



Environmental Statement Addendum: Volume 2 Townscape, Conservation and Visual Assessment

Station Hill, Reading

February 2019

Waterman Infrastructure & Environment Limited



Contents

Introduction	pg. 05
Assessment Methodology and Significance Criteria	pg. 05
Legislation, Planning Policy and Guidance	pg. 07
Baseline Conditions	pg. 08
Visual Characteristics of the Proposed Development	pg. 09
Views Assessment	pg. 10
Conclusions and Residual Impacts	pg. 31



Townscape, Conservation and Visual Impact Assessment

Introduction

In March 2013, an Outline Planning Application for the redevelopment of approximately 2.14 hectares (ha) of previously developed land at Station Hill (the ‘Site’) was submitted by Sackville Developments Reading Ltd (SDRL). The development was known as the Station Hill 3 (SH3) Scheme. The SH3 Scheme included the demolition of all the existing buildings and structures within the SH3 Site, excluding the existing multi-storey NCP car park, and replacement with four new commercial buildings (referred to as Building Plots A - D) and two new primarily residential buildings (referred to as Building Plots E and F). The existing NCP Car-Park would be reconfigured and refurbished. The Planning Application was subsequently granted planning consent by Reading Borough Council (RBC) in January 2015 and is hereafter referred to as the ‘2015 Consented Scheme’. At the same time, an application for a Temporary Flexible Event Space within the north of the Site was also submitted and subsequently granted consent in January 2014.

In August 2015, SDRL submitted two further planning applications to extend and amend Plot E of the 2015 Consented Scheme to incorporate an adjacent site referred to as the Telecom House Site. These two applications were granted planning consent in July 2016 and are together referred to in this report as the ‘2016 Consented Scheme’.

Following acquisition of the Site from SDRL in 2018, SH Reading Master LLP (the Applicant) is seeking to make minor changes to Plots E and F of the 2016 Consented Scheme to respond to a series of design changes. These changes, referred to as the ‘Proposed Amendments’ would be made by way of applications pursuant to Section 73 of the Town and Country Planning Act, 1990 (hereafter referred to as the Section 73 Applications). At the same time, reserved matters applications will be submitted for Plots E and F. The 2016 Consented Scheme as altered by the Proposed Amendments is hereafter referred to as the ‘Development’.

In 2013, an Environmental Impact Assessment (EIA) was undertaken of the SH3 Scheme and an Environmental Statement (ES) prepared to accompany the planning application. An ES Addendum was subsequently prepared and submitted in September 2013 to address additional environmental issues that had come to light during the determination period. Together, the ES and ES Addendum are hereafter collectively referred to as the ‘2013 ES’.

In 2015, an ES was prepared to accompany the application to revise Plot E to incorporate the Telecom House Site. This ES was a full update of the 2013 ES and covered the entire SH3 Scheme as amended by Telecom House. During the determination period, amendments were made to the planning application for Plot E incorporating the Telecom House Site and a letter setting out the EIA implications of the design amendments was submitted to Reading Borough Council (RBC) in December 2015. Together, the ES and EIA implications of design amendments letter are referred to as the ‘2015

ES’. The 2015 ES for the 2016 Consented Scheme is the ES to which the Proposed Amendments for Plots E and F should be compared.

A Townscape, Conservation and Visual Impact Assessment (TCVIA) of the proposed Development at Station Hill, Reading was produced by Tavernor Consultancy and presented in Volume 2 of the 2015 ES. This Addendum TCVIA has been prepared by Waterman to provide an update to the assessment of the likely townscape, conservation and visual impacts as a result of the Proposed Amendments, the changes in the current baseline condition and additional cumulative schemes that have come forward since production of the 2015 ES. This update should be read in conjunction with the Townscape, Conservation and Visual Assessment presented in Volume 2 of the 2015 ES (the 2015 TCVIA) and Volume 1 of the 2019 ES Addendum.

Assessment Methodology and Significance Criteria

The methodology used in the assessment process is based on Chapter 2 (Methodology) of the 2015 TCVIA and remains materially unchanged apart from the matters set out below.

In consultation with Reading Borough Council (RBC) through an Environmental Impact Assessment (EIA) Scoping Request and Opinion in relation to the Section 73 Applications to address the Proposed Amendments to Plots E and F (Ref. 181820, dated 14th November 2018), the assessment presented in this Addendum TCVIA assesses seven of the 31 viewpoints assessed within the 2015 TCVIA. These viewpoints were selected for reassessment on the basis that the Proposed Amendments may be perceptible within the viewpoint analysis and/or have the potential to change the significance of effect on townscape character.

The current baseline conditions are also considered to present a material change since the 2015 ES as a number of schemes (that were in an advanced stage of construction at the time of the 2015 ES and which were considered material to the future baseline scenario) are now completed and a number of buildings on the Site that were present in the baseline viewpoints of the 2015 TCVIA have now been demolished.

Finally, additional cumulative schemes have come forward since preparation of the 2015 TCVIA and, where relevant, these have been considered in this Addendum TCVIA.

This Addendum TCVIA therefore considers the following scenarios in the assessment process:

- The existing baseline;
- The proposed development scenario: the reserved matters details for Plots E and F with the remaining Station Hill Development (as maximum parameters) in place (Proposed View); and

- The cumulative scenario: Reserved matters details for Plots E and F with the remaining Station Hill Development (as maximum parameters but with Plot B in accordance with the reserved matters consent for that plot) plus Cumulative Surrounds.

In addition, this update provides a comparison between the effects of the 2016 Consented Scheme as presented in the 2015 TCVIA and those of the Development. This is to enable a comparison to be made between the effects of the 2016 Consented Scheme and those of the 2016 Consented Scheme incorporating the Proposed Amendments.



Cumulative Schemes

An updated list of cumulative schemes to be considered as part of the cumulative effects is provided in the table below.

Table 2.1: Schemes Considered in Cumulative Assessment

Scheme Name/Address	Application Reference	Details of Works
Former Sorting Office Caversham Road/ Vastern Road, Reading, RG1 1AA	11/00276/OUT	Outline planning application with all matters reserved with the exception of means of access, for the demolition of existing buildings; site preparation; and redevelopment of the application site for a mix of uses from amongst employment and business uses (use class B1) and residential accommodation (C3); Hotel (C1), retail floor space (A1), food and drink uses (A3, A4 and A5), leisure uses (D2), car parking, public and private open space, landscaping works, highways, access and associated works.
Building B, Station Hill 3	151543	Reserved Matters application for Building B of Station Hill, Reading
29-35 Station Road, Reading, RG1 1LG	181753	Demolition of existing building and the erection of a 22-storey building (at 121m AOD) for hotel accommodation, office accommodation and ground floor retail uses. No parking is proposed on site although servicing will be provided for to the rear of the site accessed from Garrard Street. As agreed with Reading Borough Council, given that, at the time of the assessments being undertaken, the application had not yet been validated, model information has been taken from a previously approved application on this site for a scheme of a similar height (Application ref: 04/01395/FUL).
Garrard House 30 Garrard Street Reading, RG1 1NR	160328	Extension to include part new fourth floor and new fifth and sixth floors to provide 18 residential units.
52 to 55 Friar Street and 12 Grayfriars Road, Reading, RG1 1DX	162210	Demolition of existing building and structures (Class A1) and erection of 3 new buildings ranging between 6 - 12 (and basement) storeys in height to provide 135 (1xstudio, 54x1, 73x2 & 7x3-bed) residential units (Class C3), a flexible Class A1-A5 use at ground floor level fronting onto Friar St, a flexible Class A1-5, B1(a) or D2 (gym only) use at ground floor level fronting onto Greyfriars Rd, with associated access, parking, servicing, landscaping and engineering works (amended description).
Bristol and West Arcade, Market Place	180358	Demolition of vacant former Bristol & West Arcade (173 – 175 Friar Street) and erection of an eight storey mixed-use building (plus basement) to provide 35 residential units, 4,212 sqm of B1 office floorspace, and 5 retail units (A1/ A2/A3), demolition of rear parts of 29 – 31 and 32 Market Place, the change of use of the retained units at 27 – 28, 29 - 31 Market Place at first, second and third floors to provide 8 residential units, change of use at ground and basement level of 32 Market Place from A2 to flexible retail use (A1/A2/A3), retention of 260.4 sqm of A4 use at ground and basement at 29-31 Market Place, change of use at ground and basement of 27 - 28 Market Place to flexible retail use (A1/A2/A3), and associated internal and external works to the Listed Buildings, landscaping, refuse, plant, cycle stores and substation at basement level.
Land between Weldale Street and Chatham Street	170326	Demolition of all existing buildings (including 3 retail units) and structures, and erection of new buildings ranging between lower ground & 4 storeys to lower ground & 11 storeys in height, providing 427 (233x1, 182x2 & 12x3-bed) residential units (Class C3) and 1 flexible ground floor retail shop (Class A1) or restaurant and cafe (Class A3) unit, together with new public realm, landscaping, accesses, parking and associated works (amended description).
Former Coopers BMW site, Napier Road / Kings Meadow Road, Reading, RG1 8BN	162166	Erection of a part 12 storey, part 23 storey building comprising 315 apartments in a mix of studio, one-bedroom, two-bedroom and 3-bedroom units; residents' lounges, tech-hub, dining room, and cinema room, various rooftop outdoor amenity spaces, concierge/reception with coffee meeting area, residents' storage facilities, postroom, ancillary back-of-house facilities, 315 secure cycle parking spaces, 49 car parking spaces, landscaping, and associated works. Demolition of existing multi-storey car park.
Kings Point, 120 Kings Road	162087	Demolition of existing building and the erection of a part seven, part nine, part eleven, part twelve and part seventeen storey building comprising 103 residential units and 351.5 sqm GIA of commercial (A1/A3) floorspace at ground and mezzanine floor level together with parking and associated landscaping (without complying with conditions 2, 7, 8, 9, 18, 19, 28 of planning permission 150019) to allow the removal of sub-basement, enlargement of basement level and internal and external alterations at the basement, ground and mezzanine levels (amended description).

Legislation, Planning Policy and Guidance

This section provides a summary of legislation, planning policy and guidance where it has been updated since the 2015 TCVIA. Documents that have not been referred to in this section, remain unchanged from the 2015 TCVIA.

National Legislation and Policy

National Planning Policy Framework 2018

The National Planning Policy Framework 2018¹ (NPPF) sets out the Government’s overarching planning policies for England and how these should be applied. In Chapter 12, Achieving Well-designed Places the NPPF sets out that the creation of high quality buildings and places is fundamental to what the planning and development process should achieve. It also explains the importance of good design as being a key aspect of sustainable development that creates better places in which to live and work and Paragraph 127 states that planning policies and decisions should ensure that the developments:

- “a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;
- b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;
- c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);
- d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;
- e) optimise the potential of the site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; and
- f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users.....”

Chapter 12 also sets out at Paragraph 128 that “Design quality should be considered throughout the evolution and assessment of individual proposals.” and at Paragraph 130 that “Permission should be refused for development of poor design that fails to take the opportunities available for improving the character and quality of an area and the way it functions, taking into account any local design standards or style guides in plans or supplementary planning documents”.

Chapter 16 of the NPPF Conserving and Enhancing the Historic Environment at Paragraph 184 states that heritage assets “are an irreplaceable resource, and should be conserved in a manner appropriate to their significance”. Paragraph 189 sets out that in determining planning applications “local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. As a minimum, the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary”.

Chapter 16 at Paragraph 192 sets out that in determining applications, local planning authorities should take account of:

- “a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and
- c) the desirability of new development making a positive contribution to local character and distinctiveness”

Planning Practice Guidance, 2018

The Planning Practice Guidance² (‘PPG’) was launched by the Government on the 6th March 2014. Following its launch, a number of previously published planning guidance documents were cancelled. The guidance provides a web-based resource in support of the National Planning Policy Framework and has subsequently been updated and expanded to include additional subject areas, including changes in response to the introduction of the new National Planning Policy Framework 2018. The PPG draws upon a number of the previously published guidance documents and does not seek to alter national policy, only to supplement it and provide further guidance.

PPG Conserving and Enhancing the Historic Environment (April 2014) and last updated in 2018³ sets out that protecting the historic environment is an important component of the NPPF to achieve sustainable development. The PPG comments in relation to the setting of a heritage asset that:

“Setting is the surroundings in which an asset is experienced, and may therefore be more extensive than its curtilage. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not.

The extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration from other land uses in the vicinity, and by our understanding of the historic relationship between places.....

.....The contribution that setting makes to the significance of the heritage asset does not depend on there being public rights or an ability to access or experience that setting. This will vary over time and according to circumstance.

When assessing any application for development which may affect the setting of a heritage asset, local planning authorities may need to consider the implications of cumulative change. They may also need to consider the fact that developments which materially detract from the asset’s significance may also damage its economic viability now, or in the future, thereby threatening its ongoing conservation.....”

Local Policy

Reading Borough Local Plan, Submission Draft (March 2018)

RBC is currently working on producing a new Local Plan⁴ which will replace the current development plans (the Core Strategy, Reading Central Area Action Plan and Sites and Detailed Policies Document). The new plan will set out how Reading will develop up to 2036 and defines the amount of development that will take place within the borough, the areas and sites where development is expected to be accommodated, and where it will be restricted, and sets out policies for how planning applications will be decided.

1 Ministry of Housing, Communities & Local Government, Revised National Planning Policy Framework, July 2018

2 Ministry of Housing, Communities & Local Government, Planning Practice Guidance, 2018

3 Ministry of Housing, Communities & Local Government, Conserving and enhancing the historic environment, 2018
4 Reading Borough Council, Local Plan, Submission Draft (Regulation 22 of the Town and Country Planning (Local Planning) (England) Regulations 2012), March 2018



Chapter 2 Vision and Objectives sets out the priorities of the plan as :

- *“Safeguarding and protecting those that are most vulnerable;*
- *Providing the best help through education, early help and healthy living;*
- *Providing homes for those most in need;*
- *Keeping the town clean, safe, green and active;*
- *Providing infrastructure to support the economy; and*
- *Remaining financially sustainable to deliver these service priorities.”*

Policy EN1 Protection and Enhancement of the Historic environment states that:

“Historic features, areas of historic importance and other elements of the historic environment, including their settings will be protected and where possible enhanced. This will include:

- *Listed Buildings;*
- *Conservation Areas;*
- *Scheduled Monuments;*
- *Historic parks and gardens; and*
- *Other features with local or national significance, such as sites and features of archaeological importance, and assets on the Local List”*

Policy EN1 also sets out that proposals for new development are *“expected to protect and if possible enhance the significance of heritage assets and their settings...proposals should seek to avoid harm in the first instance”*.

Policy EN5Protection of Significant Views with Heritage Interest states that new development should not harm and where possible make a positive contribution to views of acknowledged historical significance including the:

“View northwards down Southampton St from Whitley St towards St Giles Church, St Mary’s Church and Greyfriars Church.”

Policy EN6 New Development in a Historic Context requires that in areas characterised by heritage assets, the historic environment will inform and shape new development. The Policy also states that *“New development will make a contribution to the historic character of the area by respecting and enhancing its architectural and visual qualities and considering how heritage considerations*

can influence the design of new development”. When determining planning applications for new development the policy notes following factors will be taken into consideration:

“a) The positive contribution of the development to the existing historic townscape (scale, height, mass, proportion, plot size, street form, materials, significant vistas and views, and open space);

b) Sensitivity to historic context;

c) Reflection of borough-wide major heritage themes that contribute to local distinctiveness (e.g. patterned brickwork or former worker terraced housing);

d) Whether development promotes and/or improves access to previously undiscovered or neglected historic significance”

Policy CR10Tall Buildings sets out that *“A new cluster of tall buildings with the station at its heart will signify the status of the station area as a major mixed-use destination and the main gateway to and most accessible part of Reading”* and that. *“Tall buildings in this area should:*

- *“.....Contribute to the creation of a coherent, attractive and sustainable cluster of buildings with a high quality of public realm;*
- *Ensure that adequate space is provided between the buildings to avoid the creation of an overly dense townscape and to allow buildings to be viewed as individual forms;*
- *Be designed to fit within a wider planning framework or master plan for the area, which allows separate parcels of land to come forward at different times in a coordinated manner”*

In addition to the area specific requirements Policy CR10 sets out further requirements for tall buildings, including that they should:

- *“Enhance Reading’s skyline, through a distinctive profile and careful design of the upper and middle sections of the building;*
- *Contribute to a human scale street environment, through paying careful attention to the lower section or base of the building, providing rich architectural detailing and reflecting their surroundings through the definition of any upper storey setback and reinforcing the articulation of the streetscape;*
- *Contribute to high-quality views from distance, views from middle-distance and local views;*
- *Take account of the context within which they sit, including the existing urban grain, streetscape and built form and local architectural style;*

- *Avoid bulky, over-dominant massing;*
- *Conserve and, where possible, enhance the setting of conservation areas and listed buildings;*
- *Use high quality materials and finishes;*
- *Create safe, pleasant and attractive spaces around them, and avoid detrimental impacts on the existing public realm;*
- *Consider innovative ways of providing green infrastructure, such as green walls, green roofs and roof gardens. ...”*

Baseline Conditions

History of the Site and surrounding area

The baseline conditions introduction and section relating to the history of the Site and surrounding area (Chapter 4 Paragraphs 4.1 to 4.9) remain unchanged to the findings reported in the 2015 TCVIA.

The existing buildings on and near to the Site

The sub section detailing the existing buildings on and near to the Site (Chapter 4 Paragraphs 4.10 to 4.14) remains largely unchanged from that reported in the 2015 TCVIA, except that the 15 storey Western Tower and associated retail arcade, the Mecca Bingo Hall and Bus Station, and part of Xafinity House along Station Hill have been demolished. A ‘Temporary Events Space’ comprising of an open area in the northern part of the Site has replaced the Western Tower retail arcade whilst the remaining areas subject to demolition are open ground surrounded by construction hoarding. In addition, a number of schemes that were in an advanced stage of construction at the time of the 2015 TCVIA, and which were therefore considered as part of a future baseline scenario, are now completed. These completed developments include the redeveloped Thames Tower and a 14 storey office block adjacent to the north east corner of the Site. These therefore now form part of the existing baseline conditions.

Designated Heritage Assets

Paragraphs 4.15 to 4.46 of the 2015 TCVIA remain unchanged with the exception of paragraph 4.38 relating to No. 39 Friar Street. Since the publication of the 2015 TCVIA it is understood that No 39 Friar Street [1321951]) has been de-listed by Historic England.

Visual Characteristics of the Proposed Development

The Proposed Amendments relate to Blocks E and F only. The remainder of the Development remains as per the 2016 Consented Scheme. The key design elements relevant to this assessment are:

Plot E

- Change to an ‘E’ shaped massing;
- Geometry of the ground floor frontage onto Friars Walk is amended to add interest and variety;
- The existing lower ground floor is extended eastward up to the application boundary of Plot F, thereby providing a more usable and efficient space for parking; and
- Change from standard self-contained residential accommodation to a Build to Rent product.

Plot F

- The footprint of the L-shaped block remains unchanged but the small courtyard area has been removed;
- The geometry of the upper floor elevations onto Friars Walk and Merchants Place are pulled back to increase the distance from Plot F and the properties on Merchant’s Place;
- A proportion of lower ground floor space will be introduced beneath Plot F, meshing with the extended Plot E ground floor which will connect beneath Garrard Street; and
- Change from standard self-contained residential accommodation to a Build to Rent product.

Building Height and Mass

The consented massing has been designed such that:

- Plot E steps upwards from Friar Street to Garrard Street in compliance with the strategy set out in the supporting information to the 2016 Consented Scheme;
- The massing takes advantage of the profile of the site boundaries and other constraints and is articulated so that it has a good slenderness ratio and elegance of form;

- Key corners are articulated to provide visual focal points as one approaches and walks through the site;
- The resulting form allows for active frontage to be maximised in line with the outline planning consent; and
- To ensure that the entrance is visible from Friar Street and to ensure that it has a sense of destination, Friars Walk is opened out at its junction with Friar Street to create a partially-covered (under the mass of Plot E), welcoming, small square or plaza.

Building Appearance

The material palette supplied by the Design Code has been amended to use masonry or stone like material in favour of reconstituted or natural stone as previously proposed. Central Reading has a mix of modern and traditional buildings, with the character of the central area defined by the building stock of the late 19th and early 20th centuries with the predominant use of reds, greys and buff coloured bricks and sandstones coursing and pilasters. Blocks E and F would share a similar palette with red bricks fronting Friars Walk and greys to Garrard Street. A sandstone colour would be used on the lantern frame with metal infill providing detail and interest.



Views Assessment

In consultation with Reading Borough Council (RBC) through an Environmental Impact Assessment (EIA) Scoping Request and Opinion in relation to the Proposed Amendments to Plots E and F (Ref. 181820, dated 14th November 2018), the assessment presented in this Addendum TCVA assesses seven of the 31 viewpoints assessed within the 2015 TCVA. These viewpoints were selected for reassessment on the basis that the Proposed Amendments may be perceptible within the viewpoint analysis and/or have the potential to change the significance of effect on townscape character.

The seven viewpoints selected for the assessment of the Proposed Amendments comprise:

- VP09: Chatham Street;
- VP10: Weldale Street;
- VP12: Junction of Friar Street and Greyfriars Road looking along Friar Street;
- VP24: St Laurence's Church;
- VP25: Station Road B
- VP26: Friar Street Looking West; and
- VP30: Greyfriars Road and Garrard Street.

The Figure below shows the location of the of seven viewpoints.

The Visual Assessment of the remaining 24 viewpoints remains unchanged from that presented in the 2015 TCVA. This Addendum TCVA and the 2015 TCVA should be read in conjunction with each other.

Each Plot of the proposed Development is represented by a different coloured wireline to add clarity. The wireline images of each of the seven viewpoints are shown in the Figure below.

For Plots A, B, C and D, the lower dotted line on the Figure represents the minimum parameter and the solid upper line represents the maximum parameter. Plot E (red) and F (orange) are shown with a single wireline in accordance with the Reserved Matters application; this is as agreed with RBC.

Cumulative schemes are represented with a black wireline in the cumulative views. Details of the cumulative schemes are provided in Table 2.1 of this report.

Parameter masterplan plot key

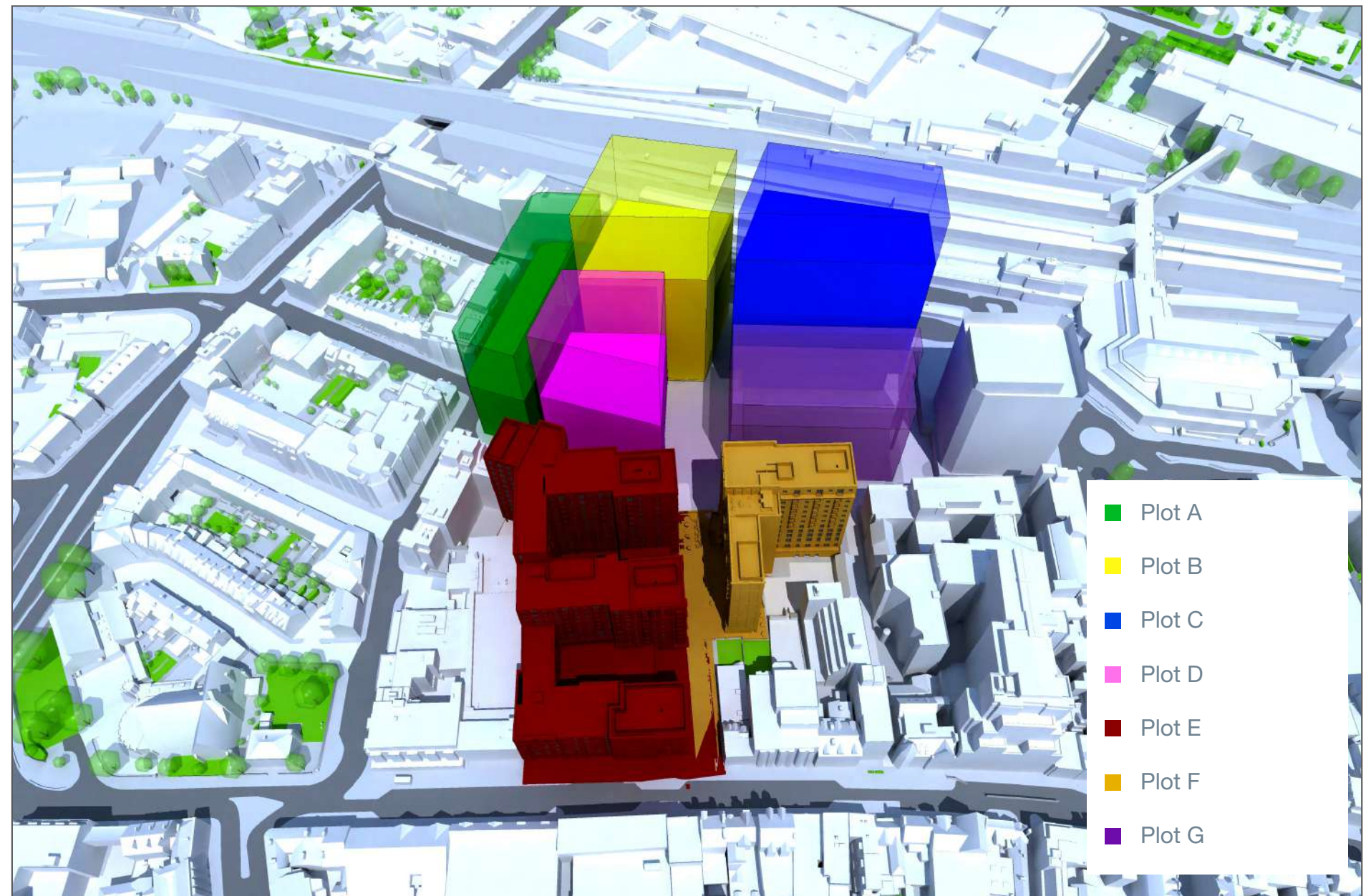
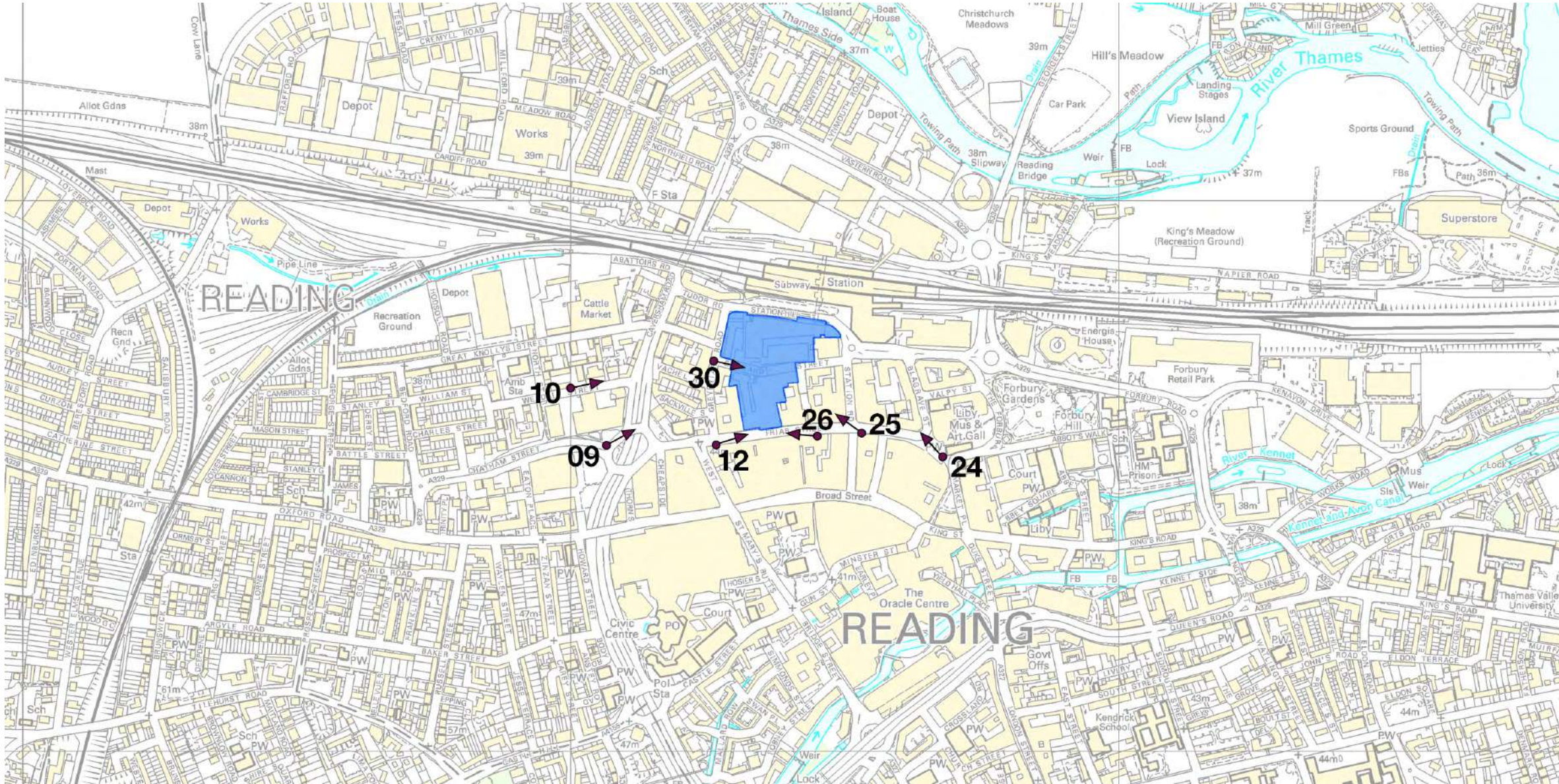


Table of Views

View	Location	Page	Style	Render/ Wireline	Ref	OS-E	OS-N	Height (AOD)	Heading	Lens	Field of View	Film	Date	Time
9	Chatham Street	14	AVR-1	Wireline	D17719	471066.54	173557.53	45.23	62.20°	24mm	74°	Digital	25/11/18	11:45
10	Weldale Street	16	AVR-1	Wireline	D17720	470998.59	173656.97	42.14	78.23°	35mm	55°	Digital	25/11/18	11:55
12	Junction of Friar Street and Greyfriars Road looking along Friar Street	18	AVR-1	Wireline	D17721	471257.24	173558.94	46.66	72.50°	24mm	74°	Digital	25/11/18	12:07
24	St Lawrence's Church	20	AVR-1	Wireline	D17840	471683.82	173529.91	46.49	314.87°	24mm	74°	Digital	20/12/18	13:23
25	Station Road B	22	AVR-1	Wireline	D17722	471452.29	173580.82	47.14	275.81°	24mm	74°	Digital	25/11/18	12:28
26	Friar Street looking west	24	AVR-1	Wireline	D17723	471520.50	173583.22	46.92	306.07°	24mm	74°	Digital	25/11/18	12:36
30	Greyfriars Rd and Garrard Street	26	AVR-1	Wireline	D17725	471257.93	173708.75	40.35	97.09°	24mm	74°	Digital	25/11/18	12:14

Views map





09
page 14

Chatham Street



10
page 16

Weldale Street



12
page 18

Junction of Friar Street and Greyfriars Road looking along Friar Street



24
page 20

St Lawrence's Church



25
page 22

Station Road B



26
page 24

Friar Street looking west



30
page 26

Greyfriars Rd and Garrard Street



09

Chatham Street



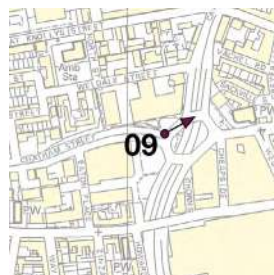
Existing View



Proposed View



Camera Location



View Location

Existing baseline

The viewpoint looks east towards the Site from Chatham Street to the west of the junction with Caversham Road and Friar Street. The view towards the Site is dominated by a road junction with a roundabout in the foreground. There are two groups of trees prominent in the foreground on the left side of the frame and right centre. Within the far right of the frame is a security fence surrounding a substation. A light industrial brick building with some blue coloured cladding is visible in the far left of the viewpoint. The Grade II listed Greyfriars Church is visible through trees located on the roundabout, the view of the church in summer would be reduced with leaf growth. In the centre of the frame are a mixture of 3-4 storey predominantly brick buildings that are partly obscured by tree cover. In the background of the centre of the frame Thames Tower protrudes above the closer 3-4 storey buildings and is also partly obscured by tree cover to its full height particularly the south side of the tower. The recently refurbished Thames Tower represents the only tall building in this viewpoint.

The main change to the baseline view since production of the 2015 TCVA is the 15 storey Western Tower previously prominent in the centre of the view has now been demolished. This removes a large detracting feature from the viewpoint.

Proposed View

As with the 2016 Consented Scheme, the proposed Development would be visible in the centre background of the view, framed and partially obscured by, tree cover. If built out to the maximum parameters, the upper sections of the proposed buildings would appear as a tight group with differing heights and massing. This would add depth to the skyline which, with the exception Thames Tower, is currently devoid of tall buildings. The massing of the buildings rises towards Plot C (blue) in the north east of the Site. Plot E (red), the lowest of the proposed buildings in the view would be visible in the south of the Site and would remove the view of the Thames Tower. The finish and appearance of Plot E would create a building with a contrasting character to the reminder of the proposed commercial buildings visible in this viewpoint to reflect its residential use.

The taller cluster of commercial buildings behind Plot E remain the same as assessed in the 2015 TCVA and as reported by Tavernor Consultancy would “share a calm and light architectural expression whilst their different heights and mass would read as separate stepped forms. At their minimum parameters, little of the closest Plots A (green) and D (pink) would be visible through the trees and above the existing roofline, however they would still step up to the taller buildings of the new cluster within an overall stepped composition which rises to the northeast”.

Significance of Impact: **moderate, beneficial.** This has been reduced from the major beneficial effect reported in the 2015 TCVA a result of baseline changes associated with the demolition of detracting features on Site, notably Western Tower; the Proposed Amendments would not be perceptible from this viewpoint.

Cumulative

The Plot B reserved matters consent (black) would have a similar but slightly lower and smaller massing in the top floors compared with the Plot B maximum parameters, but would maintain the compact, stepped profile of the new group of buildings. The mass of the proposed development on land between Weldale Street and Chatham Street (Ref. 170326) would add a strong built form that would frame the left side of the viewpoint in the foreground creating a more enclosed urban character to the viewpoint. This enclosure would increase the focus towards the proposed Development in the background. The clustered form of the proposed Development would add positively to the central Reading skyline.

Significance of Impact: **moderate, beneficial.** This has been reduced from the major beneficial effect reported in the 2015 TCVA a result of baseline changes associated with the demolition of detracting features on Site, notably Western Tower; the Proposed Amendments would not be perceptible from this viewpoint.



Cumulative view



10

Weldale Street



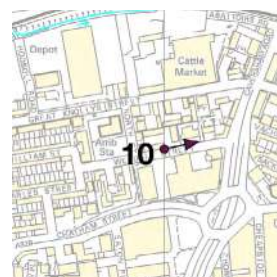
Existing View



Proposed View



Camera Location



View Location

Existing Baseline

The baseline character of the foreground and right of this view remain largely unchanged from that reported in the 2015 TCVA. However, a five-storey residential block with brick cladding now occupies the left of the frame removing a view of disjointed terraced residential properties. In the background, Thames Tower is now complete and Western Tower has been demolished. These changes to the baseline have removed detracting features from the view since the 2015 TCVA.

Proposed

The proposed Development would positively change this view through the addition of contemporary built elements on the skyline. From this westerly position, if built out to the maximum parameters, the rooflines of Plots A (green), D (pink), B (yellow), and C (blue) would appear as a tight group, with their different heights and massing adding depth to the skyline form and rising towards Plot C to mark the northeast end of the Site at the Station. Plot D would conceal the view of Thames Tower. The amended Plot E (red) would be to lowest of the new cluster of buildings sitting to the south of the tall commercial buildings and add to the stepped character of the cluster of buildings. The Proposed Amendments do not change the taller cluster of commercial buildings which, as reported by Tavernor Consultancy in the 2015 TCVA, would “share a calm and light architectural expression whilst their different heights and mass would read as separate, stepped forms. At their minimum parameters, little of the closest Plots A and D 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.”

Significance of Impact: **moderate beneficial**. This has been reduced from the major beneficial effect reported in the 2015 TCVA a result of baseline changes associated with the demolition of detracting features on Site, notably Western Tower; the Proposed Amendments would not be perceptible from this viewpoint.

Cumulative

The Plot B (Reserved Matters Consent) (black) would have a similar, but slightly lower and smaller massing in the top floors compared to the Plot B maximum parameters, maintaining the compact, stepped profile of the new cluster of buildings. The upper elevations of the 22-storey hotel development at 29 – 35 Station Hill Road (181753) would be visible above Plot E (red) but would continue to sit lower in the skyline than the cluster of commercial buildings and therefore not detract from the stepped profile composition from this viewpoint.

In the foreground, the mass of the development on land between Weldale Street and Chatham Street (Ref. 170326) would remove an industrial building, which would continue to reinforce the contemporary residential character of area. The massing would also frame the right side of the viewpoint.

Significance of Impact: **moderate, beneficial**. This has been reduced from the major beneficial effect reported in the 2015 TCVA a result of baseline changes associated with the demolition of detracting features on Site, notably Western Tower; the Proposed Amendments would not be perceptible from this viewpoint.

35mm – 31.5°

50mm – 20°

0°

50mm – 20°

35mm – 31.5°



Cumulative view



12

Junction of Friar Street and Greyfriars Road looking along Friar Street



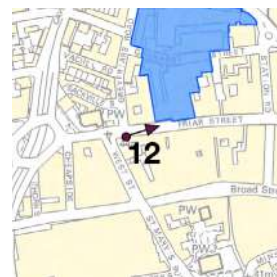
Existing View



Proposed View



Camera Location



View Location

Existing Baseline

The baseline is unchanged from that reported in the 2015 TCVA except that 39 Friar Street, directly to the east of the Site (beyond the Site in this view), is no longer listed.

Proposed

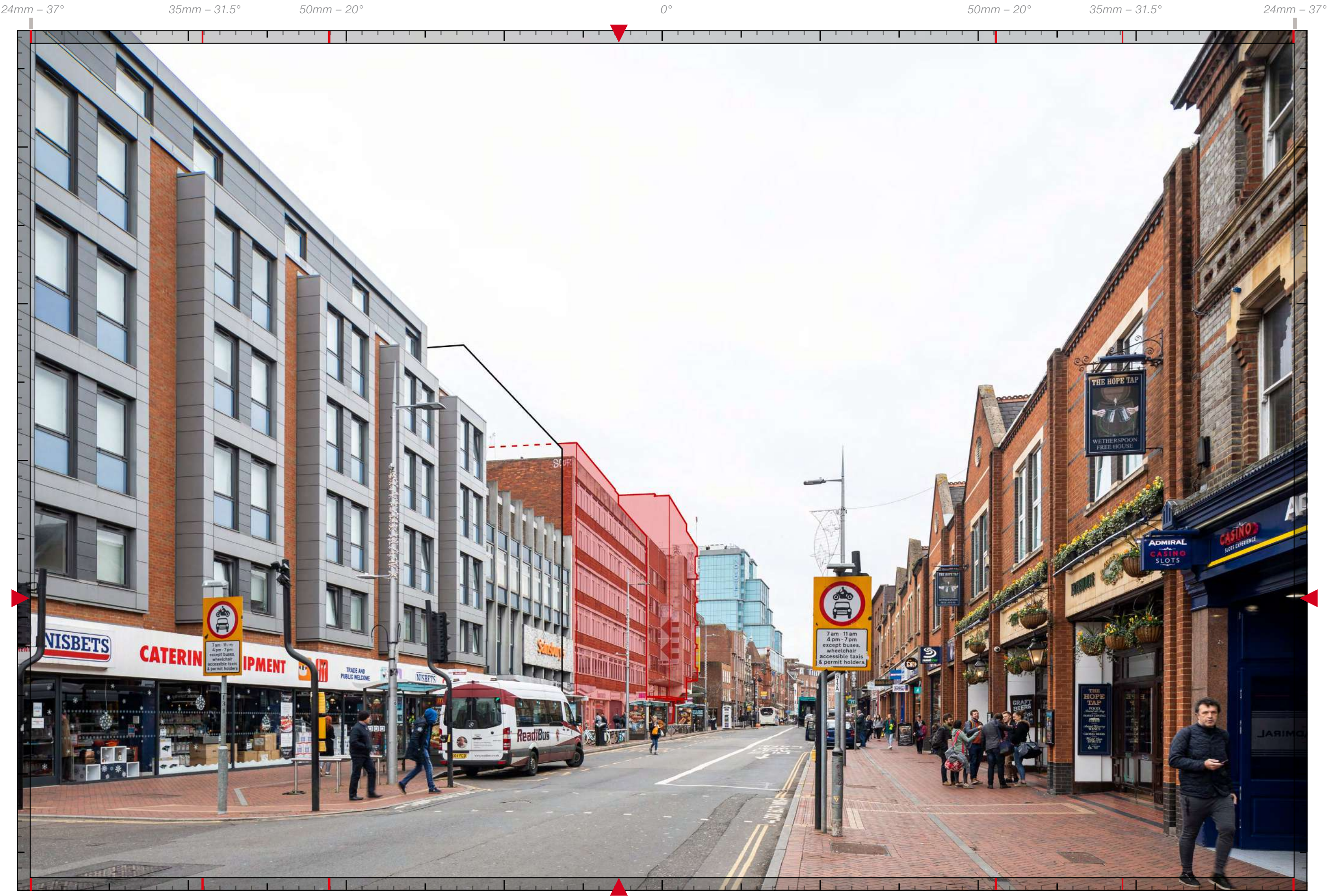
Only Plot E (red) of the proposed Development would be visible in this view. The Proposed Amendments mean that the higher elevations of Plot E, toward Garrard Street, are not visible in this viewpoint, giving the impression of a building that appears similar in height to the building on the left of the frame and to the existing buildings on Site. The Plot E building steps up and out towards Friar Street at its easterly end and would be cantilevered to partially enclose the proposed Friars Walk pedestrian thoroughfare; this would allow glimpsed views at street level into the on Site public realm. As previously reported by Tavernor Consultancy in the 2015 TCVA “above street level, Plot E would be visibly predominantly residential in nature and characterised by an appropriate materials palette”. Plot E would provide a new high quality building which would add positively to the varied street frontage. The building would also highlight the entrance to the new pedestrian route north through the Site leading to the new public spaces and pedestrian activity associated with these spaces.

Significance of Impact: **moderate, beneficial.** This has increased from the minor to moderate beneficial effect reported in the 2015 TCVA because the Proposed Amendments have allowed for greater visibility into the proposed public realm and removed the view at street level of the taller built elements in the north of Plot E.

Cumulative

The development of 52 to 55 Friar Street and 12 Grayfriars Road (Ref. 162210) would be of similar height on Friar Street to the proposed Development and the building on the left side of the frame.

Significance of Impact: **moderate, beneficial** This has increased from the minor to moderate beneficial effect reported in the 2015 TCVA. because the Proposed Amendments have allowed visibility into the proposed public realm and removed the view at street level of the taller built elements in the north of Plot E.



Cumulative view



24

St Lawrence's Church



Existing View



Proposed View



Camera Location



View Location

Existing Baseline

15.59. This baseline view remains largely the same as that reported in the 2015 TCVA. However, Thames Tower is now complete and there has been landscaping works to Market place including resurfacing of the paving, new street lampposts, removal of trees in a brick planter and the addition of two new larger deciduous trees.

Proposed

Plot E (red) is not visible within this view and only a small part of Plot F (orange) is visible alongside the Novotel building with the massing of Plot D (pink) beyond. The Proposed Amendments to Plot F do not change the appearance of the building cluster from this view. As reported by Tavernor Consultancy in the 2015 TCVA "The top of Plot C (blue) will be visible beyond the redeveloped Thames Tower at both minimum and maximum parameters and will be a recognisable new landmark for the new Station Square and refurbished Station just beyond. At maximum parameters, stepping down to the west and south, Plots B (yellow), D and F will appear beside and beyond the Novotel, adding depth to the new cluster form. They will share a calm architectural language whilst reading as separate forms with stepped heights rising up to the northeast."

Significance of Impact: **minor to moderate, beneficial**. This is the same as reported in the 2015 TCVA.

Cumulative

The Bristol and West Arcade development (Ref. 180358) would replace the buildings on the left side of the frame in the foreground with a contemporary mixed-use development comprising a four storey frontage, and creating a slightly higher skyline at this viewpoint. The Plot B (Reserved Matters Consent) (black) would be of a mass similar to the 2016 Consented Scheme maximum parameters, with some articulation at upper levels. The development at 29-35 Station Road (181753) would appear in front of the new Thames Tower and Plot C (blue) building and would provide a compact skyline profile in this view.

Significance of Impact: **major, beneficial**. This is the same as reported in the 2015 TCVA.



Cumulative view



25

Station Road B



Existing View



Proposed View



Camera Location



View Location

Existing Baseline

The upper storeys of Thames Tower are now built out and visible on the right of the frame and 39 Friar Street directly to the east of the Site (in front of the Site in this view) has now been de-listed. All other elements of the baseline are unchanged from that reported in the 2015 TCVA.

Proposed

Only Plot E (red) would be visible on the left side of the view on Friar Street (Plot F is set back and is therefore not visible) and would rise a small amount above the existing buildings particularly to the east of the Site where the building would step up to a slightly higher elevation. The taller elements in the north of Plot E away from the lower southern frontages of Friar Street would not be visible. Plot E would be seen obliquely within this varied street frontage in the far left of the frame but would contribute more variation and depth to the existing roofline without dominating the skyline.

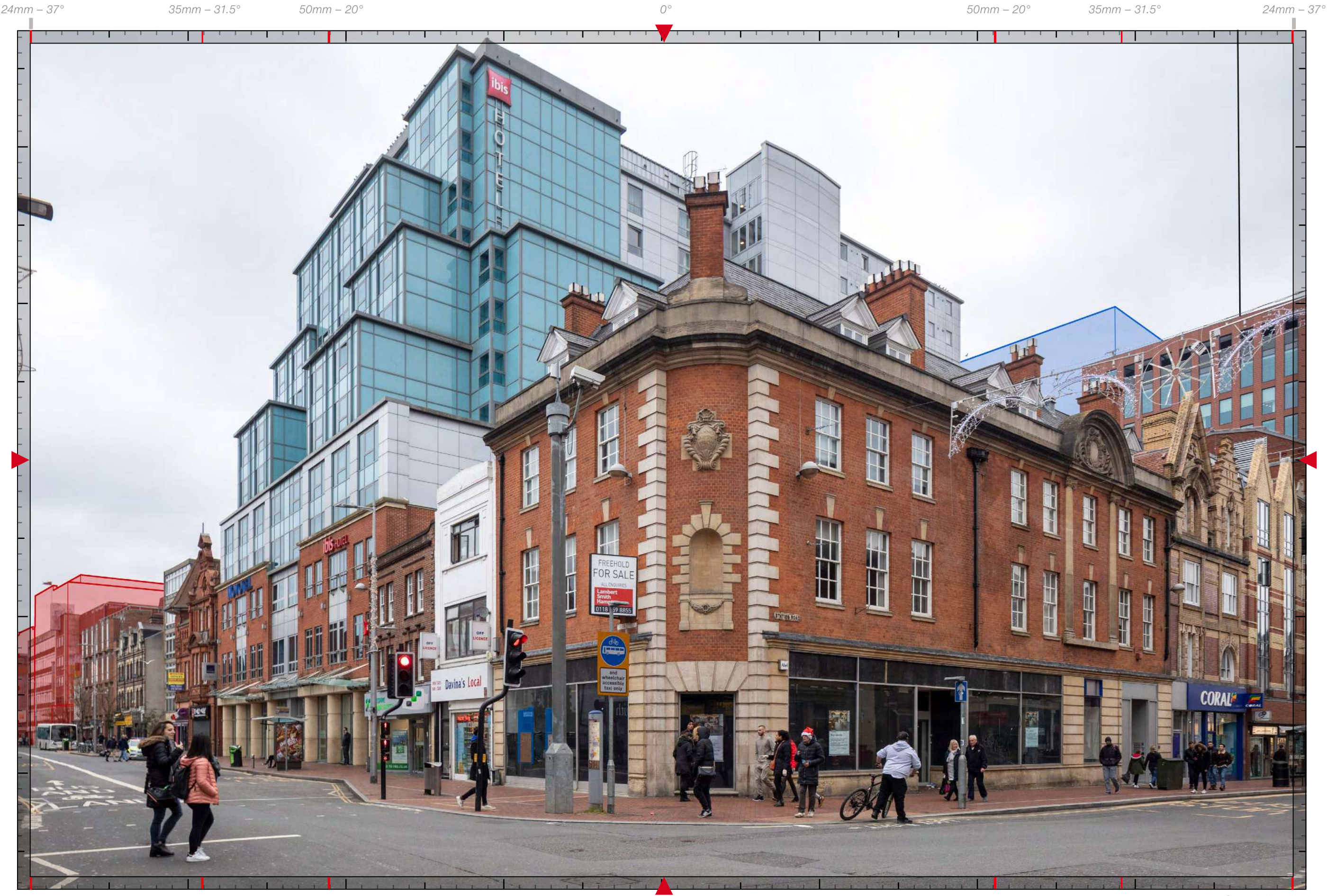
As reported by Tavernor Consultancy in the 2015 TCVA, "above the roofline in the right of the frame on Station Road, the top of Plot C would landmark the new Station Square and regenerated area just south of the Station, and would assist in forming a separate upper layer of built form in view, joining the top of the redeveloped Thames Tower and helping to separate the Novotel from the predominantly brick frontage at street level. At the minimum parameters, the higher elevations of Plot C (blue) are unlikely to be noticed."

Significance of Impact: **minor, beneficial.** This is the same as reported in the 2015 TCVA.

Cumulative

The profile of 29-35 Station Road (181753) would appear on the far right of the frame, extending above Thames Tower and Plot C (blue).

Significance of Impact: **minor, beneficial.** This is the same as reported in the 2015 TCVA.



Cumulative view



26

Friar Street Looking West



Existing View



Proposed View



Camera Location



View Location

Existing Baseline

The baseline is unchanged from that reported in the 2015 TCVA except that 39 Friar Street, directly to the east of the Site is now de-listed.

Proposed

Only Plot E (red) of the proposed Development would be visible in this view (Plot F is set back and is therefore not visible). The amended Plot E would rise to a similar height as its close neighbours and the taller elements in the north of Plot E would not be visible above the skyline line on Friar Street. Plot E would appear taller than the buildings further west and provide a local marker for the entrance to the new Friars Walk pedestrian route that would run northwards through the Site. The far eastern end of the Plot E building would be cantilevered to partially enclose the proposed Friars Walk and this would provide a frontage with a more open character at street level. In contrast, the Plot E roofline would add depth and interest to the streetscape and the high quality architectural finishes which would add positively to the eclectic street frontage.

Significance of Impact: **moderate, beneficial**. This is the same as reported in the 2015 TCVA.

Cumulative

The development 52 to 55 Friar Street and 12 Greyfriars Road (Ref. 162210) immediately to the west of the Site would have limited perceptibility from this viewpoint, being at an oblique angle, and would be of similar height on Friar Street to Plot E.

Significance of Impact: moderate, beneficial. This has increased from the minor beneficial effect reported in the 2015 TCVA. because the Proposed Amendments have allowed greater visibility into the proposed public realm and removed the view at street level of the taller built elements in the north of Plot E.



Cumulative view



30

Greyfriars Road and Garrard Street



Existing View



Proposed View



Camera Location



View Location

Existing Baseline

This view looks east along Garrard Street from Greyfriars Road, towards the core of this urban block which is bounded by Station Hill to the north, Greyfriars Road to the west, Friar Street to the south and Merchant's Place to the east. The view is framed by Xafinity House, a five-storey red brick commercial building to the left of the view, and Greyfriars House to the right, which is distinguished by the tinted glazing, grey panels and black and grey polished granite to the ground floor. Further along the street is the Garrard Street multi-storey car park to the left of the view and Garrard House (currently undergoing refurbishment) to the right. To the right of the multi-storey car park are the rear elevations of retail and commercial buildings fronting Friar Street. The top three storeys of Thames Tower are also visible above Garrard Street and a communications mast occupies the centre of the frame to the right of the multi-storey car park. Construction hording is visible on the north side of Garrard Street that surrounds Plots B and D. Since the 2015 TCVA, a bridge that connected the south side of Garrard Street to the multi-storey car park has been demolished. This is a 'back-street' view set apart from the main retail and commercial areas.

Proposed

As reported by Tavernor in the 2015 TCVA *Plots A (green) and D pink) of the consented Scheme would provide a new continuous and legible frontage to Garrard Street on the left, and the northern elevations of Plots E (red) and F (orange) would follow the route of the road on the right.* Plots A and D would remove the view of Thames Tower. The Proposed Amendments to Plot E and F would create a more accentuated stepped profile across the skyline on the south side of Garrard Street compared to the 2016 Consented Scheme. The existing disjointed back street character of Garrard Street would be transformed by the proposed Development creating modern townscape with a defined route down Garrard Street and increased permeability of the wider area.

Significance of Impact: **major, beneficial.** This is the same as reported in the 2015 TCVA.

Cumulative

A small corner of the very top floors of the development at 29-35 Station Road (Application Pending) would appear in the centre of the frame between Plots D (pink) and F (orange) nominally adding to the modern built form of the viewpoint.

Significance of Impact: **major, beneficial.** This is the same as reported in the 2015 TCVA.



Cumulative view



Conclusions and Residual Impacts

Do Nothing – No Development

The Proposed Amendments do not change the findings of this section as reported in the 2015 TCVIA.

Construction Impacts of the Proposed Development

The Proposed Amendments do not change the findings of this section as reported in the 2015 TCVIA.

Operational Impacts of the Proposed Development

There have been changes to the baseline situation on Site since the assessment presented in the 2015 TCVIA. This includes the demolition of buildings, notably Western Tower, and the construction of the Temporary Events Space in the north of the Site. However, the Site is still considered to be of low sensitivity to change and the proposed Development would have a substantial and permanent beneficial effect on the existing townscape and public realm character.

Townscape impacts

The Proposed Amendments do not change the findings of this section as reported in the 2015 TCVIA.

Heritage impacts

The Heritage Impacts Section presented in the 2015 TCVIA remains predominantly the same. However, 39 Friar Street (formerly Grade II Listed) has now been delisted. Plot E and Plot F were previously designed to accommodate and be sympathetic the setting of 39 Friar Street through massing design and selection of the finish materials palette. Notwithstanding the delisting of 39 Friar, the Proposed Amendments remain in accordance with these design principals.

Visual Impacts

Local Views

The effects to Local viewpoints not reassessed in this assessment remain the same as reported in the 2015 TCVIA. For those views that have been reassessed, due to the scale of the proposed Development, it would have a

moderate to major, beneficial impact on all local views in close proximity to the Site in which it is visible (Viewpoints 9, 10, 12, 26, 30). As reported by Tavernor in the 2015 TCVIA *“Plot A would be the most visible form, fronting the west of the Site, with the maximum parameter tops of other commercial Plots rising above. If built out to the maximum parameters, the tops of Plots A, D, B and C would appear as a tight group, their different heights and massing adding depth to the skyline form and rising towards Plot C to mark the northeast end of the Site at the Station. The streets to the west of the Site have a fragmented appearance and are characterised by varied housing and light industrial buildings and spaces, the setting of which would be positively transformed by the Proposed Development.”*

In close views on Friar Street (Viewpoints 12 and 26) only Plot E would be visible. Plot E would add positively to the varied street frontage and would mark the entrance to the new Friar’s Walk, leading north through the Site and to the new public spaces and activity located there. The improved frontage to the north side of Friar Street would have moderate beneficial effects.

Distant Views

The Proposed Amendments do not change the findings of this section as reported in the 2015 TCVIA.

Mitigation

The Proposed Amendments do not change the findings of this section as reported in the 2015 TCVIA.

Residual impacts

There would be no residual effects beyond those considered in relation to the completed and operational development.

Comparison of effects between the 2016 Consented Schemes and those of the 2016 Consented Scheme incorporating the Proposed Amendments

The effect of the Development on views from the west of the Site (Viewpoints 9 and 10) have been reduced from major beneficial as reported in the 2015 TCVIA to moderate beneficial. This change is a result of baseline changes associated with the demolition of detracting features on Site, notably Western Tower; the Proposed Amendments would not be perceptible from these viewpoints. Some off Site detracting features have also been removed in viewpoint 10 in the midground where disjointed terraced residential properties have been replaced with a modern apartment block.

Close Views on Friar Street (viewpoints 12 and 26) have changed from minor/moderate to moderate beneficial. This is because the Proposed Amendments have allowed greater visibility into the proposed public realm and removed the view at street level of the taller built elements in the north of Plot E.



APPENDIX:

CITYSCAPE VERIFIED VIEWS METHODOLOGY

0.0	INTRODUCTION	32	4.0	MODEL POSITIONING	38
0.1	Methodology overview		4.1	Height and position check	
0.2	View selection				
0.1	PHOTOGRAPHY	32	5.0	CAMERA MATCHING	40
1.1	Digital photography		5.1	Cityscape's Database	
1.2	Lenses		5.2	Creation of Scheme Model	
1.3	Digital camera		5.3	Camera Matching Process	
1.4	Position, time and date recording		5.4	Wireline Image	
2.0	DIGITAL IMAGE CORRECTION	34	6.0	RENDERING	42
2.1	Raw file conversion		6.1	Rendering	
2.2	Digital image correction		6.2	Texturing	
			6.3	Lighting and sun direction	
3.0	GPS SURVEY	36	7.0	POST PRODUCTION	44
3.1	Survey		7.1	Post production	



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

1.1 Digital photography

With the latest advances in Digital Photography it is now possible to match the quality of plate photography.

1.2 Lenses

For local views a wide angle lens of 24mm or 35mm is generally used in order to capture as much of the proposal and its surroundings as possible. Intermediate distance views were photographed with a lens between 35mm to 70mm and occasionally long range views may be required with lens options ranging from 70mm to 600mm. As a guide, the following combinations were used:

Distance to subject	View	Lens Options
0 – 800 metres	Local	24mm to 35mm
800 to 5000 metres	Intermediate	35mm to 70mm
5000+ metres	Long	70mm to 600mm

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

1.3 Digital camera

Cityscape uses a Canon 5D MK IV (shown in figure 1) and a Canon 1DS MK III (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 or equivalent 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.





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 to prepare the digital image for the next stage of camera matching (see section 5). The image is also 'bank'² corrected which means ensuring that the horizon in each digital image is precisely horizontal.

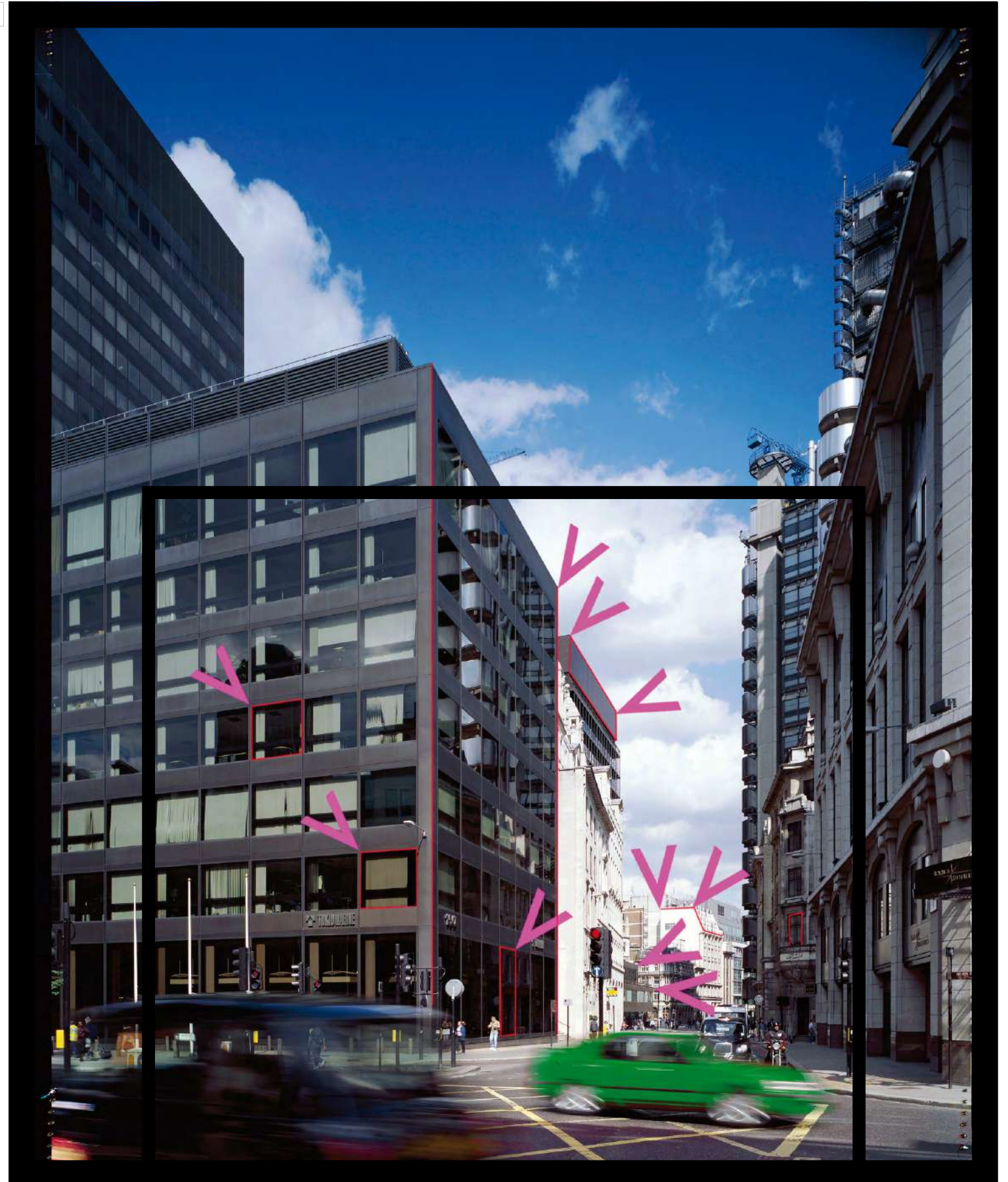
In spite of the selection of the most advanced photographic equipment, lenses are circular which results in a degree of distortion on the perimeter of images. The outer edges of an image are therefore not taken into consideration; this eliminates the risk of inaccuracy. Figure 17 in section 5 illustrates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

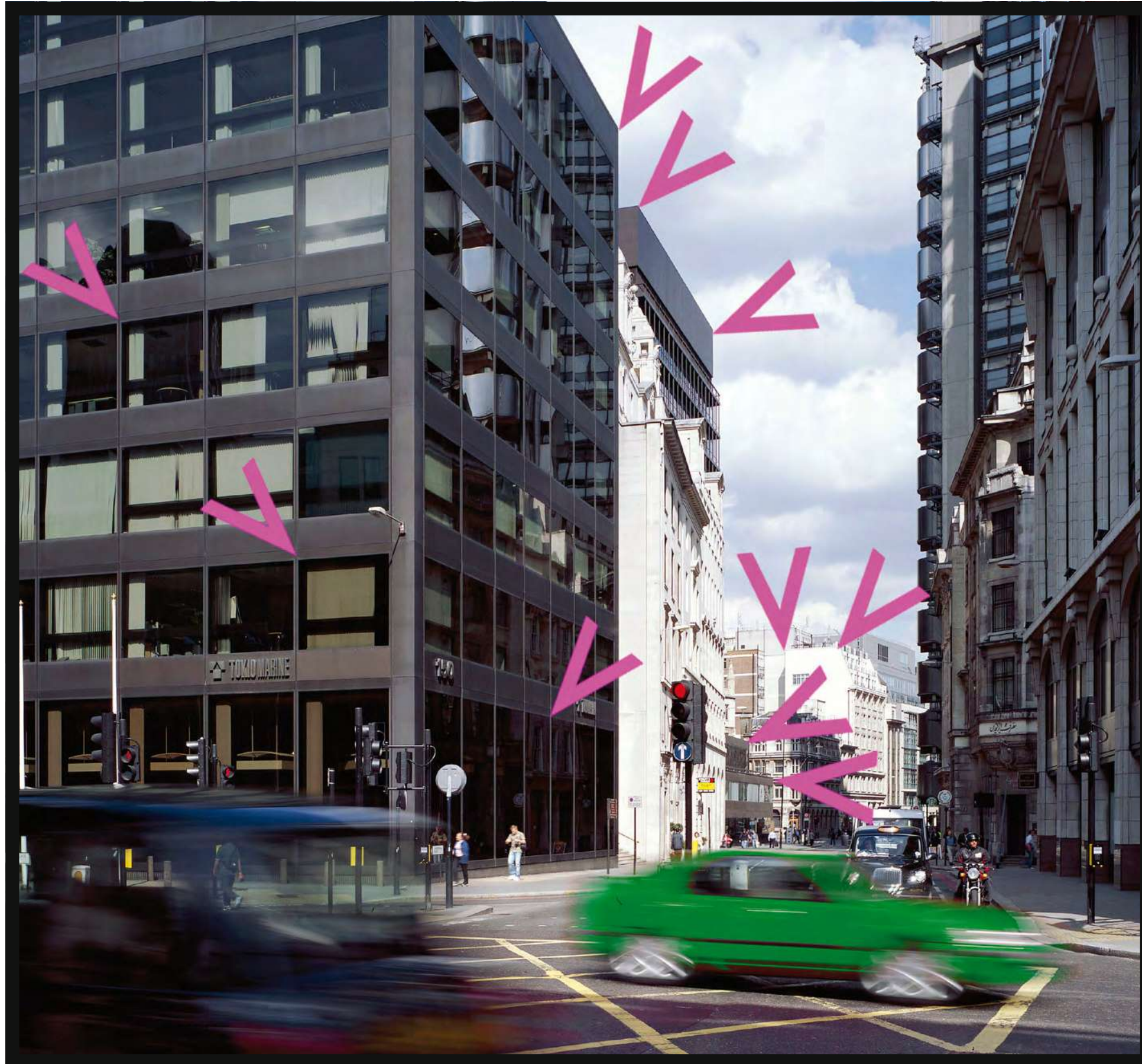
The adjusted or corrected digital image, known as the 'background plate', is then saved to the Cityscape computer system ready for the camera matching process (see section 5). In preparation for the survey (see section 4) Cityscape indicates on each background plate the safe area and priority survey points, 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 By aligning the vanishing points.

6





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

An independent surveyor was 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 within the safe zone.

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.

The surveyor 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 the surveyor 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 GSM³ 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 required points on each building 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 observations⁴ and intersection observations⁵. 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.

³ GSM network: the mobile phone network.

⁴ 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.

⁵ Intersection observation is the co-ordination of a point using directions only from two ends of a baseline.



8



9



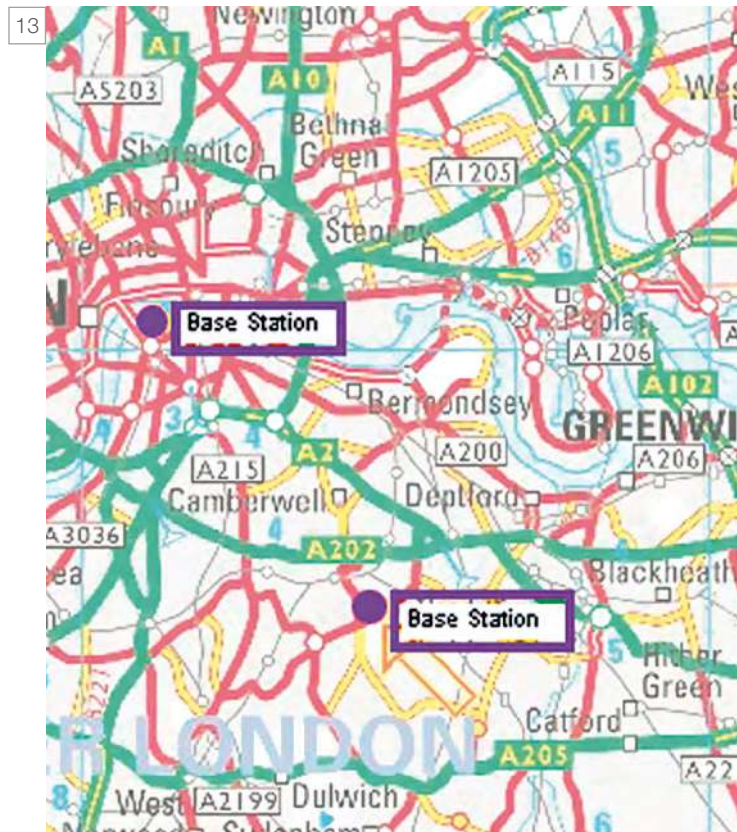
10



11



12



13

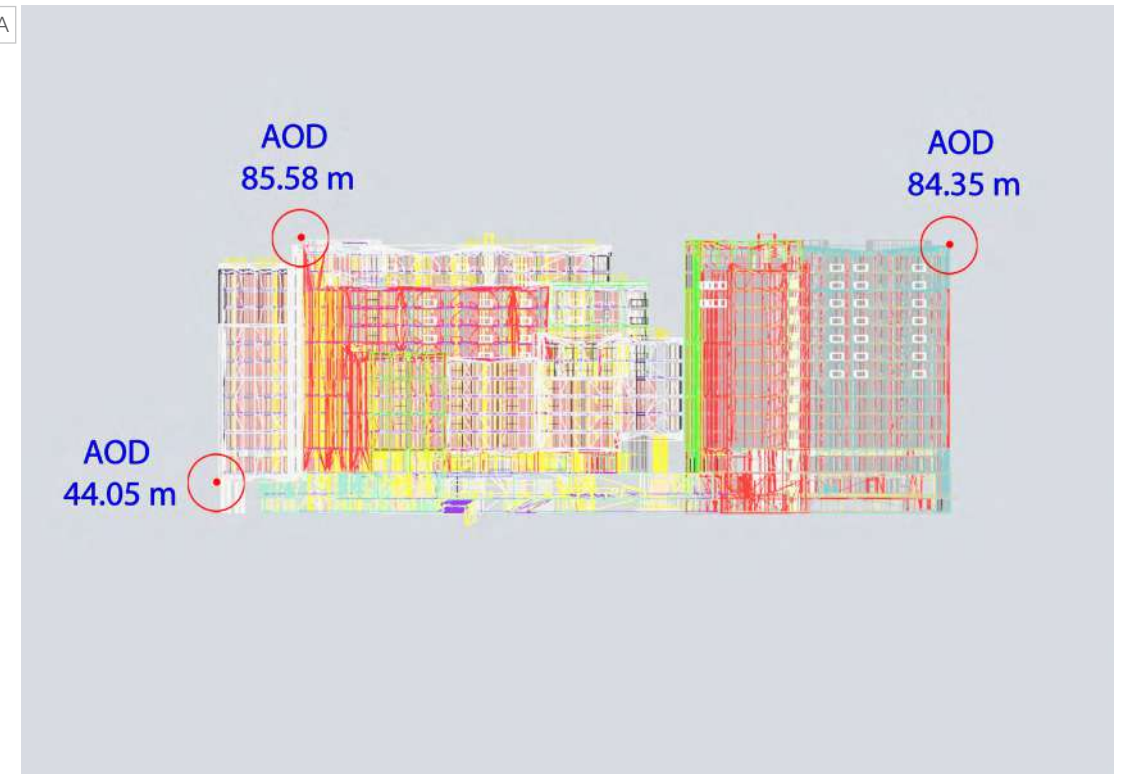
- 8 Marshall Survey semi-permanent GPS base station
- 9 GPS System
- 10 Field survey being carried out using a GPS rover
- 11 Electronic Theodolite
- 12 Field survey being carried out by St. Paul's Cathedral
- 13 Location of Marshall Survey's GPS base stations

4.0 MODEL POSITIONING

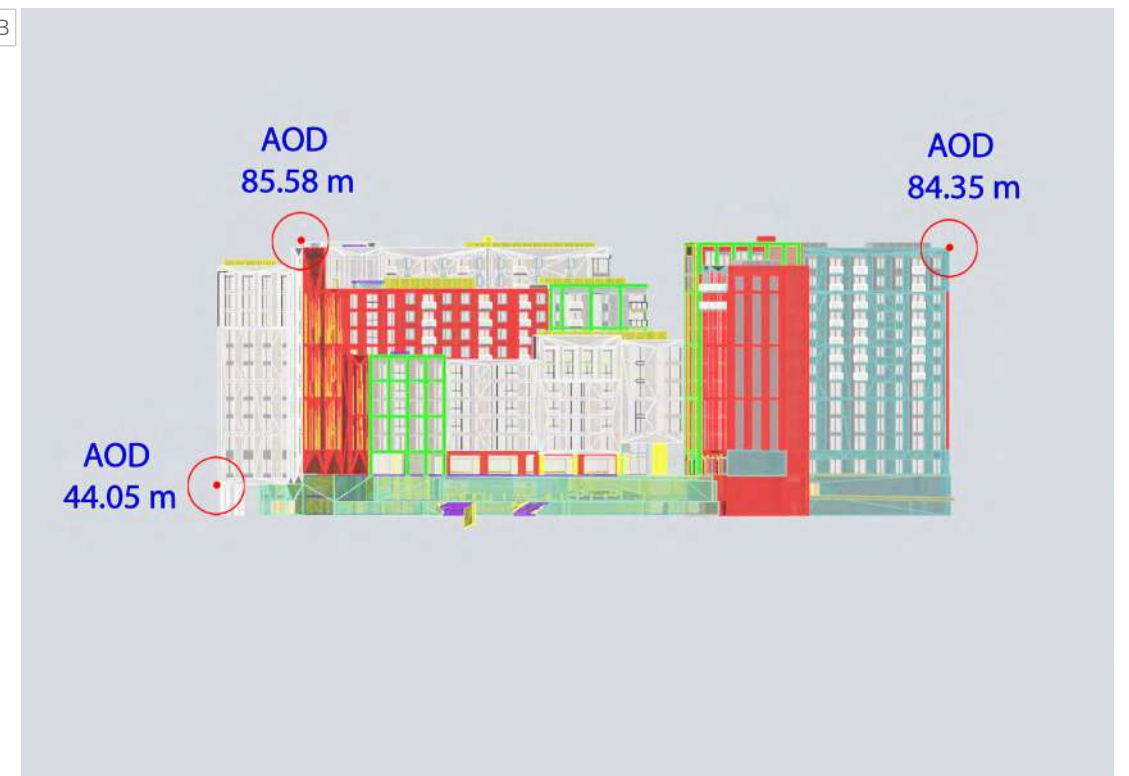
4.1 Height and position check

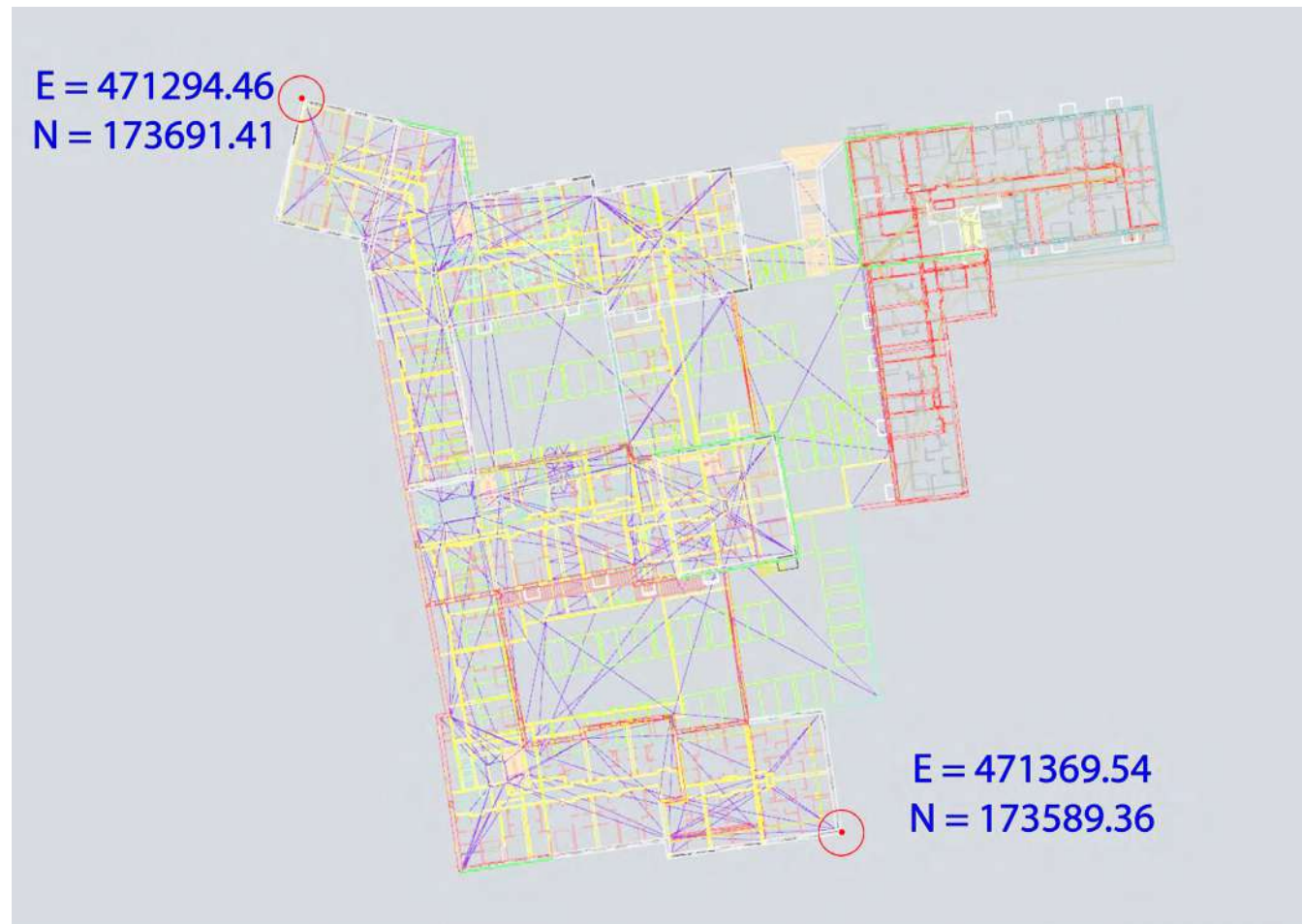
The model is positioned using a site plan provided by the architect. This is then overlaid onto OS positioned survey from a CAD provider. Once the building has been positioned, confirmation of height and position is requested from the architect. At least two clear reference points are agreed and used 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).

14A

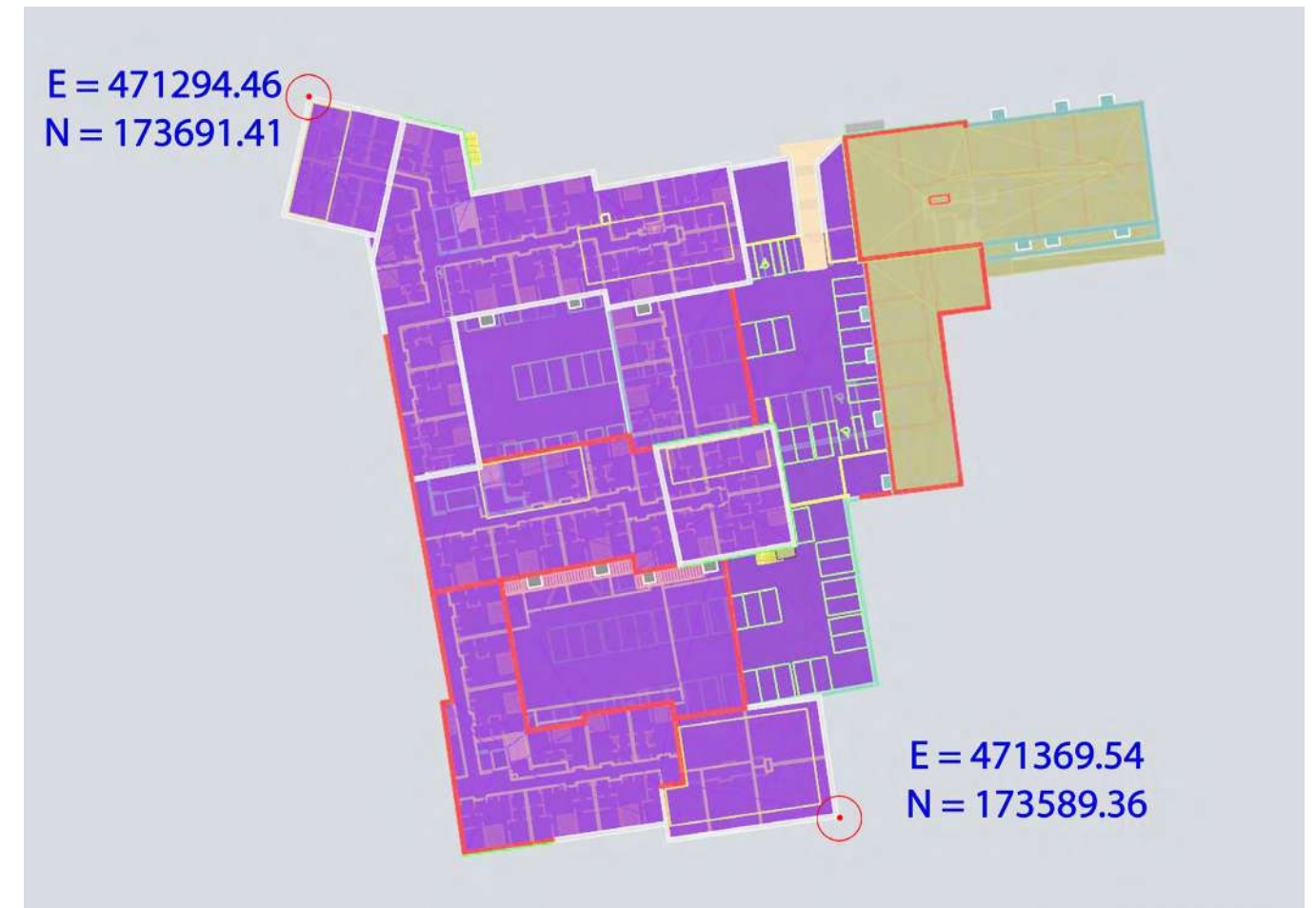


14B





15A



15B

14A Architect's Elevation Drawing

14B Cityscape's Elevation Model

15A Architect's Plan Drawing

15B Cityscape's Plan Model

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.

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.

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 the surveyor (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 the surveyor is in all cases used in the verification process of camera matching.

5.2 Cityscape's Database

A wireframe⁶ 3D model of the proposed scheme if not provided 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 the surveyor.

5.3 Camera Matching Process

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

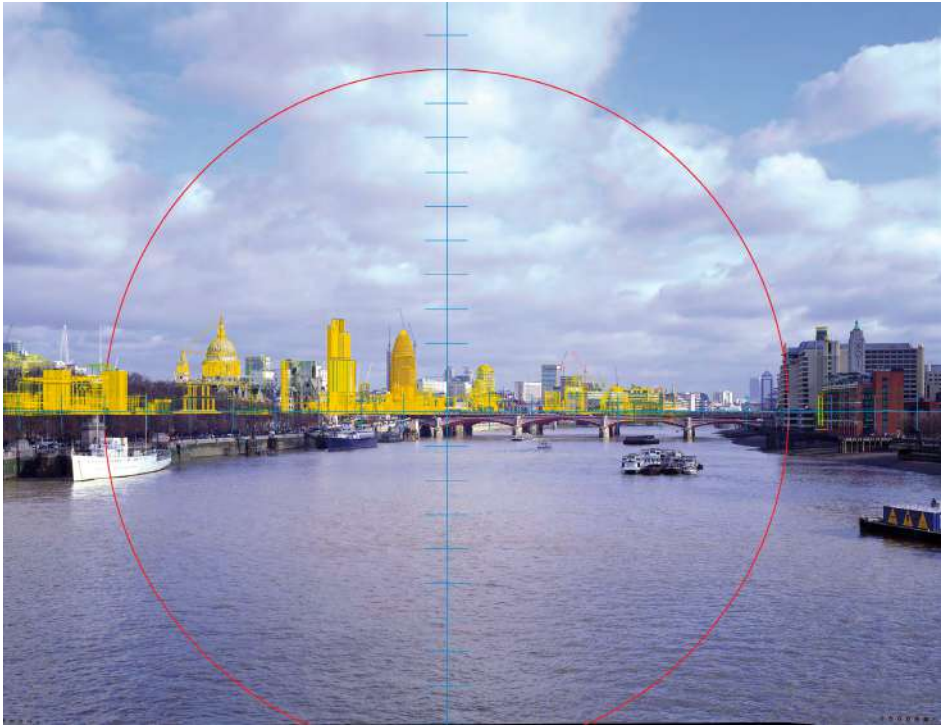
Cityscape is then able to insert the wireframe 3D model of the proposed scheme into the view in the correct location and scale producing a verified wireline image of the proposal (shown in Figures 19 & 22).

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.



⁶ 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



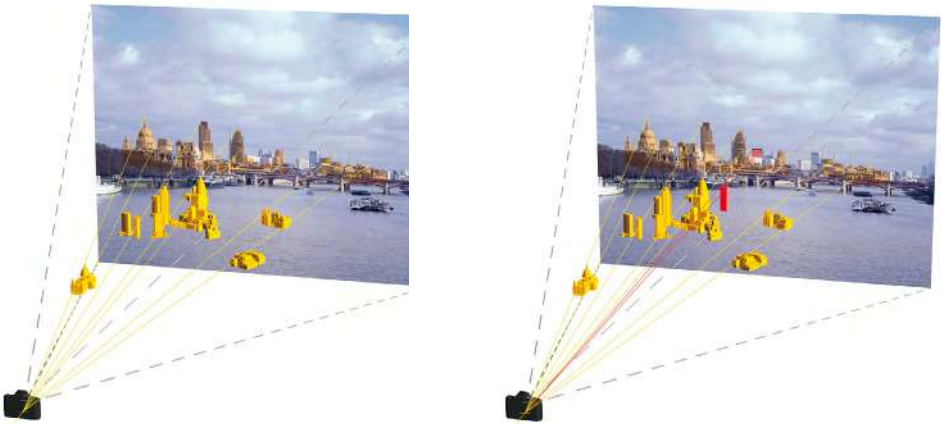
17



20



21



22



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®⁸. 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).

⁸ Adobe Photoshop® is the industry standard image editing software.



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



Cityscape Digital Ltd
69 – 85 Tabernacle Street
London, EC2A 4BD

020 7566 8550

www.cityscapedigital.co.uk