

PLOT E AND TELECOM HOUSE
Outline Application
EIA Implications of Design Amendments

Volume 2: Townscape, Conservation and Visual Assessment
Clarifications Document

Tavernor Consultancy
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01

INTRODUCTION

- 1.1 This document provides additional material to the Townscape, Conservation and Visual Impact Assessment (TCVIA) (Volume 2 of the Environmental Statement) submitted to Reading Borough Council (RBC) in July 2015 for proposals to Station Hill.
- 1.2 Since the submission, amendments have been made to the parameters of proposed Plot E of the masterplan. The views where the changes are likely to be perceived have been remodelled by Cityscape and are included in section 2 of this document. An additional view has also been produced at the request of RBC and is located in section 3.
- 1.3 The assessment methodology, planning policy context and baseline conditions are set out in the submitted Townscape Conservation and Visual Impact Assessment.
- 1.4 The revisions to the parameters of Plot E will have an increased degree of articulation. An additional set back will be introduced and there will be reductions to the height of the Friar Street, Friar’s Walk and Garrard Street elevations. The maximum height of the plot will remain unchanged.



02

REVISED VIEWS

- 2.1 The changes to the parameters of Plot E are demonstrated though the following 7 views. For each view two images are shown:
- 1. Proposed – the submitted maximum parameters of the Proposed Development
 - 2. Amended Maximum Parameters – the submitted maximum parameters of the Proposed Development with revised maximum parameters for Plot E.

New no.	SPD title
9	Chatham Street
10	Weldale Street
12	Junction of Friar Street and Greyfriars Road looking along Friar Street
25	Station Road, looking west
26	Friar Street looking west
28	Junction of Castle Street and St Mary's Butts
30	Looking east from the junction of Greyfriars Road and Garrard Street

Table of Views

View	Location	Page	Style	Ref	OS-E	OS-N	Height (AOD)	Heading	Lens	Field of View	Film	Date	Time
09	Chatham Street	12	AVR-1	D7279	471066.497	173557.351	43.59	61.00	24mm	74°	Digital	27/01/2012	13:26
10	Weldale Street	14	AVR-1	D11458	470998.695	173656.708	40.534	77.60	35mm	54°	Digital	01/06/2015	15:43
12	Junction of Friar Street and Greyfriars Road	16	AVR-1	D11452	471257.24	173558.91	45.06	73.20	24mm	74°	Digital	01/06/2015	13:40
25	Station Road, looking west	18	AVR-1	D9995	471246.29	173556.95	45.02	21.45	24mm	74°	Digital	01/06/2015	13:50
26	Friar Street looking west	20	AVR-1	D11456	471452.33	173580.85	45.52	275.83	24mm	74°	Digital	01/06/2015	12:42
28	Junction of Castle Street and St Mary's Butts	22	AVR-1	D7311	470613.10	173243.17	42.09	352.09	24mm	74°	Digital	26/01/2012	15:30
30	Looking east from the junction of Greyfriars Road and Garrard Street	24	AVR-1	D11472	471257.9255	173708.7047	38.69	97.06°	24mm	74°	Digital	01/06/2015	14:45









ADDITIONAL VIEW

09 Chatham Street



Proposed

From this westerly position, if built out to the maximum parameters, the tops of Plot A (green), D (pink), B (yellow) and C (blue) will appear as a tight group, their different heights and massing adding depth to the skyline form and rising towards Plot C (blue) to mark the northeast end of the Site at the Station. Plot E will extend in front of Plot D (pink), helping to consolidate the group form and stepped character of the Proposed Development. It will have a different character to its materials and elevations to reflect its residential use. The taller cluster of commercial buildings will share a calm and light architectural expression whilst their different heights and mass will read as separate, stepped forms. At their minimum parameters, little of the closest Plots A (green) and D (pink) will be visible through the trees and above the existing roofline, however they will still step up to the taller buildings of the new cluster within an overall stepped composition which rises to the northeast. The Station will gain a new, high quality landmark on the skyline and the regenerated Site will have a richly layered, cohesive presence on the central Reading skyline.

Significance of Impact: **major, beneficial**

Amended Maximum Parameters

The height of the north-east corner of Plot E (red) would be slightly reduced. The southern end of the plot is greatly screened by trees and therefore the additional step in the massing would not be noticeable from this position. The amendments to Plot E would cause only a slight change to the view and the impact of the Proposed Development would remain major, beneficial as described above.

Significance of Impact: **major, beneficial**

Proposed view



View Location



Camera Location





Amended Maximun Parameters

10 Weldale Street



Proposed view

Proposed

The Proposed Development has the potential to positively transform this view. Like on Chatham Street, from this westerly position, if built out to the maximum parameters, the tops of Plot A (green), D (pink), B (yellow) and C (blue) will appear as a tight group, their different heights and massing adding depth to the skyline form and rising towards Plot C (blue) to mark the northeast end of the Site at the Station. Plot E will extend westwards, concealing Plot F and appearing partly in front of Plot D (pink). It will help to consolidate the group form and stepped character of the Proposed Development. The taller cluster of commercial buildings will share a calm and light architectural expression whilst their different heights and mass will read as separate, stepped forms. At their minimum parameters, little of the closest Plots A (green) and D (pink) will be visible above the existing roofline, however they will still step up to the taller buildings of the new cluster within an overall stepped composition which rises to the northeast. The Station will gain a new, high quality landmark on the skyline and the regenerated Site will have a richly layered, cohesive presence on the central Reading skyline.

Significance of Impact: **major, beneficial**

Amended Maximum Parameters

The height of the north-east corner of Plot E (red) would be slightly reduced. The clear step down in height from Plot D (pink) would be retained. The amendments to Plot E would cause only a slight change to the view and the impact of the Proposed Development would remain major, beneficial as described above.

Significance of Impact: **major, beneficial**



View Location



Camera Location





Amended Maximun Parameters

12 Junction of Friar Street and Greyfriars Road



Proposed view



View Location



Camera Location

Proposed

Only Plot E (red) of the Proposed Development will be visible in this view. Plot E will be lower at its southerly end, on Friar Street, and will (at maximum parameters) appear to be of a similar height to the new building on the left of the frame and the Novotel at the east end of the street. At maximum parameters, a sliver of its northerly element, stepping up to Garrard Street, will also be visible on the skyline. At minimum parameters, only the southerly element will be visible and it will be of a similar height to that of the existing buildings on Site. The southern elevation will have a slightly staggered footprint, maintaining the street line to the west and east and creating a balanced entrance to the new Friar's Walk on the immediate east side of Plot E. The entrance to the new route northwards will set Plot E slightly away from the lower listed building to its east side (39 Friar Street). Above street level, Plot E will be visibly predominantly residential in nature and characterised by an appropriate materials palette. It will be a new high quality building which will add positively to the varied street frontage and will mark the entrance to the new pedestrian route north through the Site and the new public spaces and activity located there.

Significance of Impact: **minor to moderate, beneficial**

Amended Maximum Parameters

The southern elevation of Plot E (red) will now be straight, allowing a broader pavement at the entrance to the new Friar's Walk. The west half of the elevation will be lowered, providing a more articulated roofline; the taller part marking the entrance to Friar's Walk leading to the heart of the Proposed Development. The setback top has been altered, it will now not be visible from this position, reducing the impact of the building at street level. Although the amendments to Plot E would cause a noticeable change to the articulation of the plot in this view, the impact of the Proposed Development would remain minor to moderate, beneficial as described above.

Significance of Impact: **minor to moderate, beneficial**





Amended Maximun Parameters

25

Station Road, looking west



Proposed view



View Location



Camera Location

Proposed

Plot E (red) of the Proposed Development will be visible on the left side of this view on Friar Street. The southern frontage on Friar Street will appear in line with the small brick listed building (39 Friar Street) on the east side of the entrance to the new Friar’s Walk. At the minimum parameters, Plot E (red) will rise little above the existing building’s height and will be little noticed, if at all, seen obliquely within this varied street frontage. At the maximum parameters, it will contribute more variation and depth to the existing roofline without dominating the skyline and will act as a local landmark for the new pedestrian route north off Friar Street. To the right, above the roofline on Station Road, the top of Plot C (blue) will landmark the new Station Square and regenerated area just south of the Station, and will assist in forming a separate upper layer of built form in view, joining the top of the redeveloped Thames Tower (brown) and helping to separate the Novotel from the predominantly brick frontage at street level. At the minimum parameters, the top of Plot C (blue) is unlikely to be noticed.

Significance of Impact: **minor, beneficial**

Amended Maximum Parameters

The southern elevation of Plot E (red) will now be straight, allowing a broader pavement at the entrance to the new Friar’s Walk. The elevation will be step down at the western end, providing a more articulated roofline; the taller part marking the entrance to Friar’s Walk leading to the heart of the Proposed Development. The setback top has been altered so it will now not be visible from this position and will reducing the impact of the building from the street. Although the amendments to Plot E would cause a noticeable change to the articulation of the plot in this view, the impact of the Proposed Development would remain minor, beneficial as described above.

Significance of Impact: **minor, beneficial**



Amended Maximun Parameters

26 Friar Street looking west



Proposed

Only Plot E (red) of the Proposed Development will be visible in this view. The southern frontage on Friar Street will be set in line with the listed building to its east, with the entrance to the new Friar's Walk in between. At the minimum parameters, Plot E (red) will rise to a similar height as its closest neighbours. At the maximum parameters, it will appear taller than the buildings further west and will provide a local marker for the entrance to the new Friar's Walk. Its stepped roofline will rise up and away from the street front, indicating the new route and newly regenerated Site beyond. It will be a new high quality building which will add positively to the varied street frontage and will mark the entrance to the new pedestrian route northwards through the Site and the new public spaces and activity located there.

Significance of Impact: **minor to moderate, beneficial**

Amended Maximum Parameters

The southern elevation of Plot E (red) will now be straight and set slightly back from the building line of the listed building to its east. This will allow a broader pavement at the entrance to the new Friar's Walk. The west half of the elevation will be lowered, providing a more articulated roofline; the taller part marking the entrance to Friar's Walk leading to the heart of the Proposed Development. The setback top has been altered; it will now not be visible from this position, reducing the impact of the building at street level. Although the amendments to Plot E would cause a noticeable change to the articulation of the plot in this view, the impact of the Proposed Development would remain minor to moderate, beneficial as described above.

Significance of Impact: **minor to moderate, beneficial**

Proposed view



View Location



Camera Location





Amended Maximun Parameters

28

Junction of Castle Street and St Mary's Butts



Proposed

From this south-westerly point, and at maximum parameters, the tops of almost all the Plots of the Proposed Development would be visible. The west tip of the tallest Plot C (blue) would be visible at both minimum and maximum parameters and would provide a new marker for the refurbished Station and new Station Square. It would appear directly adjacent to the Tower of the Grade I listed St Mary's Church, but would in no way dominate its setting, and its calm and light architectural expression would ensure that it appeared as a recessive feature on the skyline, in the mid-distance. The other Plots would step down from the greater height of C (blue) to the south and west. Together, the new buildings will have a dense and richly layered cluster form on the skyline, marking the regeneration of the Station and surrounding area. In summer, much of Plot C (blue) would be concealed by the trees in the graveyard of St Mary's Church and at minimum parameters, the lower Plots would not be visible and the taller – B (yellow) and C (blue) – would be little noticed in the distance.

Significance of Impact: **minor to moderate, beneficial**

Amended Maximum Parameters

The changes to the setback top of Plot E (red) will be seen from this position, the building would step the overall massing of the building will be reduced. The amendments to Plot E would cause only a slight change to the view and the impact of the Proposed Development would remain minor to moderate, beneficial as described above.

Significance of Impact: **minor to moderate, beneficial**

Proposed view



View Location



Camera Location





Amended Maximun Parameters

30

Looking east from the junction of Greyfriars Road and Garrard Street



Proposed view



View Location



Camera Location

Proposed

Plots A (green) and D (pink) of the consented SH3 Scheme will provide a new continuous and legible frontage to Garrard Street on the left, and the northern elevations of Plots E (red) and F (orange) will follow the route of the road on the right. The maximum and minimum proposed heights for Plot E (red) will relate to those of the adjacent Plot F (orange), stepping down from the consented taller plots to the south. The existing jumbled, backlands character of Garrard Street will be transformed by the consented plots of the SH3 Scheme and Plot E (red), and well-defined routes between the plots will improve the permeability of the wider area.

Significance of Impact: **major, beneficial**

Amended Maximum Parameters

No change, although there will be a reduction in height of the north-west corner of Plot E (red), the building would still rise out of the frame; the impact of the Proposed Development would remain major, beneficial as described above.

Significance of Impact: **major, beneficial**





Amended Maximun Parameters



03

ADDITIONAL VIEW

Table of View

View	Location	Page	Style	Ref	OS-E	OS-N	Height (AOD)	Heading	Lens	Field of View	Film	Date	Time
32	Friar Street, western end	28	AVR-1	D12296	470810.257	174747.32	37.33	150.95	35mm	54°	Digital	02/06/2015	20:11

32

Friar Street,
western end



View Location



Camera Location



Existing view



Proposed view

Existing

This view is taken from the western end of Friar Street at the island in the centre of the pedestrian crossing. Behind the viewing position is a busy roundabout on the A329 dual carriageway. The view looks east along Friar Street, which is one of the principal retail streets in central Reading. Development along this street is mixed, on the south side (to the right) are varied in scale, age and quality and those on the north side are more recent post-war blocks; at the far end the bulky stepped curtain walling of the Novotel hotel is visible. In the foreground to the left, and the principal building in the frame, is Greyfriars Church which is Grade I listed. The Franciscan-style Church was completed in the 14th century and restored in the mid-19th century. The mature trees in the Church grounds screen the clear reading of the Church's silhouette even from this close position. The significance of the Church lies in its age and it being the most complete surviving example of Franciscan architecture in England. The modern setting of the Church, dominated by the road infrastructure to the north and west and post-war commercial and office buildings to the north-east, contributes little to its significance.

Proposed (with Amended Plot E)

From this south westerly position, if built out to the maximum parameters, the tops of Plot A (green), B (yellow), D (pink), and C (blue) will appear as a tight group, their different heights and massing adding depth to the skyline form and rising towards Plot C (blue) to mark the northeast end of the Site marking the Station. Plot E (red) will be visible in the vista along Friar Street and will be similar in height to its neighbours and the Novotel at the east end of the street. The north-east corner of the plot, on Garrard Street, will be visible in front of Plot D. The cluster of commercial buildings, Plots A-D, to the left of the Church, will share a calm and light architectural expression

whilst their different heights and mass will read as separate, stepped forms. The buildings will be set some distance beyond Greyfriars Church and will be read as a distinctly modern backdrop to the listed building. The proposed buildings at their maximum parameters will appear lower than the belfry turret and west end gable; the Church will remain the primary building in the frame and the picturesque roofline of the Church would remain clearly legible against open sky.

Significance of Impact: **major, beneficial**

Cumulative

Plot B (Reserved Matters Application) (black) will appear to have the same massing as Plot B in the SH3 Scheme and will appear between and to the left of Plots A (green) and D (pink), maintaining the compact, rounded profile of the new group of buildings.

Significance of Cumulative Impact: **major, beneficial**





Cumulative view



04

CONCLUSIONS

- 4.1 As the remodelled views assessed in section 2 demonstrate, the minor parameter changes proposed to the Plot E result in a slight visual change to the local views (Views 9, 10 and 28) and a more noticeable change in close views (Views 12, 25 and 26). There would be no visible change to View 30. While it is judged that the revised massing would result in a slight change in impact, in these views the proposed changes to the maximum parameters of Plot E would not materially alter the composition of the submitted proposed views. They would not therefore alter the assessment of significance of impacts in isolation or cumulatively. There would be no impact on any of the remaining views assessed in the TCVIA (July 2015). As a result there would also be no changes in the impacts on townscape character or the settings of built heritage assets reported in the July 2015 TCVIA.
- 4.2 The additional viewing position (View 32), included in section 3, demonstrates that while the impact on this view of Greyfriars Church would be major, it would not be harmful to its significance.



Appendix:

CITYSCAPE VERIFIED VIEWS METHODOLOGY

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0.0 INTRODUCTION

0.1 Methodology overview

The methodology applied by Cityscape Digital Limited to produce the verified images or views contained in this document is described below. In the drafting of this methodology and the production and presentation of the images, guidance has been taken from the London View Management Framework SPG March 2012. The disciplines employed are of the highest possible levels of accuracy and photo-realism which are achievable with today’s standards of architectural photography and computer-generated models.

0.2 View selection

The viewpoints have been selected through a process of consultation with relevant statutory consultees and having regard to relevant planning policy and guidance.

1.0 PHOTOGRAPHY

1.1 Digital photography

With the latest advances in Digital Photography it is now possible to match the quality of plate photography. Due to the added benefits of time saving and flexibility Cityscape now employ full time in-house digital photographers.

1.2 Lenses

For local views a wide angle lens of 24mm or 35mm was used in order to capture as much of the proposal and its surroundings as possible. Intermediate distance views were photographed with a standard 35mm to 70mm.

As a guide, the following combinations were used:

Distance to subject	View and 5D	Canon Digital SLR, 1DS Mark III and 5D
0 – 800 metres	Local	24mm to 50mm ‘L’ series
800 to 5000 metres	Intermediate	24mm to 70mm ‘L’ series zoom

Examples of these views are shown in Figures 4 and 5.

1.3 Digital camera

Cityscape used a Canon 1DS (shown in figure 1), Canon Digital SLR, Canon 1DSMK3 or 5D (all full frame digital SLRs) high resolution digital camera for the digital photography. Also used were Canon’s ‘L’ series professional tilt and shift lenses which produce high quality images that are suitable for the camera-matching process without the need for processing and scanning.

1.4 Position, time and date recording

The photographer was provided with (i) an Ordnance Survey map indicating the position of each viewpoint from which the required photographs were to be taken, and (ii) a digital photograph taken by Cityscape of the desired view. For each shot the camera was positioned at a height of 1.60/1.65 metres (depending on whether image is SPG or RPG3A view) above the ground level which closely approximates the human eye altitude. A point vertically beneath the centre of the lens was marked on the ground as a survey reference point and two digital reference photographs were taken of (i) the camera/tripod location and (ii) the survey reference point (as shown in Figures 2 and 3). The date and time of the photograph were recorded by the camera.

1





2



3

4



5



- 1 Canon 1DS Digital Camera
- 2 Camera Location
- 3 Survey reference point
- 4 Local view
- 5 Intermediate view

2.0 DIGITAL IMAGE CORRECTION

2.1 Raw file conversion

Canon cameras produce a raw file format, which is then processed digitally for both high detail and colour accuracy. The final image is outputted as a tiff¹ file.

2.2 Digital image correction

The digital images were then loaded into Cityscape's computers running Adobe Photoshop^{®2} software to prepare the digital image for the next stage of camera matching (see section 5). The image is also 'bank'³ corrected which means ensuring that the horizon in each digital image is precisely horizontal.

In spite of the selection of the most advanced photographic equipment, lenses are circular which results in a degree of distortion on the perimeter of images. The outer edges of an image are therefore not taken into consideration; this eliminates the risk of inaccuracy. Figure 17 in section 5 illustrates the 'safe' or non-distortive area of an image which is marked by the red circle.

The adjusted or corrected digital image, known as the 'background plate', is then saved to the Cityscape computer system ready for the camera matching process (see section 5). In preparation for the survey (see section 4) Cityscape marks up each background plate selecting a number of points in the view, such as corners of buildings, for survey (see Figures 6 and 7)

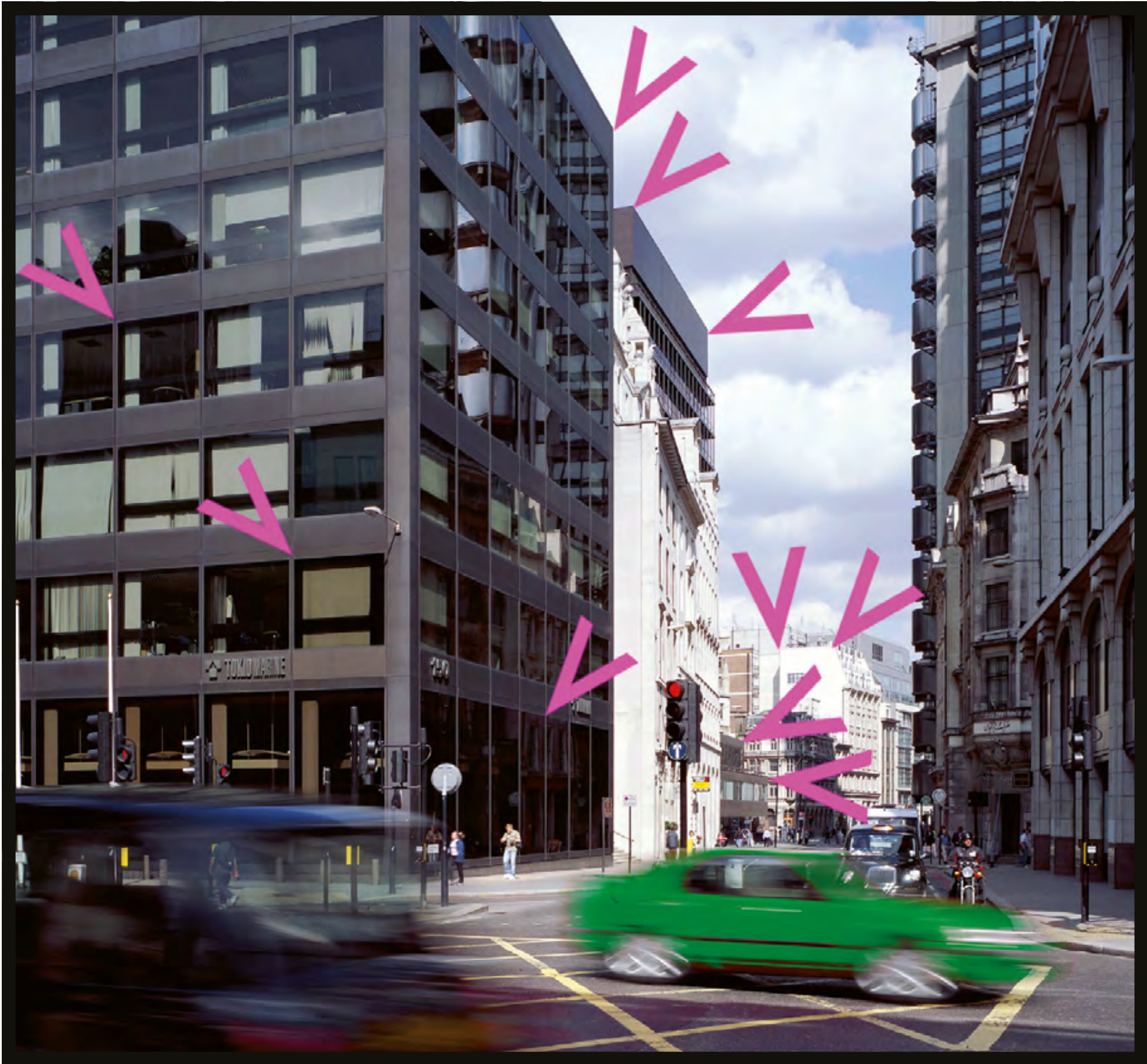
¹ TIFF is the name given to a specific format of image file stored digitally on a computer.

² Adobe Photoshop[®] is the industry standard image editing software.

³ By aligning the vanishing points.

6





7

6 Background plate highlighting critical survey points in purple and secondary survey strings in red

7 Area of interest to be surveyed as shown in Figure 7

3.0 GPS SURVEY

3.1 Survey

Marshall Survey Associates Ltd. (MSA) were contracted to undertake the survey of (i) each viewpoint as marked on the ground beneath the camera at the time the photograph was taken (and recorded by way of digital photograph (see section 1 above)) and (ii) all the required points on the relevant buildings (as marked on the background plate).

The survey was co-ordinated onto the Ordnance Survey National Grid (OSGB36) by using Global Positioning System (GPS) equipment (see, for example, Figure 9) and processing software. The Ordnance Survey National Grid (OSGB36) was chosen as it is the most widely used and because it also allows the captured data to be incorporated into other available digital products (such as Ordnance Survey maps). The height datum used was Ordnance Survey Newlyn Datum and was also derived using the GPS.

MSA uses a baseline consisting of two semi-permanent GPS base stations (see Figure 8). These stations are located approximately 5730 metres apart and positioned so as to optimise the results for the area of operation (see location map, Figure 13). The base stations are tied into the National GPS Network and are constantly receiving and storing data which allows their position to be monitored and evaluated over long periods of operation. By using the same base stations throughout the survey MSA ensure the consistency of the results obtained.

Using the Real Time Kinematic method a real time correction is supplied by each base station to the rover (shown in Figure 10) (over the GSM⁴ network) physically undertaking the field survey. This enables the rover to determine the co-ordinates of its location instantaneously (i.e. in ‘real time’). The rover receives a ‘corrected’ fix (co-ordinates) from each base station. If the two independent fixes are each within a certain preset tolerance, the rover then averages the two fixes received. The viewpoints are, with a few exceptions, surveyed using this technique. This method of GPS survey (Real Time Kinematic) produces results to an accuracy in plan and height of between 15mm – 50mm as outlined in the “*Guidelines for the use of GPS in Land Surveying*” produced by the Royal Institute of Chartered Surveyors.

The particular points on each building as marked up on the background plate are surveyed using conventional survey techniques utilising an electronic theodolite and reflectorless laser technology (shown in Figures 11 and 12). There are two methods used to fix the building details, namely polar observations⁵ and intersection observations⁶. The position of the theodolite is fixed by the rover as described above. In certain circumstances, a viewpoint may need to be surveyed using conventional survey techniques as opposed to Real Time Kinematic, if, for example, the viewpoint is in a position where GPS information cannot be received.

⁴ GSM network: the mobile phone network.

⁵ Polar observation is the measurement of a distance and direction to a point from a known baseline in order to obtain co-ordinates for the point. The baseline is a line between two known stations.

⁶ Intersection observation is the co-ordination of a point using directions only from two ends of a baseline.



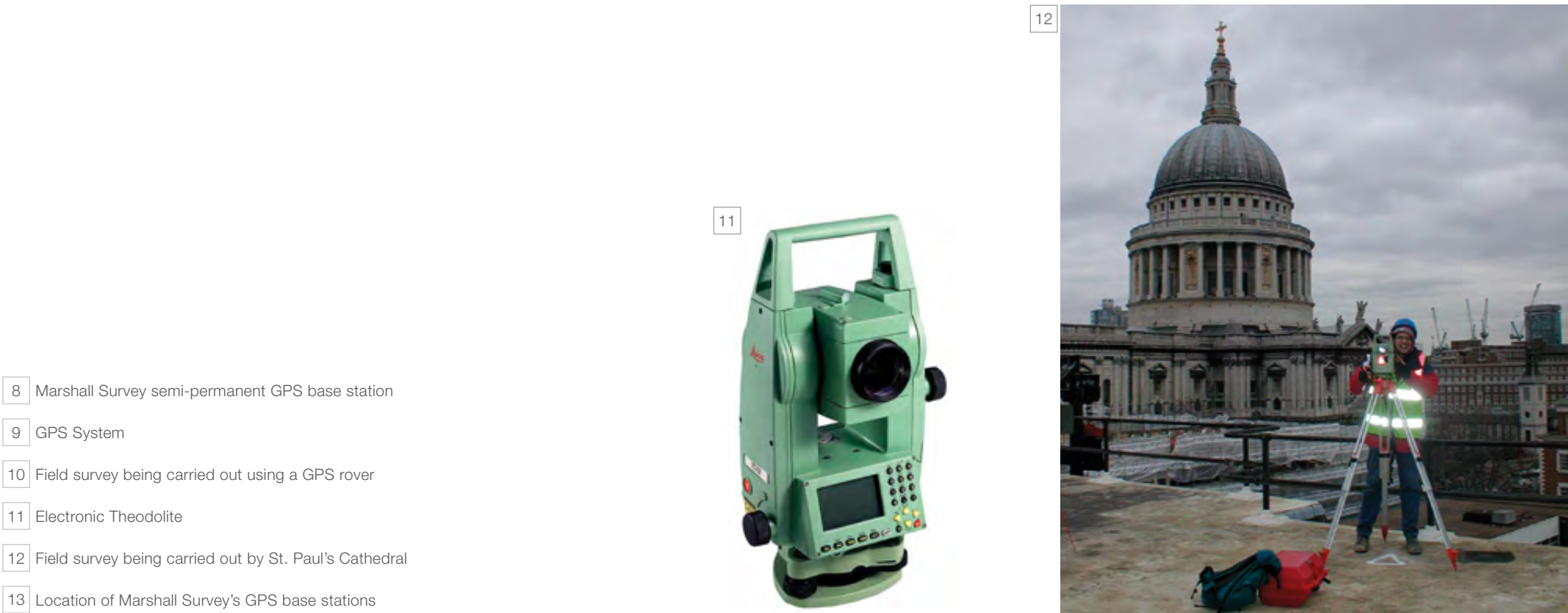
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9



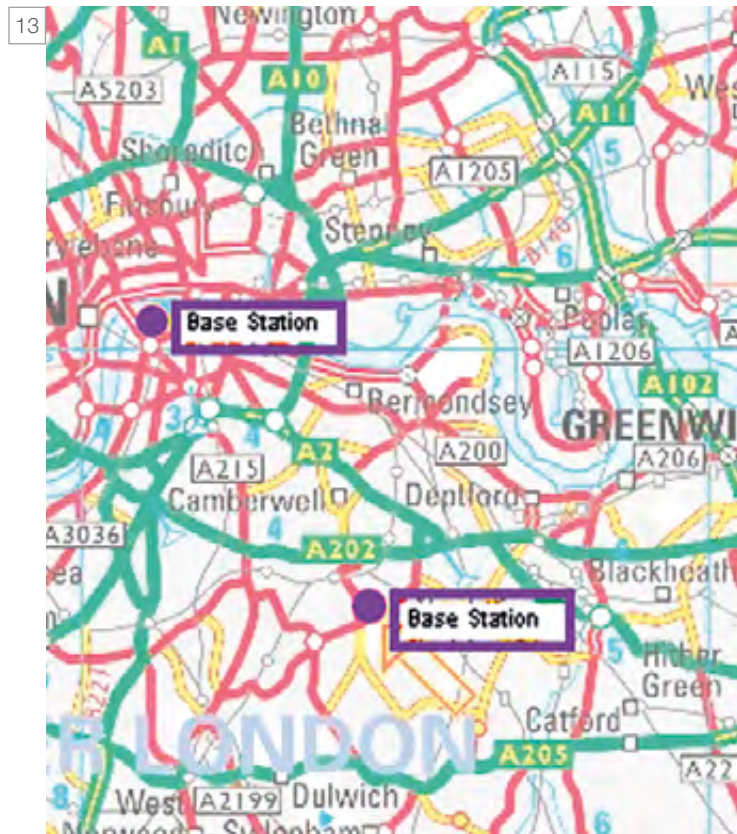
10



12



11



13

8 Marshall Survey semi-permanent GPS base station

9 GPS System

10 Field survey being carried out using a GPS rover

11 Electronic Theodolite

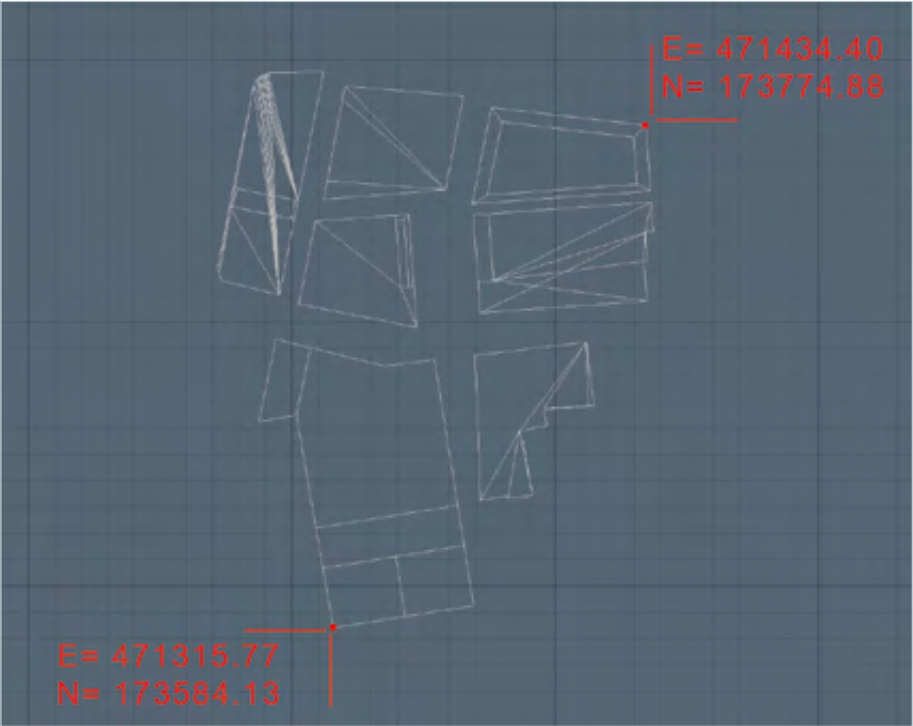
12 Field survey being carried out by St. Paul's Cathedral

13 Location of Marshall Survey's GPS base stations

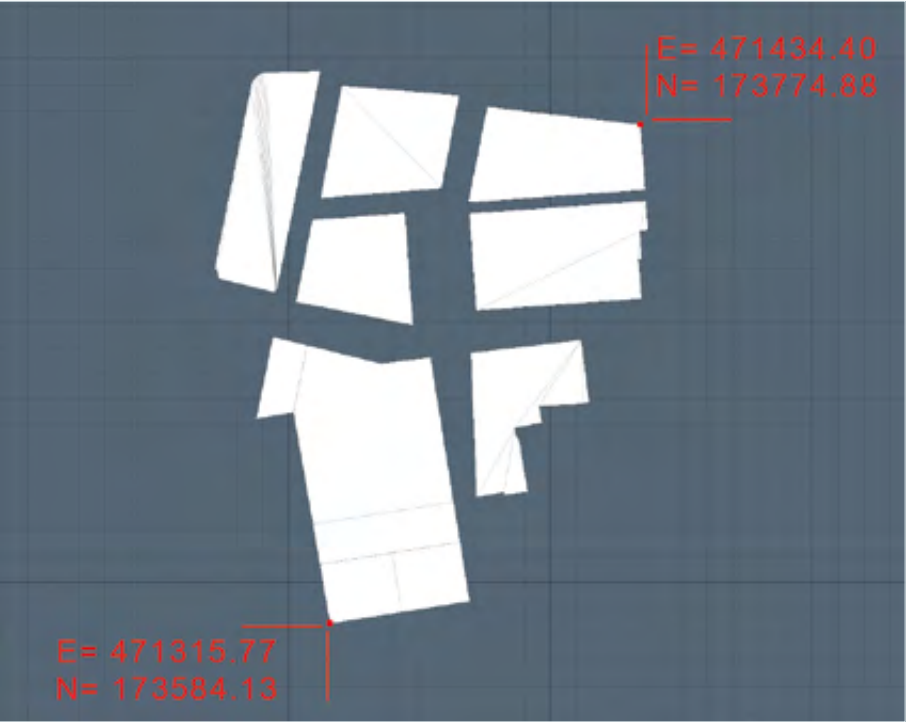
4.0 MODEL POSITIONING

4.1 Height and position check
The model is positioned using a site plan provided by the architect. This is then overlaid onto OS positioned survey from ProMap. Once the building has been positioned in Lightwave confirmation of height and position is requested from the architect. Two clear reference points are agreed and used to confirm the site plan and Ordnance Survey. The height is cross checked against the architects section and given in metres Above Ordnance Survey Datum (AOD).

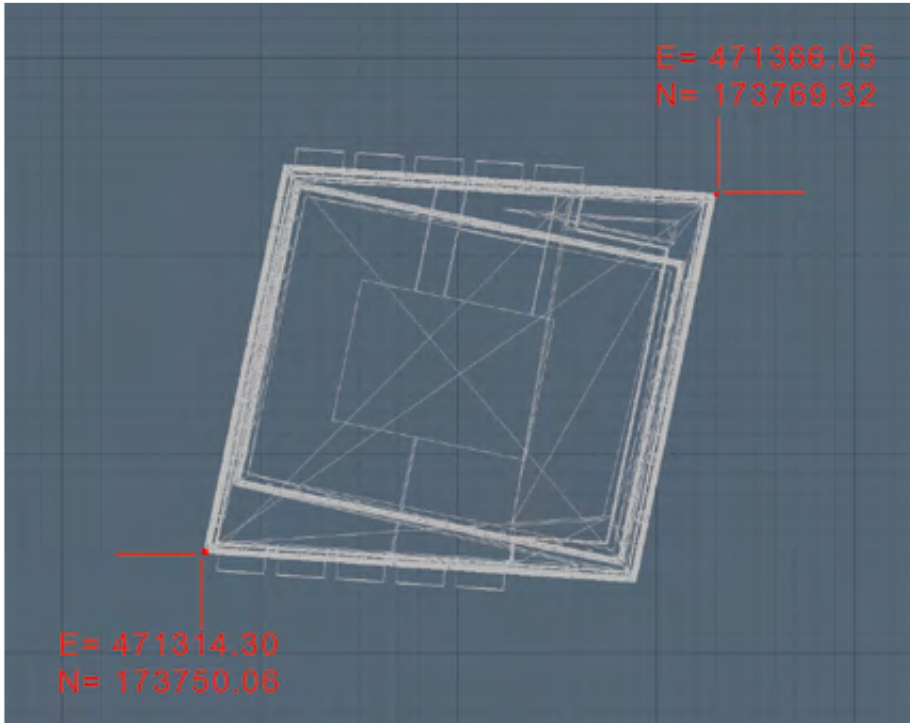
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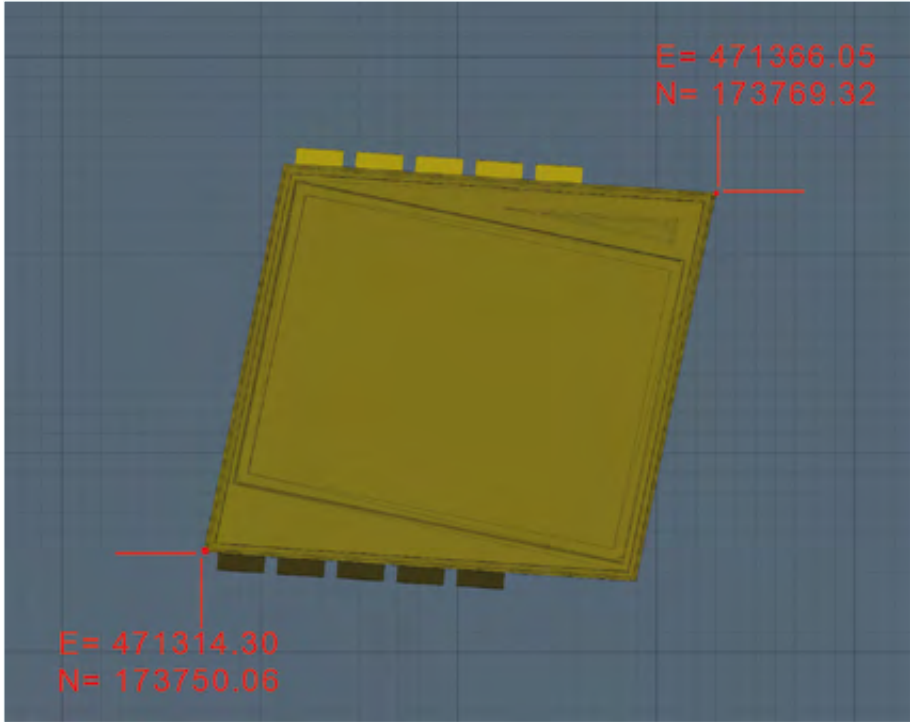
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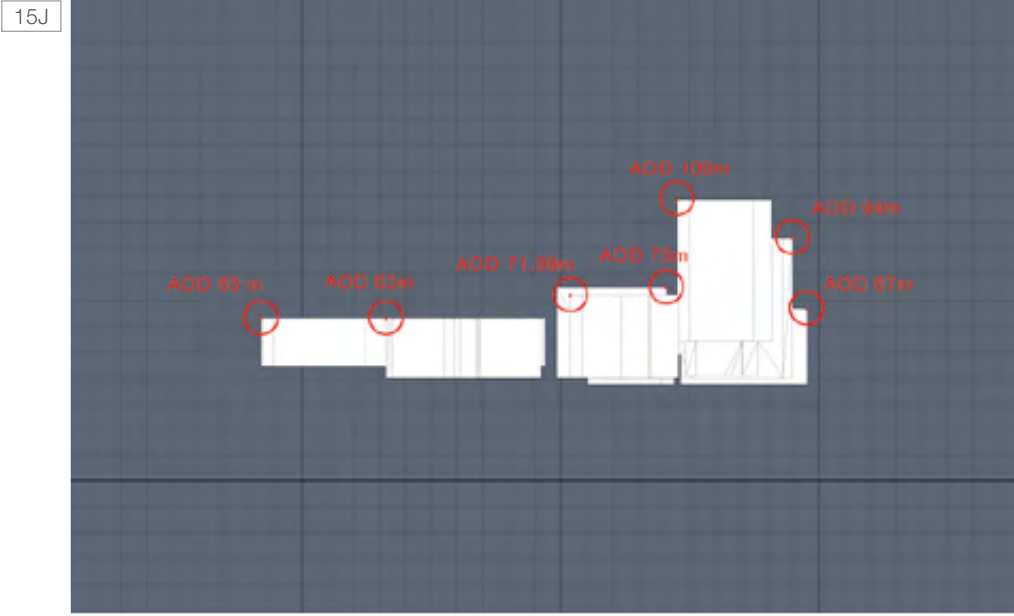
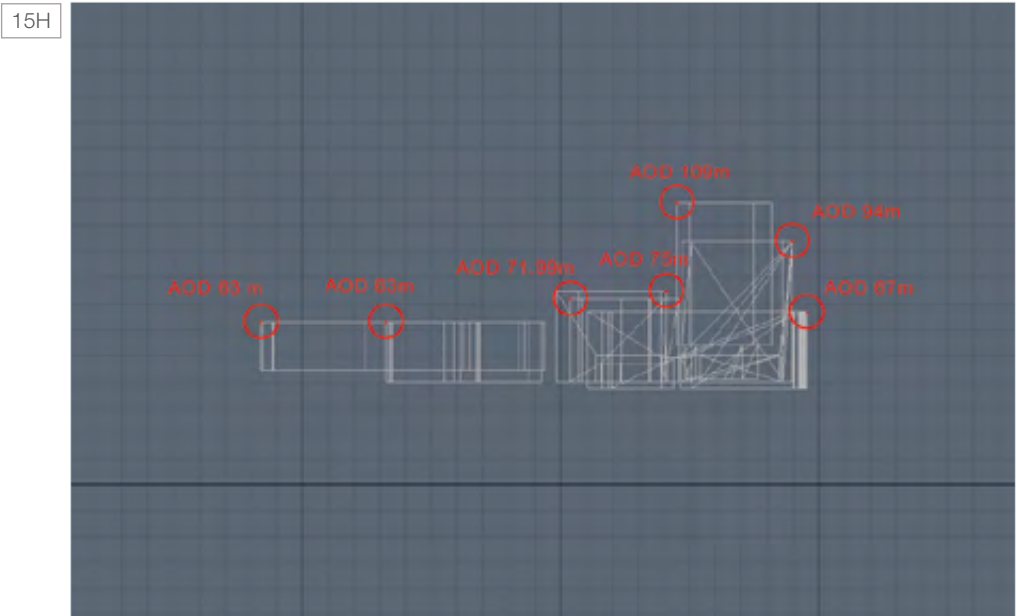
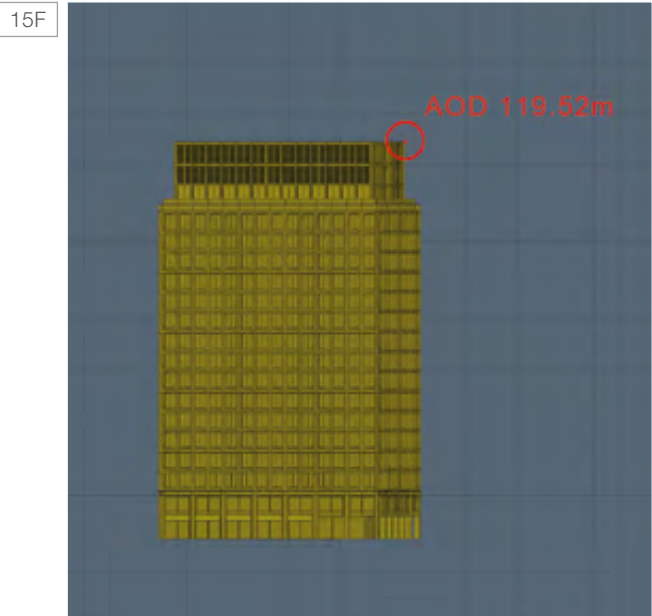
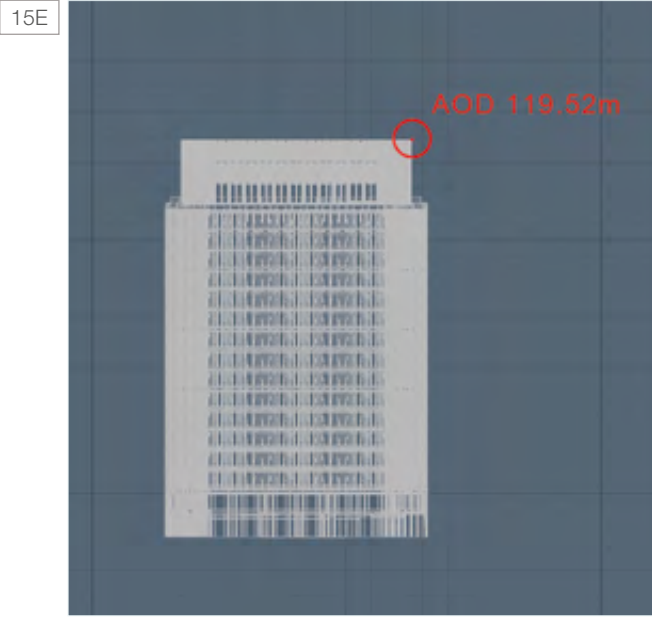


14C



14D





- 14A The architect plan
- 14B Cityscape model plan
- 14C Methodology Detail Plan Architect
- 14D Methodology Detail Plan Cityscape
- 15E Methodology Detail Elevation Architect
- 15F Methodology Detail Elevation Cityscape

- 14G Methodology Max Elevation Architect
- 15H Methodology Min Elevation Architect
- 15I Methodology Max Elevation Cityscape
- 15J Methodology Min Elevation Cityscape

5.0 CAMERA MATCHING

5.1 Cityscape's Database

Cityscape has built up a comprehensive database of survey information on buildings and locations in central London; the database contains both GPS survey information and information regarding the dimensions and elevations of buildings gathered from architects and other sources. Figure 16 shows a selection of GPS located models (yellow) within Cityscape's database which effectively represents a 3D verified computer 'model' of some prominent buildings in central London. The term '3D model' has been adopted with caution in this methodology as it is thought to be slightly misleading because not every building in central London is included in the database although the majority of those buildings which form part of the 'skyline' are included.

5.2 Creation of Scheme Model

The outlines of buildings are created by connecting the surveyed points or from the information obtained from architects' drawings of particular buildings. By way of example of the high level of detail and accuracy, approximately 300 points have been GPS surveyed on the dome of St. Paul's. The database 'view' (as shown in Figure 16) is 'verified' as each building is positioned using coordinates acquired from GPS surveys.

5.3 Camera Matching Process

In many instances, the various co-ordinates of a particular building featured in one of the background plates are already held by Cityscape as part of their database of London. In such cases the survey information of buildings and locations provided by MSA (see section 3 above) is used to cross-check and confirm the accuracy of these buildings. Where such information is not held by Cityscape, it is, where appropriate, used to add detail to Cityscape's database. The survey information provided by MSA is in all cases used in the verification process of camera matching.

A wireframe⁷ 3D model of the proposed scheme is created by Cityscape from plans and elevations provided by the architects and from survey information of the ground levels on site and various other points on and around the site, such as the edge of adjacent roads and bollards etc. provided by MSA.

The following information is required for the camera matching process:

- Specific details of the camera and lens used to take the photograph and therefore the field of view (see section 1);
- The adjusted or corrected digital image i.e. the 'background plate' (see section 2);

- The GPS surveyed viewpoint co-ordinates (see section 3);
- The GPS surveyed co-ordinates of particular points on the buildings within the photograph (the background plate) (see section 3);
- Selected models from Cityscape's database (see section 3);
- The GPS surveyed co-ordinates of the site of the proposed scheme (see section 3);
- A 3D model of the proposed scheme (see section 4).

A background plate (the corrected digital image) is opened on computer screen (for example, Figure 17), the information listed above is then used to situate Cityscape's virtual camera such that the 3D model aligns exactly over the background plate (as shown in Figures 18 and 21) (i.e. a 'virtual viewer' within the 3D model would therefore be standing exactly on the same viewpoint from which the original photograph was taken (Figure 20). This is the camera matching process.

5.4 Wireline Image

Cityscape is then able to insert the wireframe 3D model of the proposed scheme into the view in the correct location and scale producing a verified wireline image of the proposal (shown in Figures 19 & 22).

The camera matching process is repeated for each view and a wireline image of the proposal from each viewpoint is then produced. The wireline image enables a quantitative analysis of the impact of the proposed scheme on views.

16



⁷ A wireframe is a 3D model, a wireline is a single line representing the outline of the building.

16 Selected GPS located models (yellow) from Cityscape's database, situated on Cityscape's London digital terrain model

17 Background plate & selected 3D models as seen by the computer camera. Red circle highlights the safe or non-distortive area of the image

18 Background plate matched to the 3D GPS located models

19 The camera matched background plate with an example of a proposed scheme included in red

20 Background plate: digital photograph, size and bank corrected as described in section 3

21 Camera matching: the background plate matched in the 3D GPS located models

22 The camera matched background plate with the proposed scheme included

17



20



21



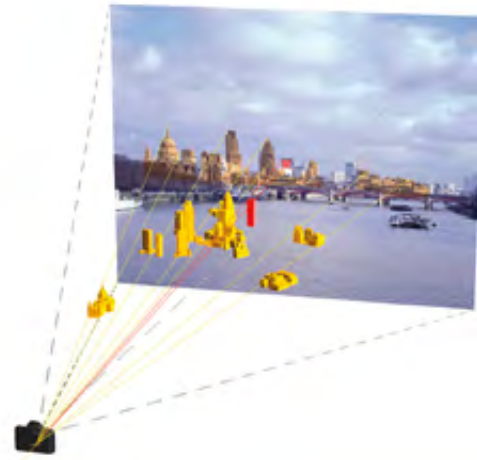
22



18



19



6.0 POST PRODUCTION

6.1 Post production

Finally the rendered image of the scheme model is inserted and positioned against the camera matched background plate. Once in position the rendered images are edited using Adobe Photoshop®. Masks are created in Photoshop where the line of sight to the rendered image of the proposed scheme is interrupted by foreground buildings (as shown in Figure 29).

The result is a verified image or view of the proposed scheme (as shown in Figure 30).

28



29



30



28 Background plate

29 Process Red area highlights the Photoshop mask that hides the unseen portion of the render

30 Shows a photo-realistic verified image

