adobe Photoshop. The foreground of the existing views was then copied and placed over the basic model in order to ensure that the depth is accurate within the photomontage view between the foreground, background and the model. A final qualitative check of all of the photomontage images has been carried out to ensure that they provide objectively accurate views of the proposed development.

2.8 Recommended viewing distances

It is recommended that final images are viewed at an optimum viewing distance (in relation to the size of printed photomontage) to give a correct sense of scale. We recommend that images are printed to a size that creates a comfortable viewing distance of up to 525mm.

Panoramic Views:

In line with the Landscape Institute's latest guidance (TGN-06-19) full size panoramas will no longer be provided with a specific RVD due to the

variables involved (including the need for it to be held in a curve). Therefore, we recommend taking a 40 degree crop (4000 x 2700 pixels) of the full panorama, printing it on A3 paper and viewing it by holding it at comfortable arm's length.

2.9 Caveats

i.) All photomontage views have been prepared based on available information supplied by the architects.

ii.) Where areas of an image have had to be rebuilt, we use a combination of the photographer's baseline photography together with existing landscape CAD and Google Earth to inform the rebuild and to create, as far as possible, what one would reasonably expect to see. These areas are, by definition, illustrative but do not affect the integrity of the overall view.

iii.) Please note that the additional (detailed) interpretative block model views shown (Views 1, 4, 10 and 11) are verified regarding their accurate positioning of the 3D model within each view, based on their respective camera-matched baseline image and also based on the model and height info supplied by the architects. Planting shown is illustrative and indicative for each planting year shown.

3.0 Supporting evidence

[illegible]

View Location Plan

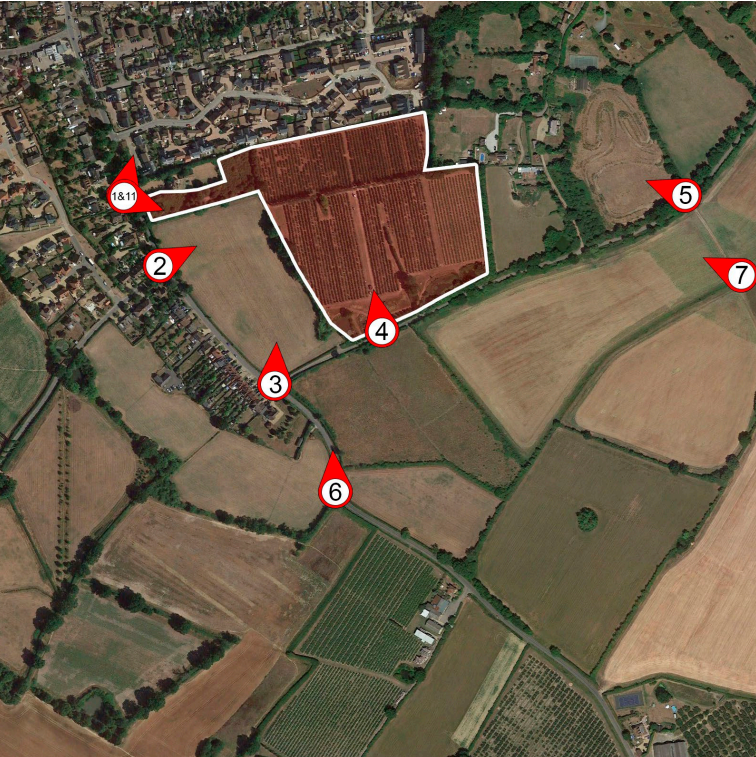


View 1

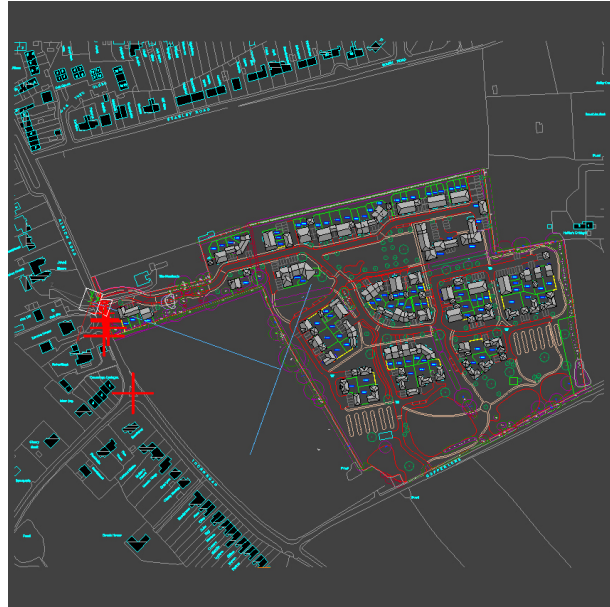
01.1 Ordnance Survey coordinates			
Point Ref	Eastings	Northings	AOD height
101	574793.008	144205.436	33.033
102	574792.162	144203.471	32.697
103	574792.448	144200.896	31.867
104	574792.456	144200.891	31.521
105	574794.845	144194.566	31.884
106	574794.837	144194.585	31.553
107	574796.831	144189.242	31.754
108	574796.853	144189.248	31.428
109	574821.968	144123.055	34.079
110	574799.904	144181.403	36.176
111	574797.858	144187.531	34.749
112	574796.290	144174.235	31.268

01.3 View 1 camera location

Eastings 574784.418m
Northings 144205.024m
AOD height 32.925m
Distance to centre of site 257m
Bearing from North 110°



01.2 OS survey points marked on photograph



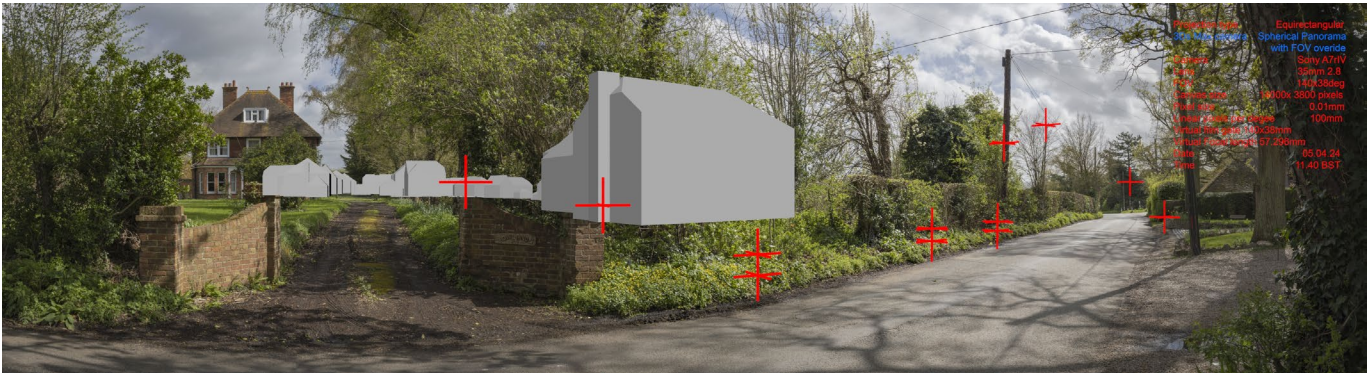
01.4 Screen grab of camera location in 3D Studio Max software



01.5 Screen grab of calculated horizon line



01.6 Screen grab of camera matching to OS data



01.7 Screen grab of model matched to photograph



01.8 Final camera matched photomontage

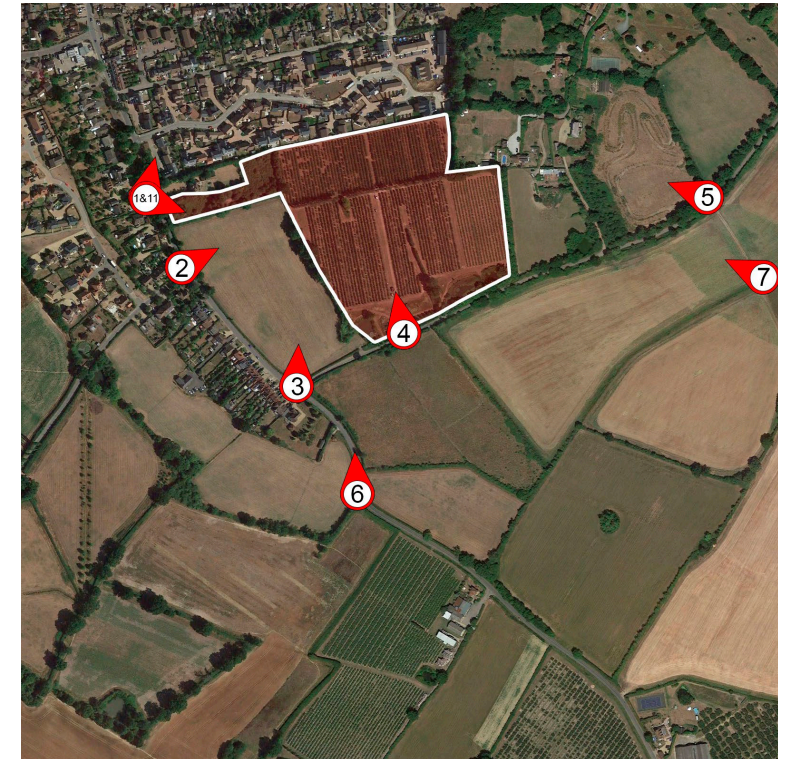
View 2

01.1 Ordnance Survey coordinates

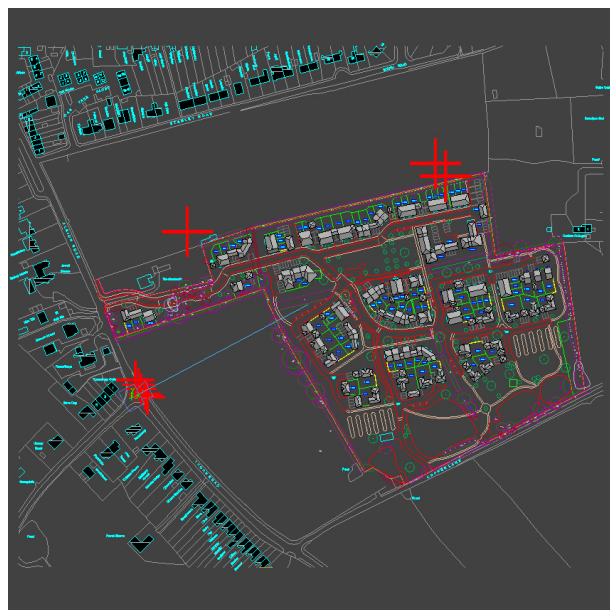
[illegible]

01.3 View 2 camera location

Eastings	574817.993m
Northings	144120.462m
AOD height	31.018m
Distance to centre of site	229m
Bearing from North	62°



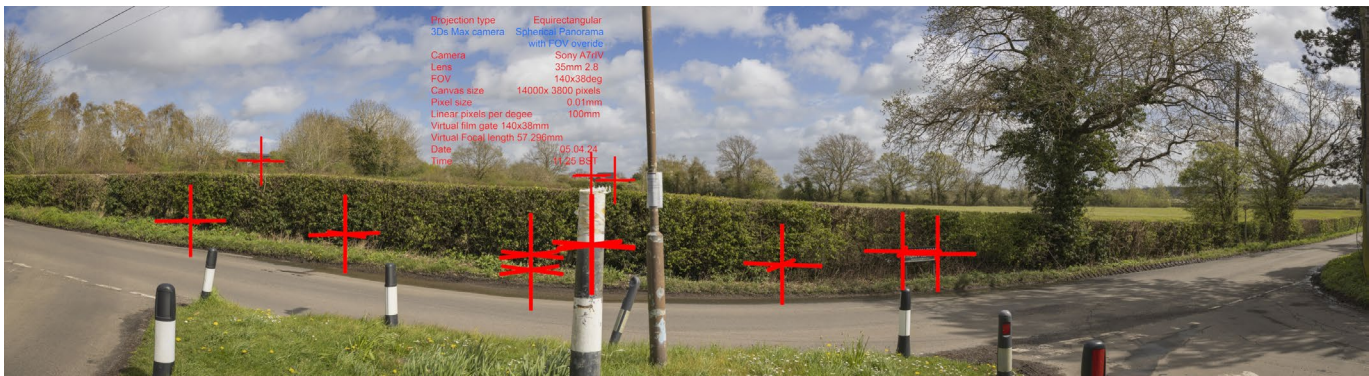
01.2 OS survey points marked on photograph



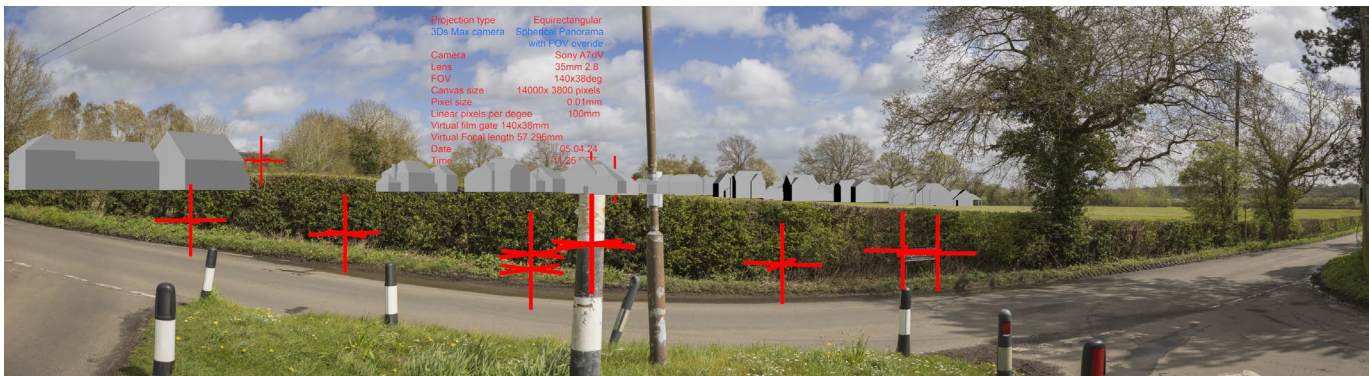
01.4 Screen grab of camera location in 3D Studio Max software



01.5 Screen grab of calculated horizon line



01.6 Screen grab of camera matching to OS data



01.7 Screen grab of model matched to photograph



01.8 Final camera matched photomontage