Camera type : Canon EOS 5D Mark IV | Lens type : EF16-35mmf/4LISUSM | Focal Length : 35mm | Approx. Distance : 56.2m | Date & Time : 14/07/2026_14:27



Project Title :	Applicant Name :	Image Title : Proposed VVM 5
Rathcoole	South Dublin County Council	

3D DESIGN BUREAU
Tel: +353 (0) 1 2880186
www.3ddesignbureau.com

Camera type : Canon EOS 5D Mark IV	Lens type : EF16-35mmf/4LISUSM	Focal Length : 35mm	Approx. Distance : 56.2m	Date & Time : 14/07/2026_14:27



Project Title : Rathcoole	Applicant Name : South Dublin County Council	Image Title : Proposed Outline VVM 5

3D DESIGN BUREAU
Tel: +353 (0) 1 2880186
www.3ddesignbureau.com

Camera type : Canon EOS 5D Mark IV | Lens type : EF16-35mmf/4LISUSM | Focal Length : 24mm | Approx. Distance : 25.37m | Date & Time : 23/07/2026_14:19



Project Title :	Applicant Name :	Image Title : Baseline VVM 6
Rathcoole	South Dublin County Council	

3D DESIGN BUREAU
Tel: +353 (0) 1 2880186
www.3ddesignbureau.com

Camera type : Canon EOS 5D Mark IV | Lens type : EF16-35mmf/4LISUSM | Focal Length : 24mm | Approx. Distance : 25.37m | Date & Time : 23/07/2026_14:19



Project Title :	Applicant Name :	Image Title : Proposed VVM 6
Rathcoole	South Dublin County Council	

3D DESIGN BUREAU
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Camera type : Canon EOS 5D Mark IV | Lens type : EF16-35mmf/4LISUSM | Focal Length : 24mm | Approx. Distance : 25.37m | Date & Time : 23/07/2026_14:19



Project Title : Rathcoole	Applicant Name : South Dublin County Council	Image Title : Proposed Outline VVM 6

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Camera type : Canon EOS 5D Mark IV	Lens type : EF16-35mmf/4LISUSM	Focal Length : 24mm	Approx. Distance : 76.36m	Date & Time : 14/07/2026_14:49



Project Title : Rathcoole	Applicant Name : South Dublin County Council	Image Title : Baseline VVM 7

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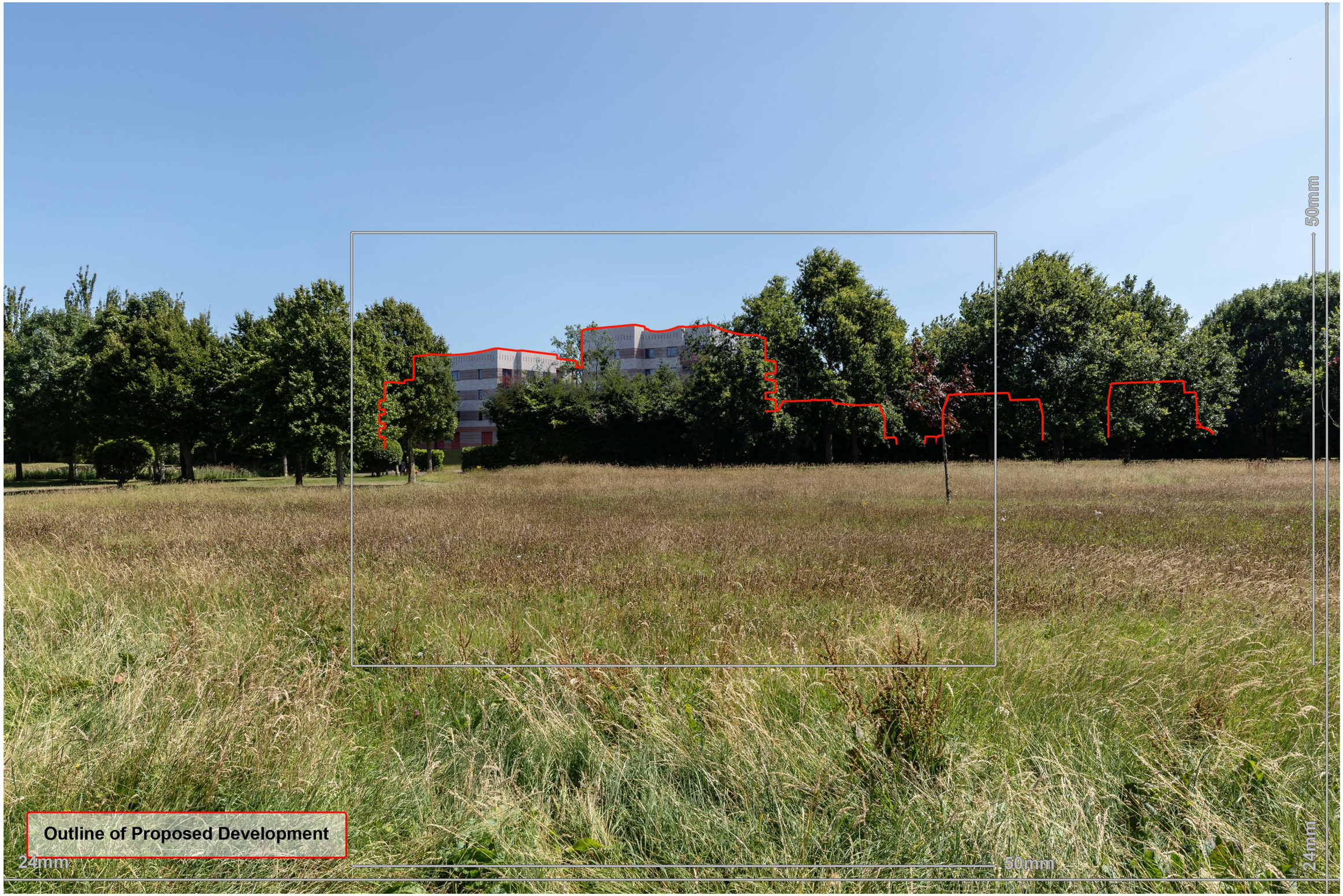
Camera type : Canon EOS 5D Mark IV	Lens type : EF16-35mmf/4LISUSM	Focal Length : 24mm	Approx. Distance : 76.36m	Date & Time : 14/07/2026_14:49



Project Title : Rathcoole	Applicant Name : South Dublin County Council	Image Title : Proposed VVM 7

3D DESIGN BUREAU
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Camera type : Canon EOS 5D Mark IV	Lens type : EF16-35mmf/4LISUSM	Focal Length : 24mm	Approx. Distance : 76.36m	Date & Time : 14/07/2026_14:49



Project Title : Rathcoole	Applicant Name : South Dublin County Council	Image Title : Proposed Outline VVM 7

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Camera type : Canon EOS 5D Mark IV	Lens type : EF16-35mmf/4LISUSM	Focal Length : 35mm	Approx. Distance : 108.19m	Date & Time : 14/07/2026_14:46



Project Title : Rathcoole	Applicant Name : South Dublin County Council	Image Title : Baseline VVM 8

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Tel: +353 (0) 1 2880186
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Camera type : Canon EOS 5D Mark IV | Lens type : EF16-35mmf/4LISUSM | Focal Length : 35mm | Approx. Distance : 108.19m | Date & Time : 14/07/2026_14:46



Project Title : Rathcoole	Applicant Name : South Dublin County Council	Image Title : Proposed VVM 8

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APPENDIX

Methodology

Verified Views Montages (VVM)

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1. Overview

This methodology appendix has been prepared by 3D Design Bureau to explain the production process of Verified View Montages (VVM) for the purposes of planning applications. The preparation and presentation of reliable verifiable visual information is a key component to the writing of Landscape/Townscape Visual Impact Assessment reports (LVIA/TVIA). It should be noted that VVMs are technical images and should be produced and used in a technically appropriate manner.

This booklet maybe accompanied by the inclusion of a number of presentation CGIs from various viewpoint locations within the proposed site. These images, taken from a close range perspective, have been produced to give a better understanding of the design intent. They are images from the digital 3D model produced for the project. Whilst soft landscaping, that reflects the proposed design, has been included as accurately as possible, artistic license may have been used for certain low level planting and trees with regard to species, size and exact locations.

Note: All images/photographs included in this appendix section are for illustrative purposes only. They do not relate to the project that is subject of this application and which this booklet has been produced for. They are included as a visual aid to the accommpanying text to better explain the technical process of the various stages of VVM production.

2. What is a Verified View Montage

A Verified View Montage (VVM) is an accurate visual representation of the potential impact (or lack there of) that a proposed development may have on its surrounding environment, if built as proposed. VVMs are produced using technical scientific verification methods, through the use of photography, surveying, 3D modelling, rendering and post-production.

Verified View Montages are produced by using survey data of the subject site and its surrounding environment, coupled with the correct geospatial insertion of the proposed development into the existing landscape using accurate and detailed digital 3D models of both the proposed scheme and surrounding existing context. This allows for a photorealistic view of the planned development in its intended location from selected viewpoint locations around the subject site.

The correct combination of all these fields of expertise will deliver a result in which 3DDB believe and trust to be accurate, for official usage by the client for their intended purposes (ex. Planning applications, impact studies,...).

3. Methodology

3.1 Pre-Production : Project Planning

Following 3DDB's appointment to a project, a desktop study is carried out to identify a full set of possible viewpoint locations for the VVMs. A full list of suggested views is drawn up for review by the design team, specifically the planning consultant and/or LVIA consultant, prior to visiting the site. A Zone of Theoretical View study (ZTV) can also be carried out to determine all or some of the locations. A ZTV is a more detailed desktop visual assessment of the development (in massing form and carried out in specific software) to assess viewpoint locations, particularly sensitive or protected views, to the subject site.

Note: If a Landscape Visual Impact Assessment (LVIA) report is being written by a third party, (landscape architect or planning consultant), the medium to long range views, and particularly any protected views to the site, will be guided by them.

Once all suggested viewpoint locations are identified, the photographic site visit to capture the baseline photography is scheduled in. Time of day and weather conditions are carefully assessed to ensure the most optimum photos are obtained, whether that be winter or summer time shots. It should be noted that in some instances, projects require both summer and winter time VVMs. This is to demonstrate best and worst case scenarios from a visual impact point of view, when trees are in full foliage and without foliage.

Note: 3D modelling of the proposed scheme can, and usually is, commenced prior to the photographic site visit taking place.

3.2 Data Capture : High Resolution Baseline Photography

Every baseline photograph is captured in raw settings using a high-resolution digital SLR camera. This allows for the maximum possible information to be retained in the digital file. It also avoids the file being altered by any internal camera processing definitions, which retains the maximum control and fidelity on the end results.

The focal lengths used depend on the surrounding context and proximity to the subject site. 3D Design Bureau use high quality lenses with focal lengths that allow for capturing enough surrounding context without compromising quality and fidelity, by avoiding excessive barrelling, distortion, or aberrations. All shots are taken horizontally with the use of a 50mm lens (where possible) and wider angle also where necessary. This is common in dense urban environments where viewpoint locations are in close proximity to the subject site and therefore require wider angles to ensure the proposed development is captured in the VVM. However, all VVMs that are of a wider angle, contain the 50mm guideline on the image.

Note: Although the 50mm focal length represents the perceived scale of the human eye, it does not represent the human field of view and therefore should not necessarily be used to show the proposed development in its context. Peripheral vision needs to be accounted for and whilst the 50mm lens option is recommended in the British Landscape Institute Technical Guidance Note (TGN 06/19), this does not take into account the dynamic movement of the human eye.

Furthermore, despite panoramic VVMs being described in the British Landscape Institute Technical Guidance Note (TGN 06/19), 3DDB do not produce these type of images for planning submissions. Panoramic VVMs are made up of a series of individual VVMs stitcthed together. The stitching process is a non repeatable action which can result in different outputs of the same image each time. Therefore, accuracy and verifiability can be called into question and it is for this reason 3DDB produce individual VVM imagery.

3. Methodology

3.2 Data Capture : High Resolution Baseline Photography (cont`d)

To ensure that each chosen photo, from the suite of photos taken, is accurately surveyed, the position of each photo location is carefully recorded and marked as follows:

On-Site:

The tripod location on site is paint marked and photographed in context to existing elements. (Fig. 1 below)
The location of each photo is manually marked on a printed map while on site.
The camera height, at which the photo was taken, is recorded.

In-Studio:

All baseline photographs go through post processing back in the studio. The full set of photos along with a viewpoint location map (Fig 2 below) are prepared and issued to the design team for review, in particular the planning consultant and LVIA consultant. From the suite of photos taken, the best views, that will demonstrate the visual impact that the proposed scheme may/may not have, are selected. For each photo at each location, two focal lengths are issued – the 50mm option and a wider field of view option. The most appropriate shot will be chosen depending on the surrounding context and location of the view. See further explanation earlier in this section 3.2.



Fig.1: Camera location and height marked, recorded and photographed.

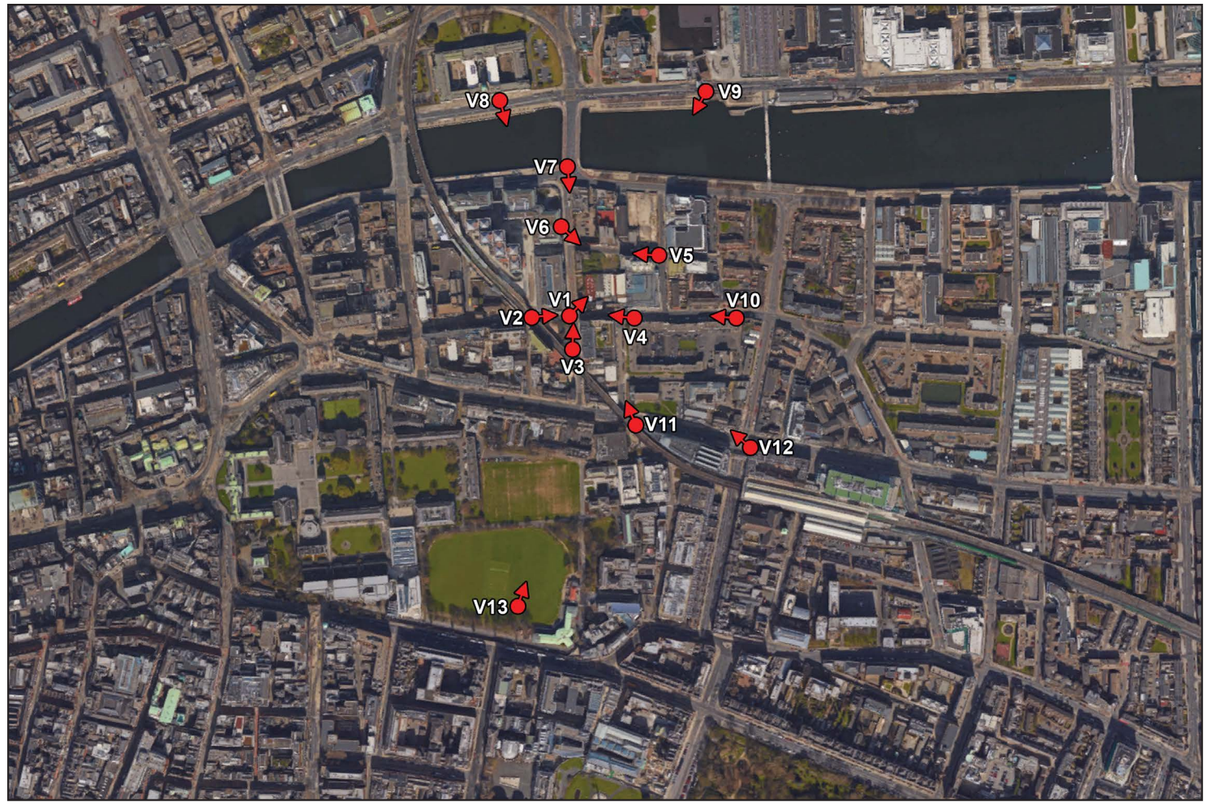


Fig.2: Viewpoint location (VL) map prepared, post site visit In-Studio.

3. Methodology

3.2 Data Capture : High Resolution Baseline Photography (cont`d)

The following images are a sampling of baseline photographs captured during a photo site visit and prior to selection of the chosen views for the VVMs. (See Fig.2 previous page for the accompanying Viewpoint location (VL) map). All baseline photos below are shown prior to any markup for surveying purposes.



Fig.3: Baseline photo-View 5 from VL Map.



Fig.4: Baseline photo-View 3 from VL Map.



Fig.5: Baseline photo-View 4 from VL Map.



Fig.6: Baseline photo-View 9 from VL Map.

3. Methodology

3.3 Surveying : Baseline Photography

Following the selection of all views for the production of the VVMs, all of the chosen baseline photos are carefully and precisely marked up and labelled for field surveying purposes (see per Fig 7 below.) Fixed reference points within each photo, such as parapet heights, kerbing, lamp posts etc are coloured coded on the baseline photos. All 'marked up' baseline photos are then issued to our qualified topographical surveyor for a thorough survey from each viewpoint.

On site, the survey team records the camera/tripod position using GPS and Total Station to an accuracy of +/-1cm Northing and Easting and to an accuracy of +/- 2cm Elevation. The 'marked up' fixed reference points identified in each photo are then surveyed to establish exact orientation of the view and to verify the photomontage process. They are clearly numbered to ensure ease of modelling. (Fig 8 below). This survey data is fed back to the production team and subsequently 3D modelled and included in the digital 3D model of the proposed development allowing for accurate positioning of the digital model within each baseline photo. (See section 3.4)



Fig.7: Fixed reference points marked for surveyor in each chosen baseline photo.



Fig.8: Fixed reference points fully surveyed and numbered.

3. Methodology

3.4 The Digital Model

3.4.1 - 3D Modelling

An accurate digital 3D model of the 'proposed' development is produced using 3D software of choice. All of 3D Design Bureau's 3D modelling is carried out within AutoDesk's Revit. The digital 3D model is created from a combination of the third party architectural, engineering and landscape drawings and/or supplied models. The 'masterfile' for a project follows 3DDB's strict internal processes and workflows, including modelling techniques, worksets, linked and bound models etc. Depending on the type of project being produced, the appropriate file set for the digital model will be employed.

The 'marked up' fixed reference points (see section 3.3) which have been surveyed, are also 3D modelled along with any other relevant survey information from the supplied topographical survey drawings. This 3D data is federated into the 'Masterfile' model of project and geospatially positioned relative to the proposed model. This process is imperative to ensure the accurate positioning and camera matching of the proposed digital 3D model within each chosen baseline photograph.

3.4.2 - 3D Visualisation

Once the digital 3D Revit model is complete, it is handed over to 3DDB's 3D visualisation team for this next stage of production. This visualisation stage involves the application of textures & finishes to the model (buildings and site), lighting setup to accurately match daylight/evening time conditions in the baseline photographs and asset population for the proposed scheme, such as soft landscaping, street furniture etc.

This visualisation process ensures the accurate visual representation of the digital 3D model is as close as possible to the intended future 'As Built' development. Note: For accurate camera matching of the digital 3D model to the chosen baseline photography (which can take place prior to the visualisation process) please see Section 3.5.

There are various 3D visualisation software's that are widely used for this stage of production. 3D Design Bureau use Autodesk 3D Studio Max as its main software of choice for the visualisation process. This is accepted as the leading industry standard for architectural visualisation work and production of VVMs.

3. Methodology

3.4 The Digital Model (cont`d)

Fig.9: 'Masterfile' digital 3D model containing the proposed scheme and survey elements.

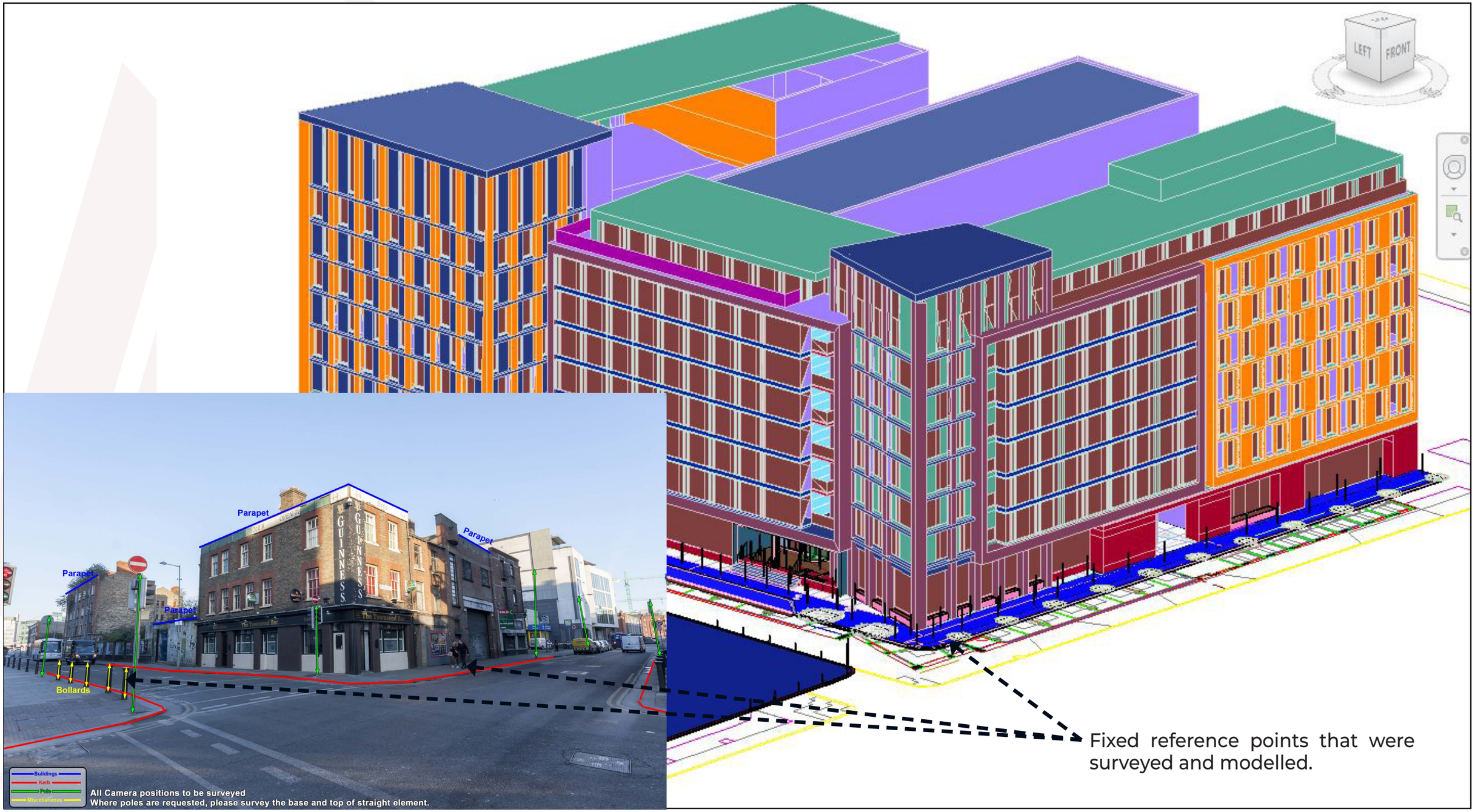


Fig.10: Fixed reference points, surveyed, modelled and included in the digital model

3. Methodology

3.5 The Verification Process

The following section is an integral part of the verification process for all verified view montages (VVMs). Following the completion (but in some instances prior/ in parallel) of the 3D visualisation process, Section 3.4, the below methodology is implemented ensuring views are verifiable.

3.5.1 Camera Matching: Real World to 3D Scene

All of the information recorded at the time of the baseline photographic site visit, that is, camera co-ordinates, angle of view, and direction of view, is programmed into the virtual camera within the 3D software package of choice - 3D Studio Max. Insertion of 'virtual' cameras within the software, with the matching attributes and settings to replicate the 'real life' cameras, is carried out.

All elements of the photo survey (the reference points), that have been modelled into the digital 3D model, and that have been geolocated relative to the proposed development, are a key component to the camera matching process. It is these surveyed elements, contained within the 3D model, that are matched to their real world counterparts in the baseline photos with the replica 'virtual' camera.
This careful camera placement methodology ensures that the size, position, and height, of the proposed development in each VVM is correct to an accuracy of 0.33% i.e. +/- 1mm on an A3 print.

See Fig 11. next page for illustrations of the 'virtual' cameras inserted within a 3D scene.

3.5.2 Image Rendering

Once all selected views have had the camera matching and 3D visualisation processes completed, each of the views are 'rendered' at high resolution and placed onto their matching baseline photograph. Software of choice for this part of the VVM process is Adobe Photoshop.

The mathematical accuracy is then double checked and verified by ensuring the existing 'marked up' fixed reference point features, which are present in the 'rendered' images, line up and match their real life counterparts in the baseline photo. See Fig 12. on page 12 for an illustration of this.

3.5.3 Post Production

Post production for each of the selected views is the last stage in the VVM process. The VVM specialist determines which existing features, within the baseline photo, such as buildings, infrastructure and vegetation, are in the foreground of the proposed development and those that are in the background, i.e. which features will mask the development and which ones will appear behind the development. Careful attention is paid to existing trees and foliage in particular, to ensure a true representation of any potential visual impact is shown/screened.

Disclaimer: Where existing background information, which is not visible in the baseline photo but revealed when the proposed development is shown in the view, is unattainable due to coverage/blocking of elements in the baseline photos, 3DDB use various methods and online information to portray these elements as accurately as possible. Some tolerance should be allowed for such views.

When it is found that the development is not visible due to foreground features, its extremities will be indicated with a red outline. Furthermore on selected wide angle views, the extent of the 50mm lens is identified on the final shot. See Figure 14.2 for an example of this.

3. Methodology

3.5 The Verification Process (cont`d)

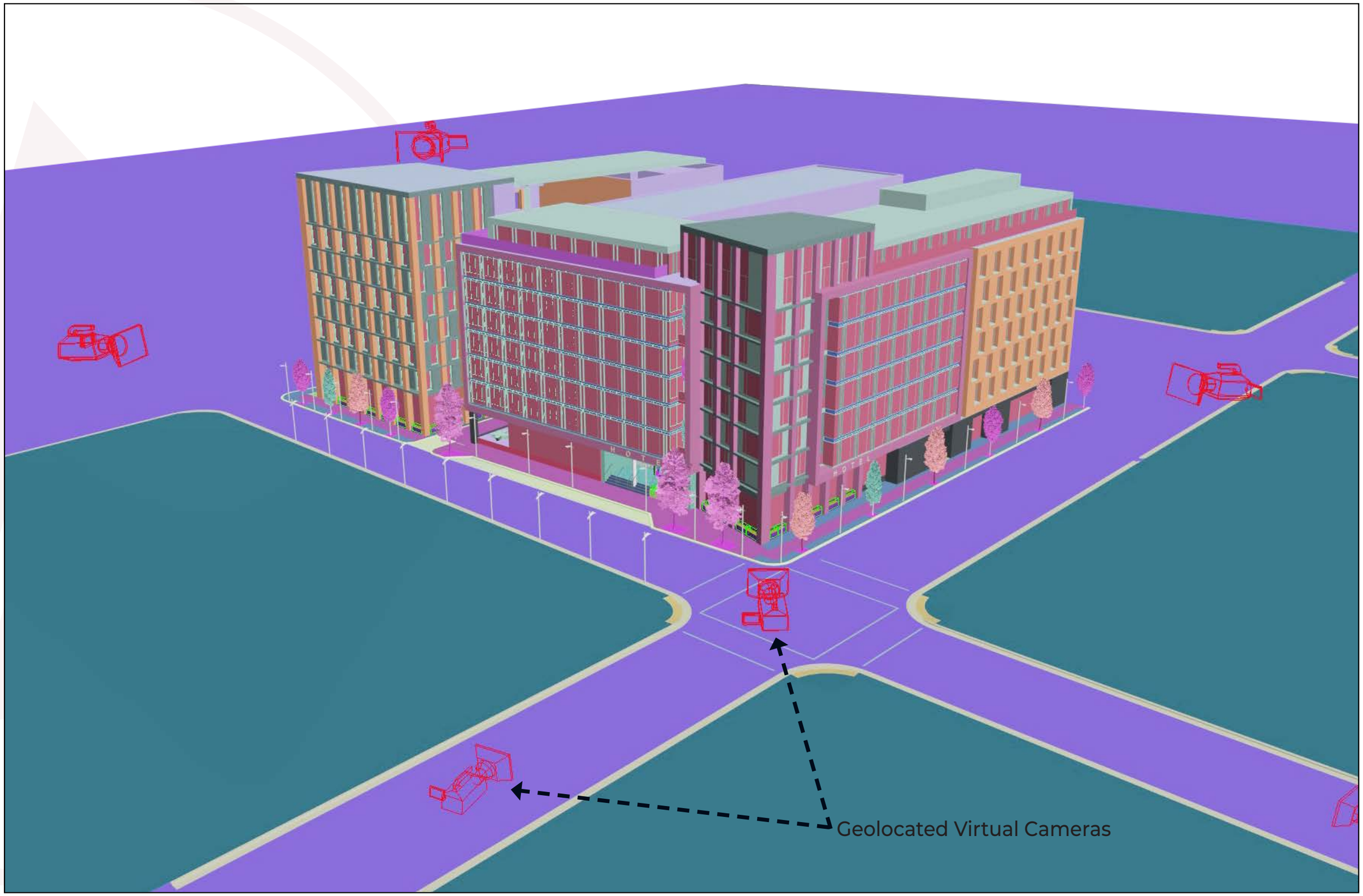


Fig.11: View from the 3DsMax model with the geolocated virtual cameras placed

3. Methodology

3.5 The Verification Process (cont`d)

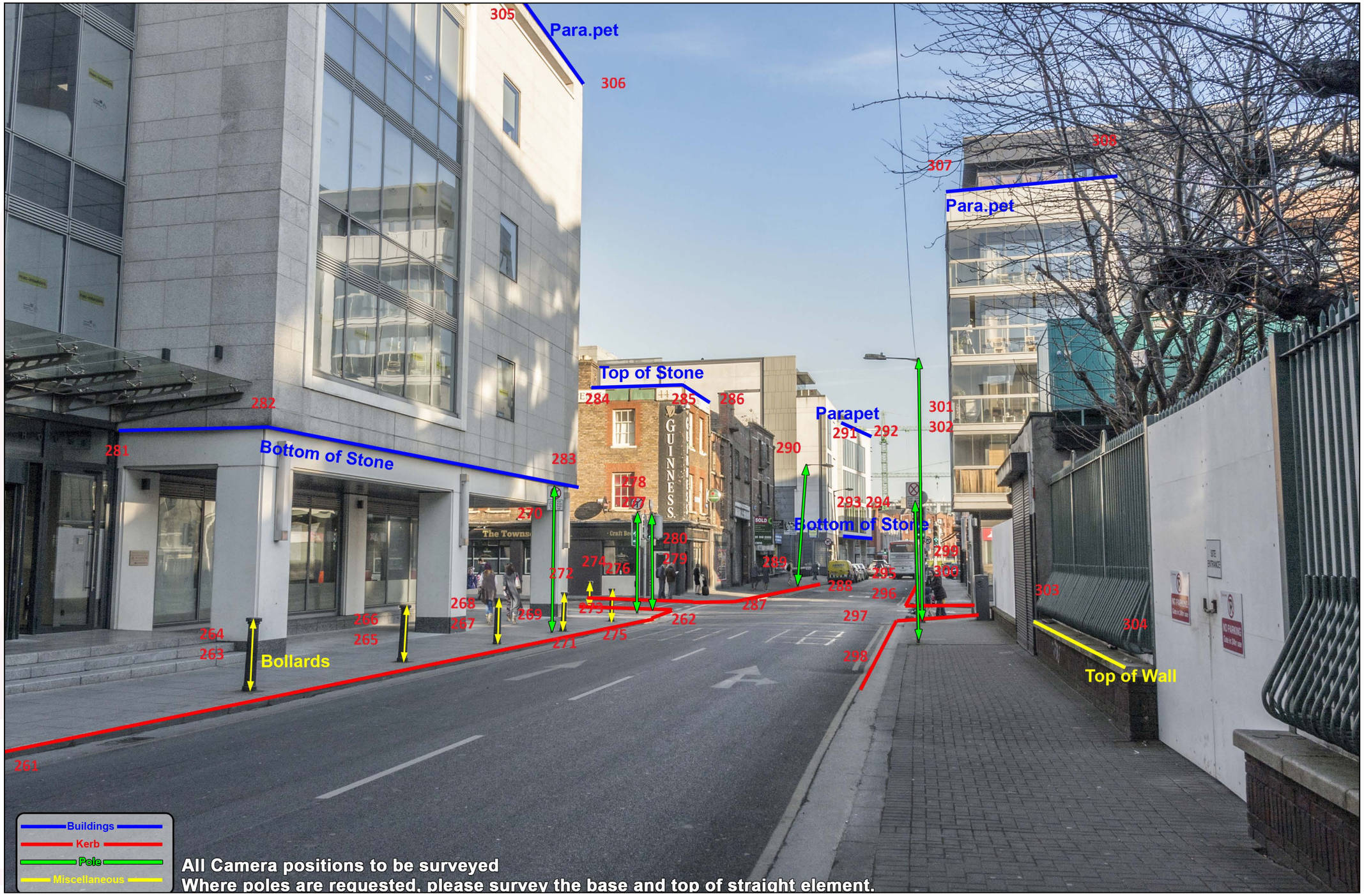


Fig.12: Fixed reference points from surveyor on baseline photo.