

WESTERN AVENUE, EMSWORTH

Visually Verifiable Images: Views & Methodology by Visualhorizon3D

For **McCarthy & Stone Retirement Lifestyles Ltd**

Designed by **Re-Format Architecture**



Contents

1.00	Introduction
2.00	View location selection
3.00	View and technical data
4.00	Methodology: Overview
5.00	Methodology: Photography
6.00	Methodology: Surveying
7.00	Methodology: 3D Model & Camera matching
8.00	Methodology: Image creation and Post production

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

1.00 Introduction

- 1.1 The Visually Verifiable Images (VVIs) shown in this document are of the proposed new development at Western Avenue, Emsworth, designed by Re-Format Architecture.
- 1.2 This document and the six VVIs of the project were created by Visualhorizon3D, a specialist in the field of Architectural Visualisation and VVIs.
- 1.3 The purpose of this document is to accurately show the proposed views, existing views, all relevant technical data and to describe the methodology used to create the finished VVIs, thus allowing a third party to verify the VVIs if necessary with regards the size, placement and form of the proposed development.
- 1.4 The work was commissioned by, and the view locations instructed by, McCarthy & Stone Retirement Lifestyles Ltd. The brief was to create six VVIs showing the proposed development in context.
- 1.5 All information regarding the development was supplied in digital format by Re-Format Architecture.
- 1.6 The VVIs are static images that show the proposed development in it's contextual surroundings. The images can be used to assess the visual impact of the development.
- 1.7 The methods used to create the VVIs are in accordance with the guidelines for Landscape & Visual Impact Assessment (GLVIA) Third Edition 2013, produced by The Landscape Institute and Institute of Environmental Management & Assessment.
- 1.8 The methodology used to create these views is described in the methodology section of this report.
- 1.9 In some sections of this report where it is marked thus #, please refer to the footnotes at the end of the relevant section for further information.

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

2.00 View location selection

- 2.1
- View locations are normally decided upon by either the client or the relevant statutory body, usually the local planning authority. The views selected for this project were instructed by McCarthy & Stone Retirement Lifestyles Ltd, presumably after discussion with, and direction from, the local planning authority.
- 2.2
- The images are intended to demonstrate the visual impact of the proposed development from the chosen locations. The views have been superimposed with an accurate computer model to show the size and form of the proposed development in relation to its contextual surroundings.
- 2.3
- The view numbers and descriptions are described below.

View 1

View from South end of Western Ave (looking South East).

View 2

View from South end of Western Ave (looking South East).

View 3

View from Havant Rd, opposite Western Avenue (looking South).

View 4

View from outside Nr. 10 Beach Rd (looking West).

View 5

View from Beach Rd, opposite Nr. 1B (looking West).

View 6

View from Brook Gardens (looking North).
- 2.4
- The adjacent image (Fig. 2.41) indicates the above view numbers and shows the relationship between the viewpoints and the site itself (highlighted blue).

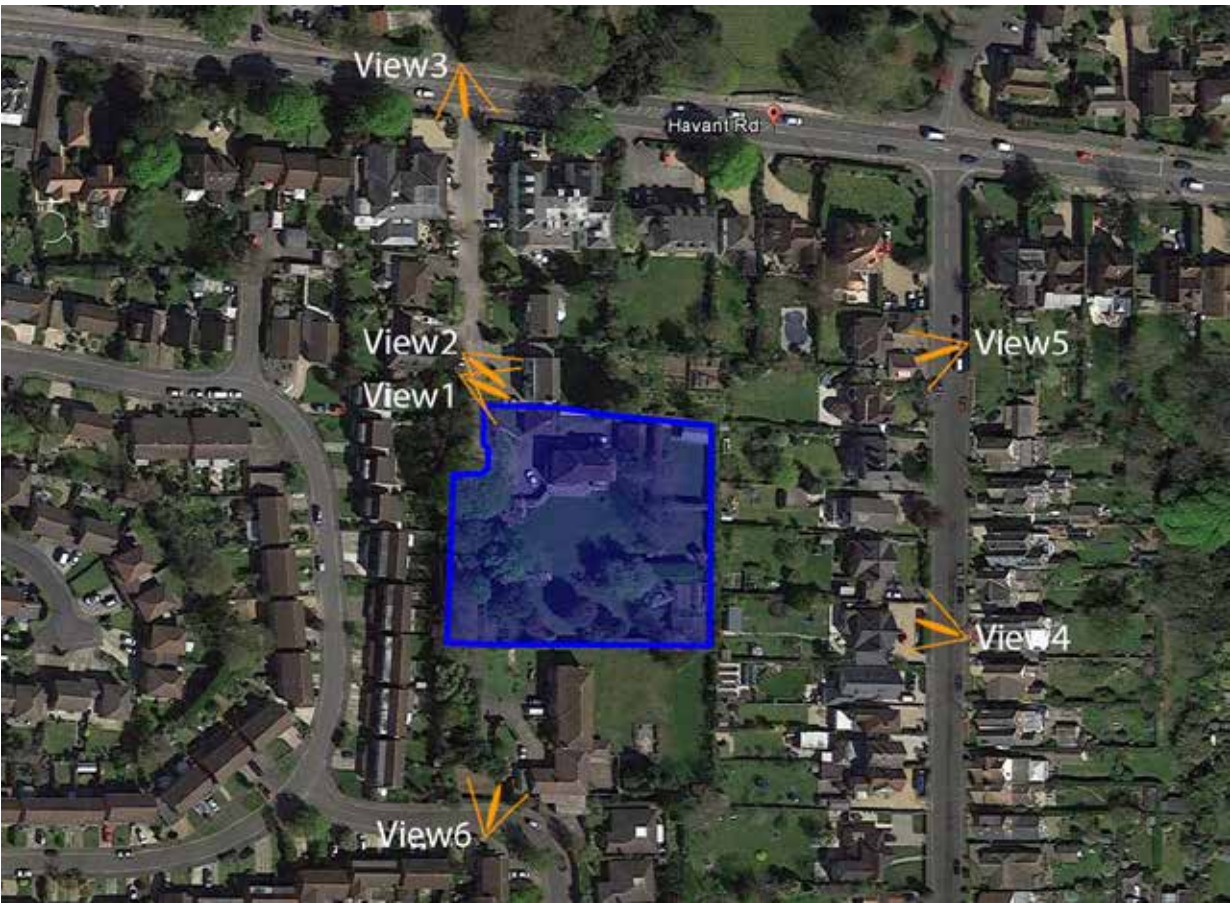


Figure 2.41

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.1 **View 1** Existing



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

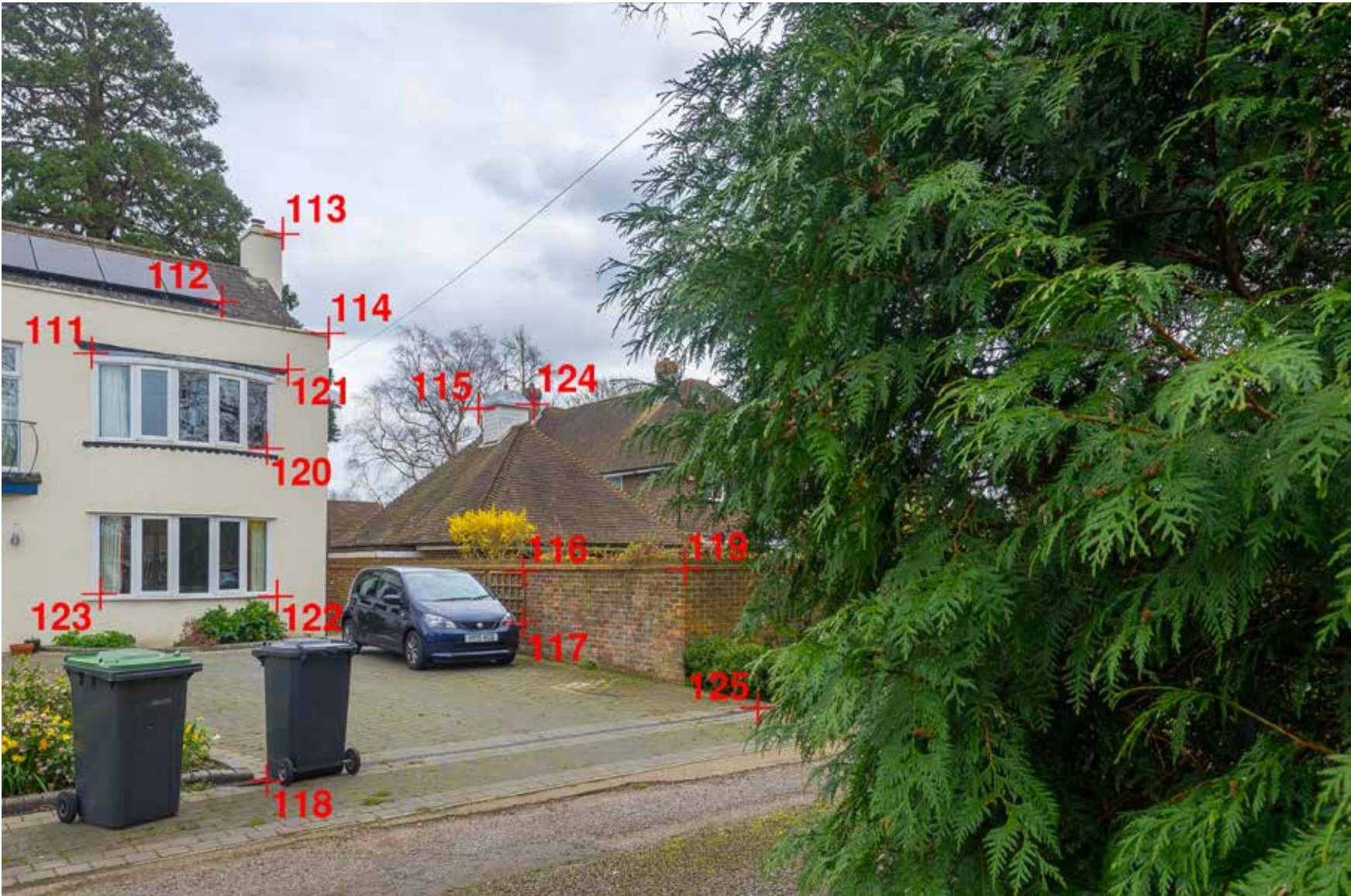
3.00 View and technical data: 3.2 **View 1** Proposed



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.3 **View 1** Technical data



Camera location



Surveyed points and data⁶

Point ID	Easting	Northing	Level AOD	Description
111	474019.672	105870.091	14.280	Junction of lead on Window
112	474021.620	105867.596	15.972	Bottom right of Solar Panels
113	474023.462	105865.910	18.226	Top Right of Chimney
114	474019.696	105866.207	15.189	Top Right of Parapit
115	474024.164	105860.643	14.951	Bottom Left of Tower on Garage
116	474015.286	105864.544	10.612	Top Right of Trellis, Inside Corner
117	474015.307	105864.520	9.777	Bottom Right of Trellis, Inside Corner
118	474009.242	105870.392	9.126	Junction of Drain Grill Joint
119	474011.031	105864.620	10.693	Bottom Right of Wall tile
120	474019.710	105867.128	10.183	Bottom Right of Window Glass Pannel
121	474019.670	105867.337	12.871	Top Right Black Strip
122	474011.031	105864.620	10.693	Bottom Right of sill
123	474019.647	105869.958	10.270	Bottom Left of Ground Window
124	474023.081	105859.608	14.947	Top Right of Tower on Garage
125	474009.294	105865.018	9.121	Top Corner of Drainage Grill

View location and camera data

Date 17/03/2017

Time 13.08 GMT

Focal length 24.00 mm

Eastings 474001.865 M

Northings 105872.536 M

Level AOSD⁶ 10.726 M



⁶ See footnotes, section 6.00 for further reading of Eastings, Northings and Level AOSD

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.4 **View 2** Existing



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

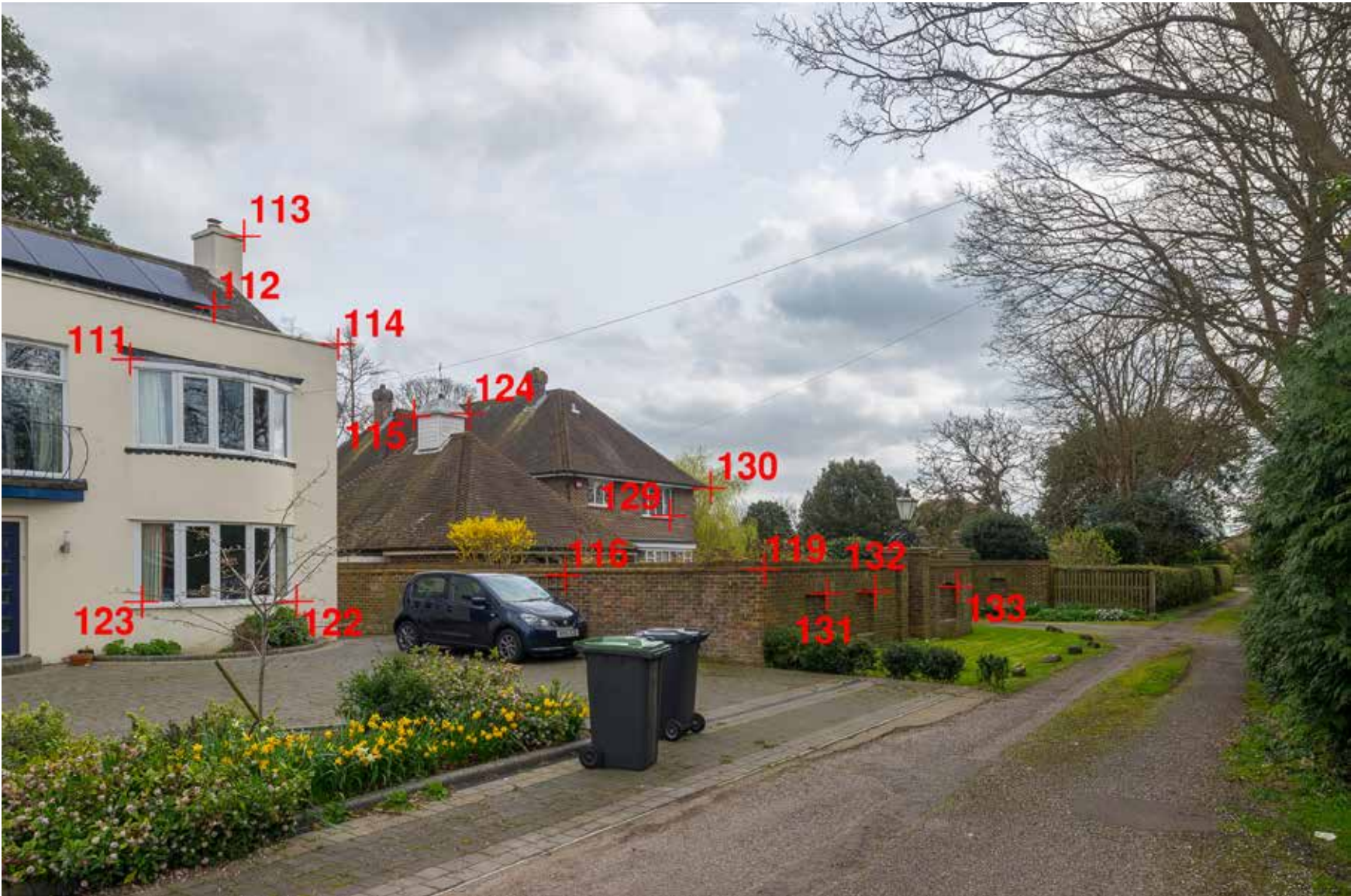
3.00 View and technical data: 3.5 **View 2** Proposed



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.6 View 2 Technical data



Camera location



Surveyed points and data⁶

Point ID	Easting	Northing	Level AOD	Description
111	474019.672	105870.091	14.280	Junction of lead on Window
112	474021.620	105867.596	15.972	Bottom right of Solar Panels
113	474023.462	105865.910	18.226	Top Right of Chimney
114	474019.696	105866.207	15.189	Top Right of Parapit
115	474024.164	105860.643	14.951	Bottom Left of Tower on Garage
116	474015.286	105864.544	10.612	Top Right of Trellis, Inside Corner
119	474011.031	105864.620	10.693	Bottom Right of Wall tile
122	474011.031	105864.620	10.693	Bottom Right of sill
123	474019.647	105869.958	10.270	Bottom Left of Ground Window
124	474023.081	105859.608	14.947	Top Right of Tower on Garage
129	474026.274	105845.213	12.923	Bottom Right of First Window
130	474025.567	105843.097	14.254	Corner of Gutter
131	474011.066	105862.203	10.252	Top Right of Wall Recess
132	474011.107	105859.901	10.245	Top Right of Wall Recess
133	474011.213	105854.285	10.244	Top Right of Wall Recess

View location and camera data

Date 17/03/2017

Time 13.30 GMT

Focal length 24.00 mm

Eastings 474003.932 M

Northings 105877.488 M

Level AOSD⁶ 10.772 M



⁶ See footnotes, section 6.00 for further reading of Eastings, Northings and Level AOSD

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.7 **View 3** Existing



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.8 **View 3** Proposed



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.9 View 3 Technical data



Camera location



Surveyed points and data⁶

Point ID	Easting	Northing	Level AOD	Description
91	473993.290	105933.993	15.271	Top Left of 1st Floor window
92	473993.473	105933.989	11.874	Top Left of Ground Window
94	473998.347	105944.841	11.922	Bottom Left of Sign on TP
95	474009.767	105941.510	11.050	Top Left of Nursing Home Sign
96	474015.697	105919.203	11.972	Top Right of Door Structure
97	474023.673	105877.908	17.403	Top of Roof on House
98	473991.167	105930.583	18.614	Top of Roof
99	473998.002	105944.668	17.125	Top Right of Box on TP
100	473999.080	105947.320	9.744	Kerb Junction
102	474007.372	105940.744	10.548	Top Right of Yellow Post
103	474021.247	105932.179	15.332	Top Left of 1st Floor window
104	474021.235	105932.163	11.829	Top Left of Ground Window
105	474019.230	105932.179	12.856	Top of Light
107	474006.001	105951.363	9.877	Bottom of white line in road
109	474001.241	105941.339	10.484	Top Left of Yellow Post

View location and camera data

Date 17/03/2017

Time 14.03 GMT

Focal length 24.00 mm

Eastings 474000.083 M

Northings 105959.75 M

Level AOSD⁶ 11.268 M



⁶ See footnotes, section 6.00 for further reading of Eastings, Northings and Level AOSD

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.10 **View 4** Existing



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.11 **View 4** Proposed



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.12 **View 4** Technical data



Camera location



Surveyed points and data⁶

Point ID	Easting	Northing	Level AOD	Description
50	474122.680	105802.709	15.532	Top of Roof Decoration
51	474122.479	105797.027	11.318	Bottom Left of Slates
52	474122.661	105808.389	11.303	Bottom Right of Slates
53	474117.622	105808.426	15.498	Top Roght of Roof Tiles
54	474119.391	105806.436	13.947	Top Right of Velux Window
55	474122.135	105822.492	15.730	Top of Roof Decoration
56	474121.884	105816.802	11.589	Bottom of Slates
57	474120.832	105816.263	10.497	Top Right of Blue Wood on Garage
58	474135.980	105807.656	8.391	Junction of Dropped Kerb
59	474135.999	105803.516	8.400	Kerb Joint
61	474113.948	105835.209	15.539	Top of Solar Panels
62	474134.660	105815.940	13.829	Top of Box on Lamp Post
64	474121.821	105823.714	9.640	Bottom Right of Window Sill
65	474116.860	105816.900	15.274	Intersection of Barge Board
70	474121.766	105823.374	12.834	Bottom Right of Glass

View location and camera data

Date 17/03/2017

Time 09.38 GMT

Focal length 24.00 mm

Eastings 474144.600 M

Northings 105804.486 M

Level AOSD⁶ 9.998 M



⁶ See footnotes, section 6.00 for further reading of Eastings, Northings and Level AOSD

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.13 **View 5** Existing



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.14 **View 5** Proposed



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.15 **View 5** Technical data



Camera location



Surveyed points and data⁶

Point ID	Easting	Northing	Level AOD	Description
72	474133.804	105880.712	12.360	Top Left of Sign
73	474115.258	105871.034	16.897	Top Left of Chimney
74	474118.449	105866.338	13.456	Top Left of Glass
77	474119.138	105888.025	13.064	Bottom Right of 1st Floor Glass
78	474120.347	105884.250	10.437	Bottom Right of door Glass
80	474133.480	105885.372	10.167	Top Left of Wall Coping Stone
81	474133.535	105879.590	10.443	Bottom Left of Brick Band
82	474130.911	105873.082	10.478	Top Right of Brick Wall
83	474135.265	105881.617	9.071	Top of Kerb
84	474135.241	105884.373	9.107	Top of Kerb
85	474120.305	105882.935	11.179	Top Right of Ground Floor Glass
87	474120.671	105883.933	15.763	Top Point of Barge Board
88	474121.210	105864.630	10.036	Bottom Left of Ground Floor Glass
89	474133.558	105872.695	10.559	Top Left of Brick Wall
90	474135.294	105877.952	9.033	Top of Kerb

View location and camera data

Date 17/03/2017

Time 10.04 GMT

Focal length 24.00 mm

Eastings 474143.960 M

Northings 105882.694 M

Level AOSD⁶ 10.790 M



⁶ See footnotes, section 6.00 for further reading of Eastings, Northings and Level AOSD

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.16 **View 6** Existing



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.17 **View 6** Proposed



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

3.00 View and technical data: 3.18 **View 6** Technical data



Surveyed points and data⁶

Point ID	Easting	Northing	Level AOD	Description
134	474006.639	105750.213	8.225	Near Corner of Gully
135	474007.084	105750.642	8.320	Kerb Junction
137	474008.916	105750.650	8.307	Kerb Junction
138	474009.841	105750.669	8.300	Kerb Junction
144	474014.434	105750.601	8.290	Kerb Junction
145	474015.348	105750.547	8.284	Kerb Junction
146	474016.267	105750.482	8.272	Kerb Junction
147	474008.694	105748.243	8.280	Top Left Tarmac
148	474009.700	105748.237	8.277	Top Right Tarmac
149	474028.089	105790.097	13.571	Top Left of Window
150	474032.185	105791.337	16.874	Near Corner of Chimney
151	474028.062	105778.740	13.581	Top Right of Window
152	474028.047	105777.554	13.260	Bottom Corner of Alarm Box
153	474023.587	105755.907	10.901	Bottom Left of Felt on Wall
154	474028.460	105758.711	14.643	Top Right of Tower

⁶ See footnotes, section 6.00 for further reading of Eastings, Northings and Level AOSD

Camera location



View location and camera data

Date 17/03/2017

Time 11.03 GMT

Focal length 24.00 mm

Eastings 474008.875 M

Northings 105745.806 M

Level AOSD⁶ 9.947 M



Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

4.00 Methodology: Overview

- 4.1 A Visually Verifiable Image (VVI), also known as an Accurate Visual Representation (AVR), can be a still or moving image that shows a proposed development in location in relation to its contextual surroundings, the degree to which it is (or is not) visible and can be presented in various forms. 'Outline' line views (Fig. 4.11 adjacent example), Solid block form (Fig. 4.12 adjacent example) or fully detailed and rendered views (Fig. 4.13 adjacent example) are typical methods used to illustrate proposed developments. The image shown in this document was instructed to be fully detailed and rendered by McCarthy & Stone Retirement Lifestyles Ltd.
- 4.2 A three dimensional computer model was accurately projected onto the base photographs to create the VVIs and the existing views are presented on the adjacent page for comparison.
- 4.3 To produce these VVIs a well established methodology has been followed. The methods used are in accordance with the Guidelines for Landscape & Visual Impact Assessment (LVIA) Third Edition 2013, produced by The Landscape Institute and Institute of Environmental Management & Assessment. The viewer can therefore be assured of the scale, placement and form of the proposed development. As for the materials used on the 3D model, there is no defined method known to accurately verify them and, as such, Visualhorizon3D had been guided by Re-Format Architecture and McCarthy and Stone Retirement Lifestyles Ltd in this regard.
- 4.4 The location of views is normally decided upon by the client/client representatives/ Planning authority, after discussion with the relevant local authority and should conform to the relevant planning policies.
- 4.5 The original photographs were taken on 17/03/2017.



Figure 4.11



Figure 4.12



Figure 4.13

5.00 Methodology: Photography

- 5.1 High resolution digital photography has been used (Fig. 5.11). Digital photography is now very advanced, is fast, saves time & money and holds all relevant data within the file needed to create the final view and output data for any possible future verification including camera type, lens used, time and date etc. By using a high resolution digital camera the need for processing and scanning is removed and the size of the digital image is ideal for the camera matching purposes. Where applicable a tilt shift lens¹ is used to better compose the view and remove any converging vertical lines.
- 5.2 A study is undertaken either by Visualhorizon3D and/or the photographer to determine the best window of time to take photographs from each location.
- 5.3 A location map (usually Ordnance Survey map or similar), descriptions and any available photographs are supplied to the photographer to easily find the view locations once on site. Ideally, the photographer will wait for favourably weather conditions (dependant on client requirements and project timescale).
- 5.4 Each camera is set up directly over a marked location that can be accurately surveyed in the surveying process (described in the next section). A plumb line² can be used to check this. The height of the lens is recorded by the photographer, usually between 1.5M and 1.7M (a good benchmark height for average eye level). In the rare event where a camera has been requested to be set up in a location that is hard to access (for example behind a glass door/window), this is noted and measurements taken to accurately place and record the camera position.
- 5.5 RAW³ format files are captured thus ensuring full resolution, tonal range and colours are recorded for latter use.
- 5.6 The date and time is also recorded and should correspond to the date imbedded in the digital photograph so that lighting conditions can be recreated in the corresponding 3D computer model. A photograph is taken of the marked location and tripod for future reference.
- 5.7 Optical distortion is removed form the digital images to assist the camera matching process.

- 5.8 Where possible, typical lenses are used in accordance with the recommendations in the Guidelines for Landscape and Visual Impact Assessment 2013 and the lens used is shown on the technical data sheet for each view.



Figure 5.11

- ¹ A tilt shift lens can be used to better compose views. It can be used to show less foreground, more sky and has the ability to remove converging vertical lines, All common practice in architectural photography.
- ² A Plum line is usually a piece of string with a pointed weight attached at one end that can be suspended to determine verticality from a given point.
- ³ RAW format files contain the raw information captured by the camera sensor. The data captured is not yet processed so these files are the digital equivalent of a negative. Where the processing of on old style negative was done in a dark room, todays RAW image processing is done by computer software.

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

6.00 Methodology: Surveying

- 6.1

A professional measured building and land surveyor carries out the surveying work for each view. The surveyor is supplied with a location map (usually Ordnance Survey map or similar), together with any other relevant location photos, to easily find the view locations once on site. Either the actual photograph to be used or an approved reconnaissance photograph is supplied for the surveyor to refer to.
- 6.2

The surveyor is supplied with an existing site survey. The surveyed points will be co-ordinated onto the existing site survey using traditional and accepted surveying methods⁴. This is used later in the camera matching process (section 7.00). In some instances where the origranl site survey is on a local grid, Eastings and Northings may relate back to this.
- 6.3

For each view the camera location marker is surveyed and static points are recorded by the surveyor. The static points surveyed should be within the cameras field of view for each location. The points must be fixed, for example corners of buildings, fixed street furniture, corners of windows and edges of roads⁵.
- 6.4

Electronic theodolite (Fig. 6.51) and reflectorless laser technology is used to locate each static point and is to a tolerance of +/-5mm.
- 6.5

The static points are numbered and all Eastings, Northings and levels Above Ordnance Survey Datum (AOSD)⁶ information is recorded for each point. The points are marked and numbered on the approved photograph for each view (Fig. 6.61 example image). This image will then form the background plate in the 3D model file (see section 7.00). The surveyed information is supplied digitally to Visualhorizon3D in a combination of dwg⁷ and jpg⁸ formats as well as a text document with written descriptions for each point.



Figure 6.51



Figure 6.61

4

Where no site survey is available, Ordnance survey maps can be used (available from Ordnance Survey, the national mapping agency of Great Britain).

5

There are occasions where a view will be in a field or in a location where no such fixed points are visible. In this instance, small markers are placed or laid down, the photograph is taken, and the marker locations surveyed and later digitally removed form the photograph.

6

Eastings and Northings are geographic coordinates for a point from a datum. Above Ordnance Survey Datum refers to levels above a vertical datum. The origins for these datums are used by Ordnance Survey, the national mapping agency of Great Britain and measurements refer back to them. Where the original site survey is on a local grid, Eastings and Northing will relate back to this.

7

Dwg is a file format used by many computer aided design packages to store 2D and 3D data.

8

Jpg is a digital image file format that can store and transmit photographic images.

7.00 Methodology: 3D Model & Camera matching

- 7.1 Unless an accurate 3D computer generated model ¹⁰ is supplied, computer aided design (CAD) drawings are supplied (usually by the design architect) in dwg⁷ format. These would typically include a site survey, plans, elevations, sections and any additional details explaining the construction and layout of the proposed development. In this instance, the architect supplied an accurate 3D model.
- 7.2 This information is imported into a 3D computer graphics software (3D software)⁹ and using the site survey, plans, elevations and sections, an accurate three-dimensional model (3D model)¹⁰ is created (Fig. 7.21 adjacent example). Heights and positioning are cross checked against the supplied information. If the 3D model was supplied, it is accurately positioned over the supplied location plans instead. In this instance, the architect supplied an accurate 3D model.
- 7.3 The surveyors information (see section 6.00) is imported into the 3D software and correctly orientated to the site survey (or Ordnance survey map) along with the plans and 3D model.
- 7.4 (Refer to example Fig. 7.41 for the following description). The background plate is shown on screen in the 3D software and the virtual camera is located in the correct location (as surveyed by the surveyor). The camera is adjusted to the correct height over the surveyed point (as recorded by the photographer). The real world camera lens information is input to the corresponding virtual camera. The output image size is set to be identical to that of the background plate and, by adjusting the virtual camera target point, the surveyed points and corresponding background plate are accurately lined up. The process is double checked, and the same steps are followed for each virtual camera and background plate.
- 7.5 Locating the various elements and the camera matching process requires diligence and attention to detail. The 3D model now relates correctly to all surveyed points, cameras, site plan and background plates.
- 7.6 The 3D scene is now ready to be worked up to create two dimensional images for each camera location the same size as the corresponding background plate (see section 8.00 for a description of this process).



Figure 7.21

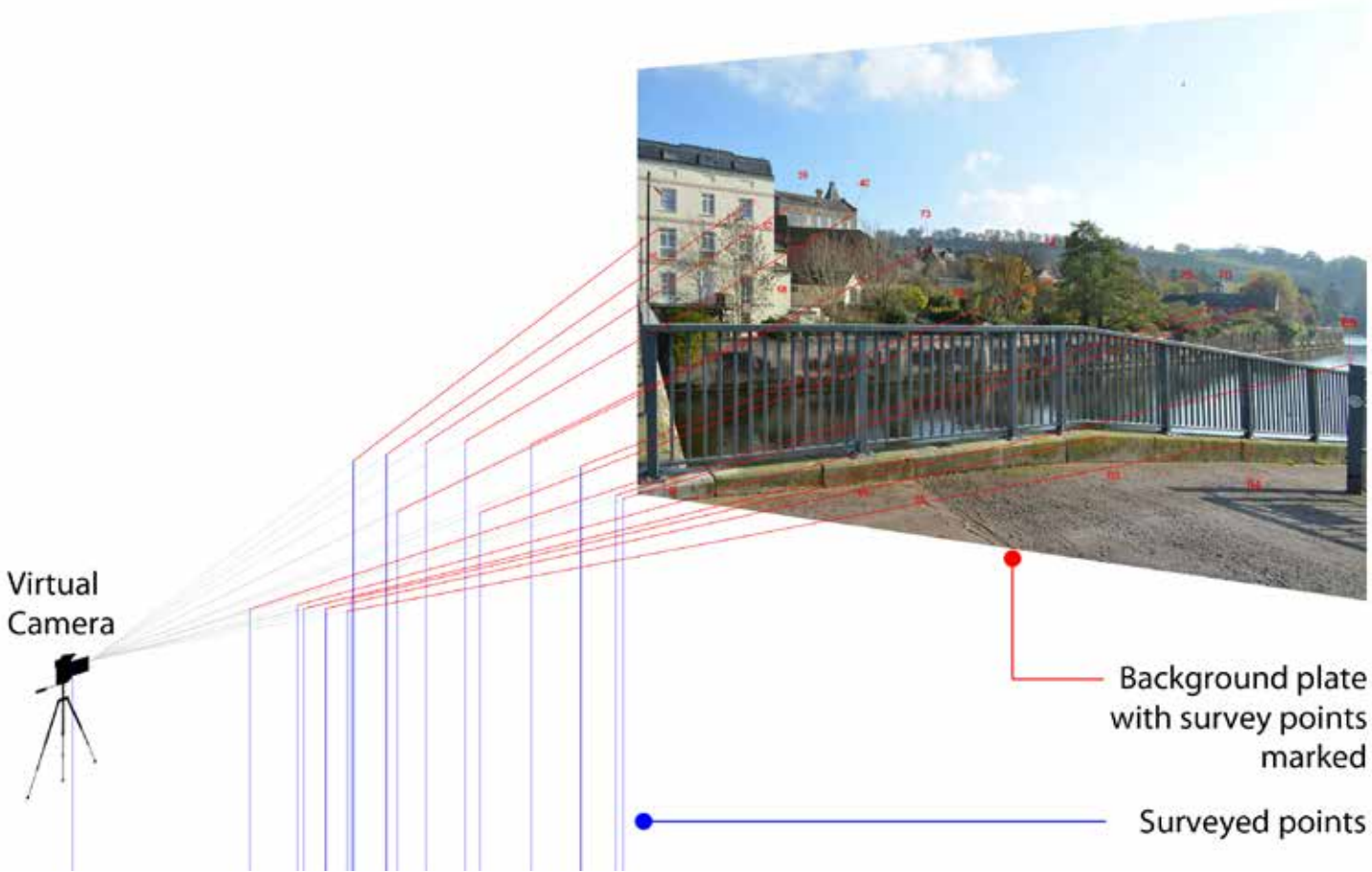


Figure 7.41

⁹ 3D computer graphics software is a computer programme that creates 3D computer generated imagery.

¹⁰ A 3D model is a mathematical representation of a three-dimensional object created using 3D software.

Western Avenue, Emsworth.

Visualhorizon3D - Visually Verifiable Images: Views & Methodology

8.00 Methodology: Image creation and post production

- 8.1 While camera matching and verification of size and location is an accurate and auditable procedure, lighting and texturing¹¹ are created using both the expertise of the 3D artist and the input of the architect/designer. The existing photographs are examined to determine tonal and light behaviour at the time the photograph was taken. This assists in understanding how the 2D image should appear within the final composition. The architect/designer should supply details of materials that will be used for the project and samples where possible.
- 8.2 The 3D software has the ability to place a light representing the sun at the correct orientation and time (as recorded in the digital photograph) to the accurately placed model. Any other real world lighting sources are recreated in the 3D scene using virtual lights. This is done for each camera location.
- 8.3 When the lighting and texturing are complete a 2D rendering¹² of each image is generated by the 3D software ready to superimpose on the photograph.
- 8.4 The rendered image and photograph of the existing view are both imported into image editing software. Post production¹³ work is carefully and expertly carried out to edit, adjust and blend the two images together.
- 8.5 Due to the work carried out in the 3D model & Camera matching stage, the rendered image will accurately overlay on the existing photograph (Fig. 8.51 adjacent example).
- 8.6 Any objects or parts of the photograph that will be in front/behind the proposed development (Fig. 8.61 adjacent example) must be edited to show this scenario. There are different ways to achieve this but, suffice to say, the same end result is an image that shows the proposal correctly in place (Fig. 8.62 adjacent example).
- 8.7 The architect/designer is again consulted with regards materials finishes. Any subtle amendments such as hue, saturation etc are made to give the end result, a verifiable view of the proposed development.
- 8.8 This process is carried out for each view location required and the images are saved and output in a format relevant to the media they will be viewed in.



Figure 8.51



Figure 8.61



Figure 8.62

¹¹ Texturing is the application of a surface to the 3D model. This can be done by wrapping 2D images or photographs on surfaces or by using software procedures and formulas to create the desired texture.

¹² The process of creating a two dimensional image from a 3D model.

¹³ The final stage in production of a view.