

VIRTUAL IDEAS

Harbourside

Public View Photomontage Report

1.0 Introduction

This report provides a response to submissions (as relevant) and assessment of the proposed amended Concept Proposal in relation to the State Significant Development (SSD) Development Application (DA) for the redevelopment of the Harbourside Shopping Centre (Harbourside) (SSD 7874).

The SSD DA was publicly exhibited for a period of 62 days from 15 December 2016 to 14 February 2017. During this time, ten (10) submissions were received from government agencies and City of Sydney Council and over 140 submissions were received from the general public.

This report should be read in conjunction with the original assessment prepared by Virtual Ideas dated 17/10/2016 to support the Harbourside Concept Proposal Square (SSD 7874).

2.0 Proposed Amended Development

Since exhibition of the proposal and given the nature and range of submissions made from agencies and the pubic, Mirvac has been reviewing the overall approach and elements of the Concept Proposal. This has accordingly led to developing an Amended Concept Proposal. The final Concept Proposal therefore includes substantial amendments made my Mirvac pursuant to Clause 55 of the Environmental Planning & Assessment Regulation, in the main to address matters raised in the submissions and deliver an overall significantly improved outcome on the site and for the broader Darling Harbour precinct.

The following key amendments have been made to the proposal:

Relocation of the Tower

The tower element of the Concept Proposal has been relocated from the north of the site to the centre of the site (the widest part of the site) to allow for an increased setback from the heritage listed Pyrmont Bridge, improved relationship to the waterfront and ICC Hotel, to minimise view impacts from 50 Murray Street, together with reducing overshadowing impacts on the public domain and improved solar amenity to the northern end of the retail centre.

Reduction in Height of the Tower

The height of the tower has also been reduced from RL 166.35 to RL 153.75. The reduction in the height will minimise overshadowing impacts to the public domain as well better relate to the height of the ICC Hotel.

Reduction in Height of the Podium

A portion of the podium height at its northern extent has been partly reduced from 30.5 RL to RL 25. The reduction in height provides for improved view sharing from 50 Murray Street.

Removal of Tower ‘Tail’ element

As part of the relocation of the tower and refinement of the podium, the stepped form of the lower tower element has now been removed. This design move has been made in order to again improve views from adjacent buildings from the west.

Building Footprint of the Tower

The building footprint of the tower has increased in width, to accommodate the floorspace from the reduction in height of the tower and removal of the ‘tail’.

Gross Floor Area / Land Use Mix

The amended proposal retains the same overall 87,000sqm of GFA, however there is a minor adjustment in the split between non-residential and residential:

- Non-residential uses floor space – 49,000sqm; and
- Residential uses floor space – 38,000sqm

In response to market demand and the focus of local and regional strategic planning policies, it is proposed for the podium to include both retail and commercial land uses. Indicatively, comprising ~23,000,000sqm lettable area of commercial and ~21,000sqm gross lettable area of retail.

The podium enables large campus sized commercial floor plates that are favoured by large multinational tech, finance and professional services companies.

Apartment numbers

As a result of a review of the mix and sizing of apartments, there is a minor reduction in the indicative number of apartments, from 364 to 357. Note, this yield is on the 'Indicative Design' only and will be subject to future design development and a Stage 2 DA. This Stage 1 DA only seeks approval for land uses and the building envelope comprising a total of 87,000sqm GFA.

Car Parking Spaces

The extent of the basement will remain the same, but there has been a minor increase of 11 car parking spaces from 295 spaces to 306 spaces. As above, this is based on the 'Indicative Design' only.

A more detailed and comprehensive description of the amended proposal is contained in the Response to Submissions and Amended Concept Proposal prepared by Ethos Urban.

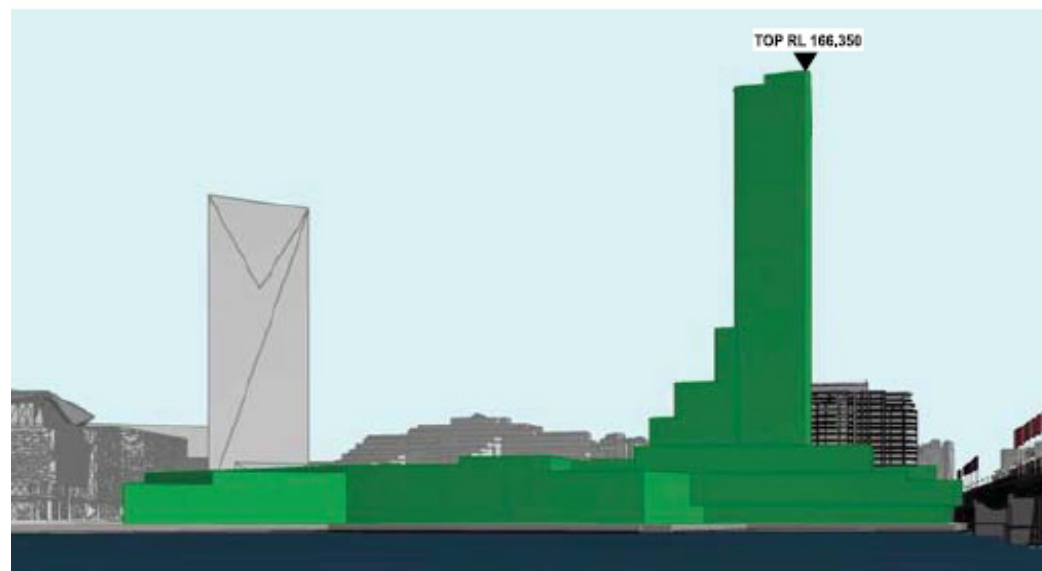


Figure 1 Original submitted Concept Proposal

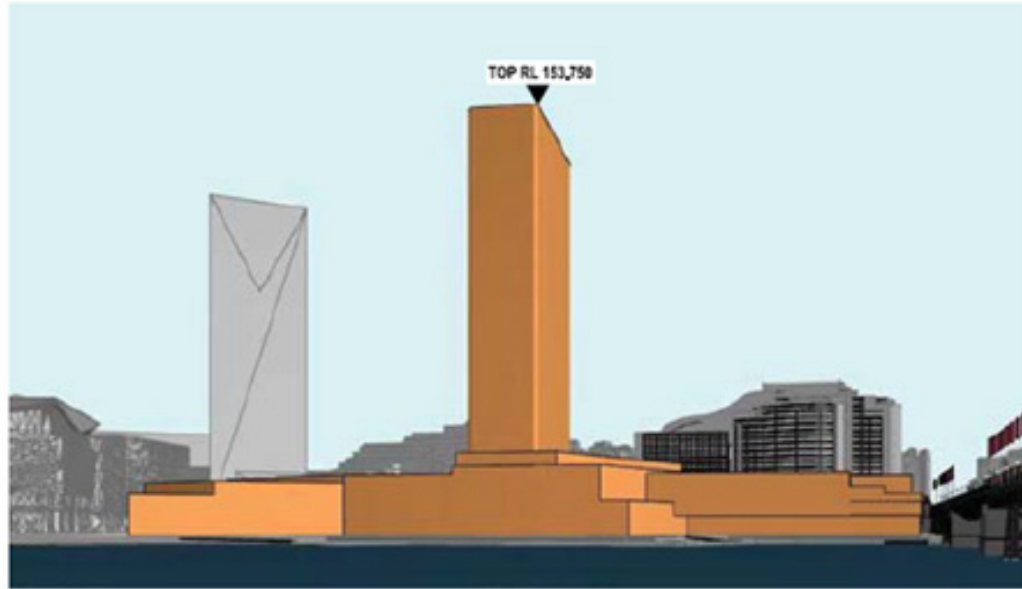


Figure 2 Amended Concept Proposal

Landscaped Open Space and Public Domain

All of the key concepts and public benefits as originally proposed are retained under the amended Concept Proposal, with the addition of further landscaping opportunities on the northern rooftop extent of the retail podium, further enhancing views and outlook from 50 Murray Street.

The final Concept Proposal seeks approval for the following key components and development parameters:

- ☐ Demolition of existing site improvements, including the Harbourside Shopping Centre, pedestrian bridge link across Darling Drive, obsolete monorail infrastructure, and associated tree removal;
- ☐ A network of open space areas and links generally as shown within the Public Domain Concept Proposal, to facilitate re-integration of the site into the wider urban context;
- ☐ Building envelopes;
- ☐ Land uses across the site, non-residential and residential uses;
- ☐ A maximum total Gross Floor Area (GFA) across the Harbourside site of 87,000m² for mixed use development (49,000sqm non-residential and 38,000sqm residential development);
- ☐ Basement car parking;
- ☐ Car parking rates to be utilised in subsequent detailed (Stage 2) Development Applications);
- ☐ Urban Design and Public Realm Guidelines to guide future development and the public domain; and
- ☐ Strategies for utilities and services provision, drainage and flooding, and ecological sustainable development.

Public View Photomontage Report

Harbourside Stage 1 DA (SSD 7874)

EXECUTIVE SUMMARY

This report has been prepared by Virtual Ideas for the purposes of visual impact assessment of the proposed Harbourside Stage 1 DA (SSD 7874) within its context.

The report includes a comparison between original photographs of the existing site conditions, as captured on the dates noted, alongside photomontages showing what the proposed Harbourside Stage 1 DA (SSD 7874) will look like when superimposed over the existing site conditions.

The report also outlines the methodology used to establish an accurate 3D model and the process followed to create the visual impact photomontages.

Information used in the creation of this report is also noted in the methodolgy and/or included as an appendix for reference.

BACKGROUND

Virtual Ideas is a highly experienced 3D visualisation company, who commonly prepares visual impact assessment material for both development application and court use, and is familiar with the requirements to provide 3D visualisation media that will communicate the visual impact of proposed developments.

Virtual Ideas' methodology and results have been inspected by various court appointed experts in a variety of cases and have always been found to be accurate and acceptable.

OVERVIEW

The process of creating accurate photomontage renderings involves the creation of an accurate, real-world scale digital 3D model.

Photographs are taken on location, with each camera position subsequently surveyed to identify the Map Grid of Australia (MGA) coordinates at each position.

3D cameras are then set-up in the 3D model to match these same real-world camera positions. By matching the real-world camera lens properties to the camera properties in our software and rotating the camera so that surveyed points in 3D space align with the corresponding points in the photograph, we can create a rendering that is correct in terms of position, scale, rotation, and perspective.

Time and data information is also recorded during the site photography so that accurate lighting conditions can be reproduced in the 3D rendering.

A digital image is then rendered from the camera in the 3D software application, that is then superimposed into the real-world photo to generate an image that represents accurate form and visual impact.

METHODOLOGY

Site Photography

Site photography was taken from predetermined positions and heights as instructed by Mirvac and Ethos Urban (formerly JBA) in consultation with the Department of Planning and Environment.

Photographs were taken using the camera and lens equipment noted below:

- Canon EOS 5DS R with a camera lens EF24-105mm f/4L IS USM
- NIKON D810 with a camera lens 14.0-24.0 mm f/2.8

Photographs were taken at an approximate eye height of 1.6m above ground level.
The positions of the photographs were surveyed and then added into the existing site survey.

Notes on photos

For consistency, all base photos have been captured with a 24mm lens. For the purposes of greater visual assessment, a 50mm equivalent crop of each 24mm photo has also been presented. Accordingly, a photomontage of each 50mm equivalent crop has also been created and included for comparison. Please refer to “Appendix B - Camera Lenses for Photomontages” for a more in-depth discussion on the choice of lens selection.

In some circumstances, the original image has been altered to more accurately reflect the existing situation given the time period since the original photo was taken (i.e. the completion of ICC Sydney, Exhibition Centre and Hotel).
Please refer to Refer to Appendix B to view the original, unaltered images.

3D model

The 3D model was created by firstly importing the surveyed data created by Rygate Surveyors and supplied by Mirvac into our 3D software (3DS Studio Max) and then importing the supplied 3D model of the proposed Harbourside Stage 1 DA (SSD 7874) from FJMT.

Alignment

The positions of the real world photography were located in the 3D scene. Cameras were then created in the 3D model to match the locations and height of the real-world photography positions. These were then aligned in rotation so that the points of the 3D model aligned with the corresponding objects visible in the photograph.

Renderings of the building with realistic textures and lighting were then created from the aligned 3D cameras and montaged into the existing photography at the same location. The resulting images presented an accurate representation of the scale and position of the proposed development relative to the existing built form.

Notes on additional 3D models included in the photomontages

As the photomontages were originally commissioned in 2016, site photography for the photomontages was predominantly captured in early 2016. As a result, a number of surrounding buildings have since either commenced construction, completed construction, been approved for construction or submitted for SSDA approval.

For the purposes of portraying an accurate representation of the current and future context, 3D models for these developments have been included where visible within the images.

This includes the following:

Completed buildings shown with basic textures

- ICC Hotel (Sofitel Hotel)
- ICC Sydney buildings (in some instances shown as 3D model, other times shown as per detail in the base photo)

Buildings that are under construction or with DA approval shown as a solid grey form

- Darling Harbour Square buildings
- The Ribbon (IMAX Darling Harbour redevelopment)
- Crown Tower, Barangaroo
- Stage 1B Residential buildings, Barangaroo

Buildings that have been submitted for SSDA shown as ghosted blue forms

- Cockle Bay tower

CONCLUSION

It is my opinion as an experienced 3D architectural visualisation professional that the images included in this report accurately portray the level of visibility and impact of the indicative built form with respect to the surrounds.

Yours sincerely,

Grant Kolln



DESCRIPTION OF COLLECTED DATA

To create the 3D model and establish accurate reference points for alignment to the photography, a variety of information was collected. This includes the following:

- 1) Architectural 3D model of indicative Harbourside Stage 1 DA (SSD 7874) base building design, proposed envelope and additional surrounding context buildings
 - Supplied by: Francis-Jones Morehen Thorp (FJMT)
Level 5/70 King St, Sydney NSW 2000
 - Format: Din3D model
- 2) 3D models of Barangaroo and Darling Harbour context buildings
 - Supplied by: Lendlease
Level 14, Tower Three, International Towers Exchange Place, 300, Barangaroo Avenue, Sydney NSW 2000
 - Format: 3DS Max files
- 3) 3D models of indicative designs for The Star and Cockle Bay developments
 - Supplied by: Francis-Jones Morehen Thorp (FJMT)
Level 5/70 King St, Sydney NSW 2000
 - Format: Din3D model
- 4) 3D model of ‘The Ribbon’
 - Created by: Virtual Ideas Pty Ltd
Studio 71, 61 Marlborough St, Surry Hills, NSW 2010
 - Format: 3DS Max file (modelled from publicly available information)
- 5) Site and Camera Surveyed data (refer to Appendix A)
 - Supplied by: Rygate & Company Pty. Ltd. Registered Land Surveyors
Level 9, 89 York St, Sydney, NSW 2000
 - Format: DWG and PDF files
- 6) Site photography
 - Created by: Virtual Ideas Pty Ltd
Studio 71, 61 Marlborough St, Surry Hills, NSW 2010
 - Format: JPEG file

CV OF GRANT KOLLN, DIRECTOR OF VIRTUAL IDEAS

Personal Details

Name: Grant Kolln
DOB: 07/09/1974
Company Address: Suite 71, 61 Marlborough St, Surry Hills, NSW, 2010
Phone Number: 02 8399 0222

Relevant Experience

- 2003 - Present

Director of 3D visualisation studio Virtual Ideas. During this time, Grant has worked on many visual impact studies for legal proceedings in various different types of industries including architectural, industrial, mining, landscaping, and several large public works projects. This experience has assisted Grant to develop a highly accurate methodology for the creation of visual impact media and report creation.
- 1999 - 2001

Project manager for global SAP infrastructure implementation - Ericsson, Sweden
- 1999 - 1999

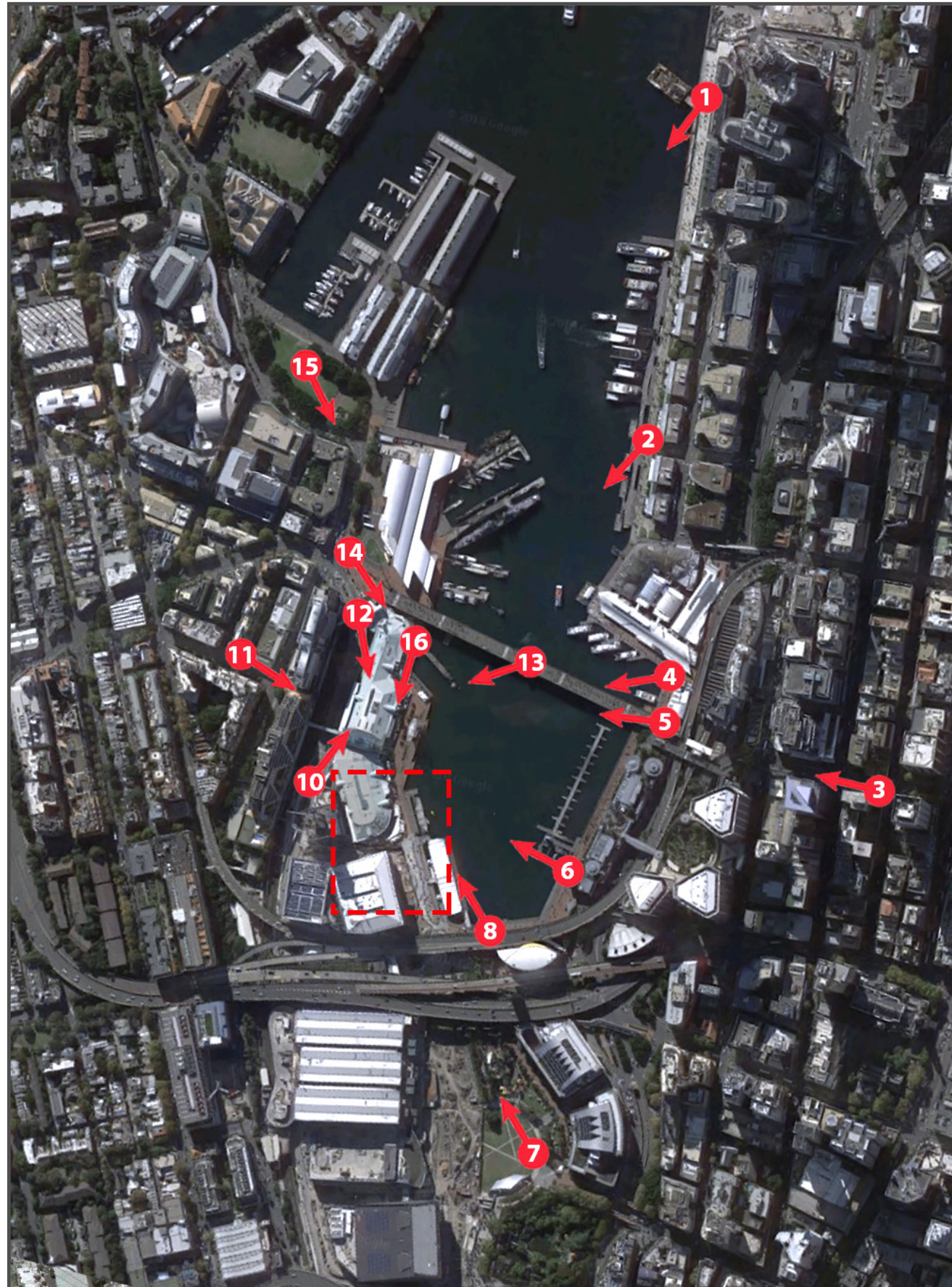
IT consultant - Sci-Fi Channel, London
- 1994 - 1999

Architectural Technician, Thomson Adsett Architect, Brisbane QLD.

Relevant Education / Qualifications

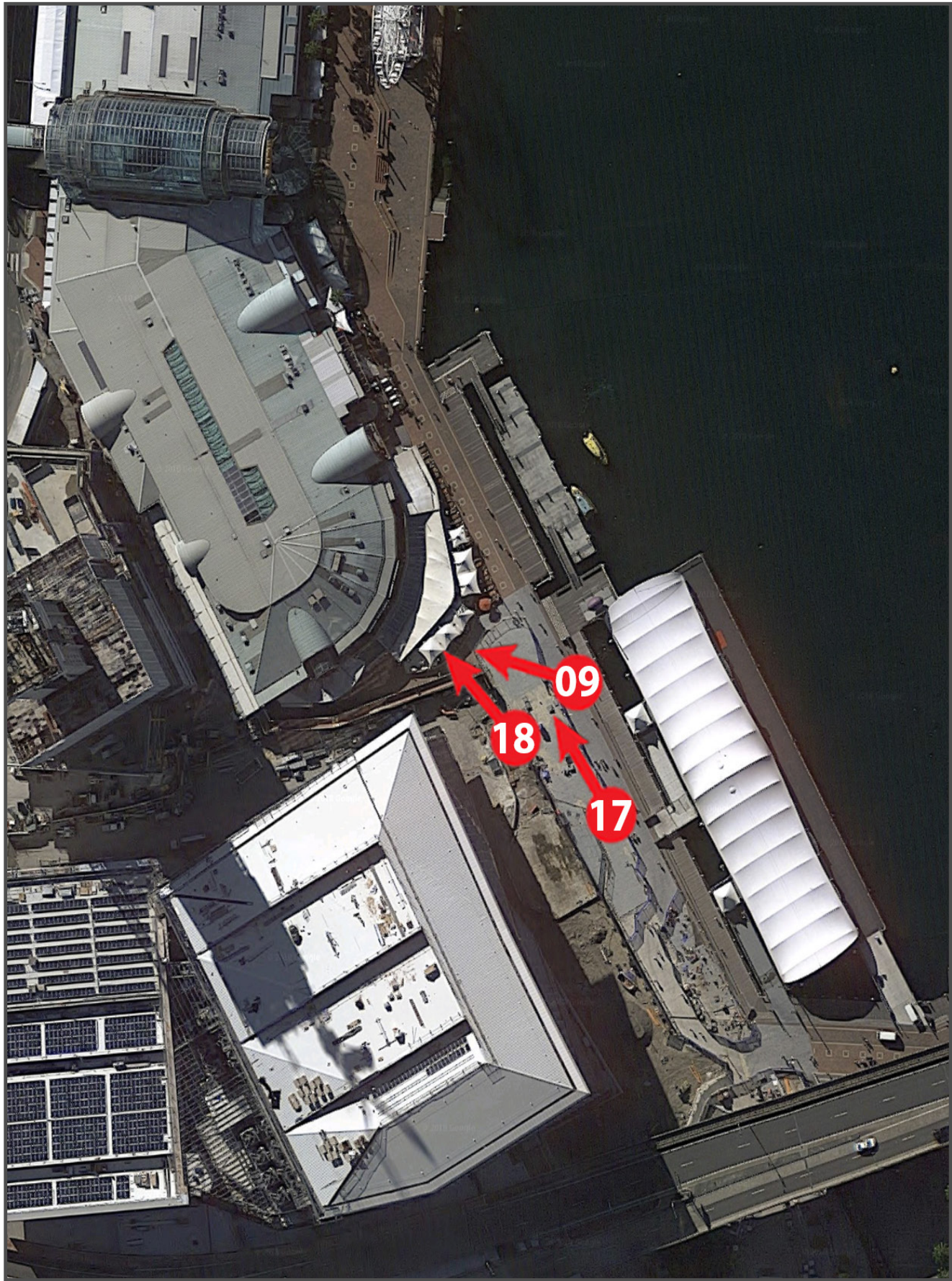
- 1997

Advanced Diploma in Architectural Technology. Southbank TAFE, Brisbane, QLD



- 1 - Barangaroo Foreshore
- 2 - King Street Wharf
- 3 - Market Street
- 4 - Cockle Bay Pier
- 5 - Pyrmont Bridge Pier
- 6 - Cockle Bay East
- 7 - Tumbalong Park
- 8 - Cockle Bay South
- 9 - Cockle Bay West
- 10 - Darling Drive South
- 11 - Bunn Street
- 12 - Darling Drive North
- 13 - Pyrmont Bridge West
- 14 - Forecourt Area Adjacent to Pyrmont
- 15 - Pyrmont Bay Park
- 16 - Harbourside promenade looking South
- 17 - ICC Promenade looking North
- 18 - Harbourside promenade looking North

*Please refer to the next page for a close-in view of the area outlined with a red-dashed line for locations 09, 17 and 18.



- 9 - Cockle Bay West
- 17 - ICC Promenade looking North
- 18 - Harbourside promenade looking North



24mm - Original Image (altered)

Photo Date - 29th January 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage



24mm - Original Image (altered)

Photo Date - 29th January 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage

NOTE: - THESE IMAGES ARE FOR INFORMATION ONLY.
- THEY HAVE BEEN PREPARED FOR VIEW ANALYSIS PURPOSES ONLY.
- HARBOURSIDE BUILDING FORM IS INDICATIVE ONLY.
- THE ICC HOTEL BY OTHERS.
- SIGNIFICANT DEVELOPMENT APPLICATIONS ARE SHOWN FOR INFORMATION AND BROADER CONTEXTUAL AND ILLUSTRATIVE PURPOSES ONLY.
- APPLICATION IS FOR BUILDING ENVELOPE ONLY.



24mm - Original Image

Photo Date - 29th January 2016



24mm - Photomontage



50mm equivalent crop of Original Image



50mm equivalent crop of Photomontage



24mm - Original Image (altered)

Photo Date - 29th January 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage



24mm - Original Image (altered)

Photo Date - 29th January 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage



24mm - Original Image (altered)

Photo Date - 29th January 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage



24mm - Original Image (altered)

Photo Date - 2nd February 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage



24mm - Original Image (altered)

Photo Date - 29th January 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage



24mm - Original Image (altered)

Photo Date - 2nd February 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage



24mm - Original Image

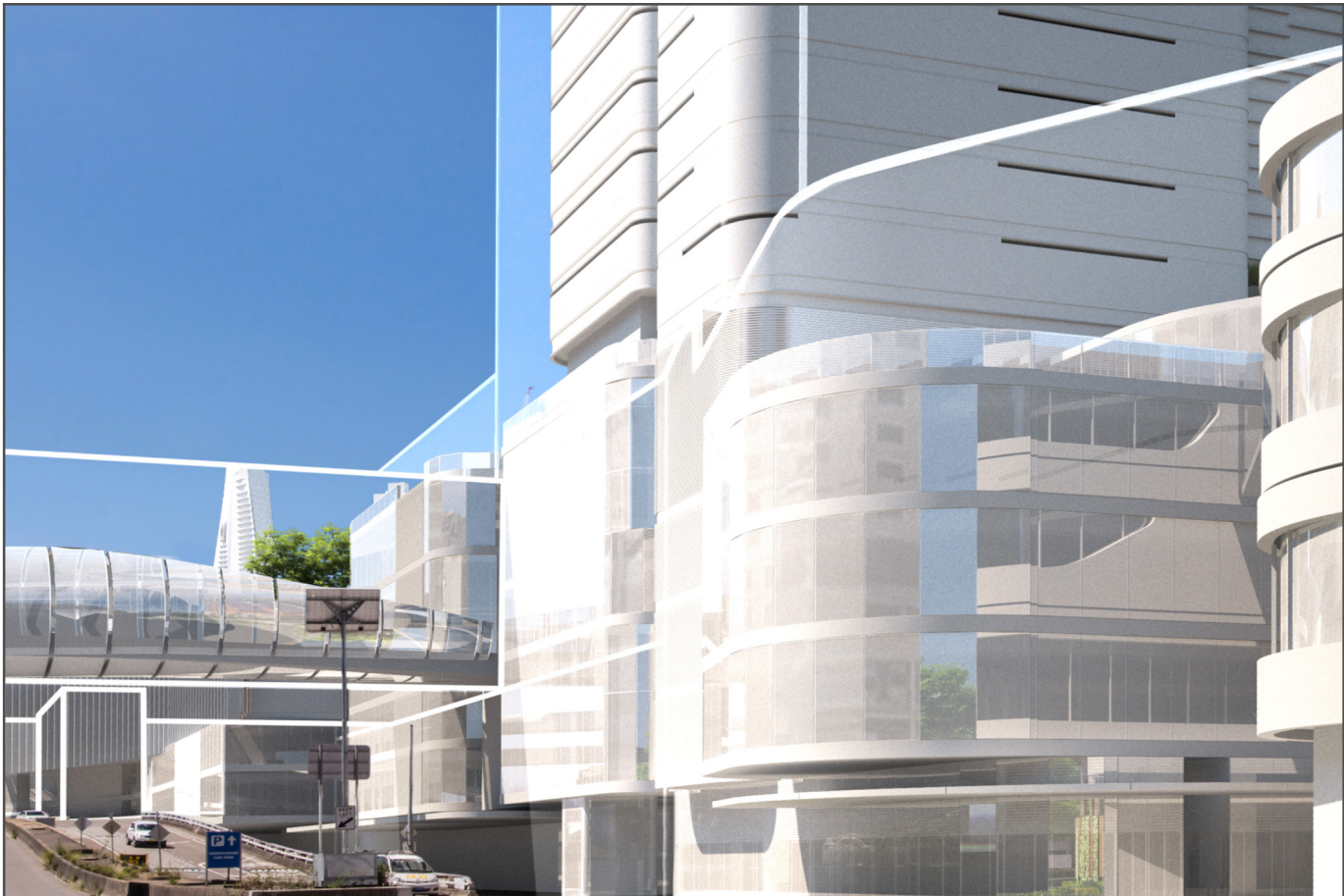
Photo Date - 2nd February 2016



24mm - Photomontage



50mm equivalent crop of Original Image



50mm equivalent crop of Photomontage

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24mm - Original Image

Photo Date - 9th February 2016



24mm - Photomontage



50mm equivalent crop of Original Image



50mm equivalent crop of Photomontage



24mm - Original Image (altered)

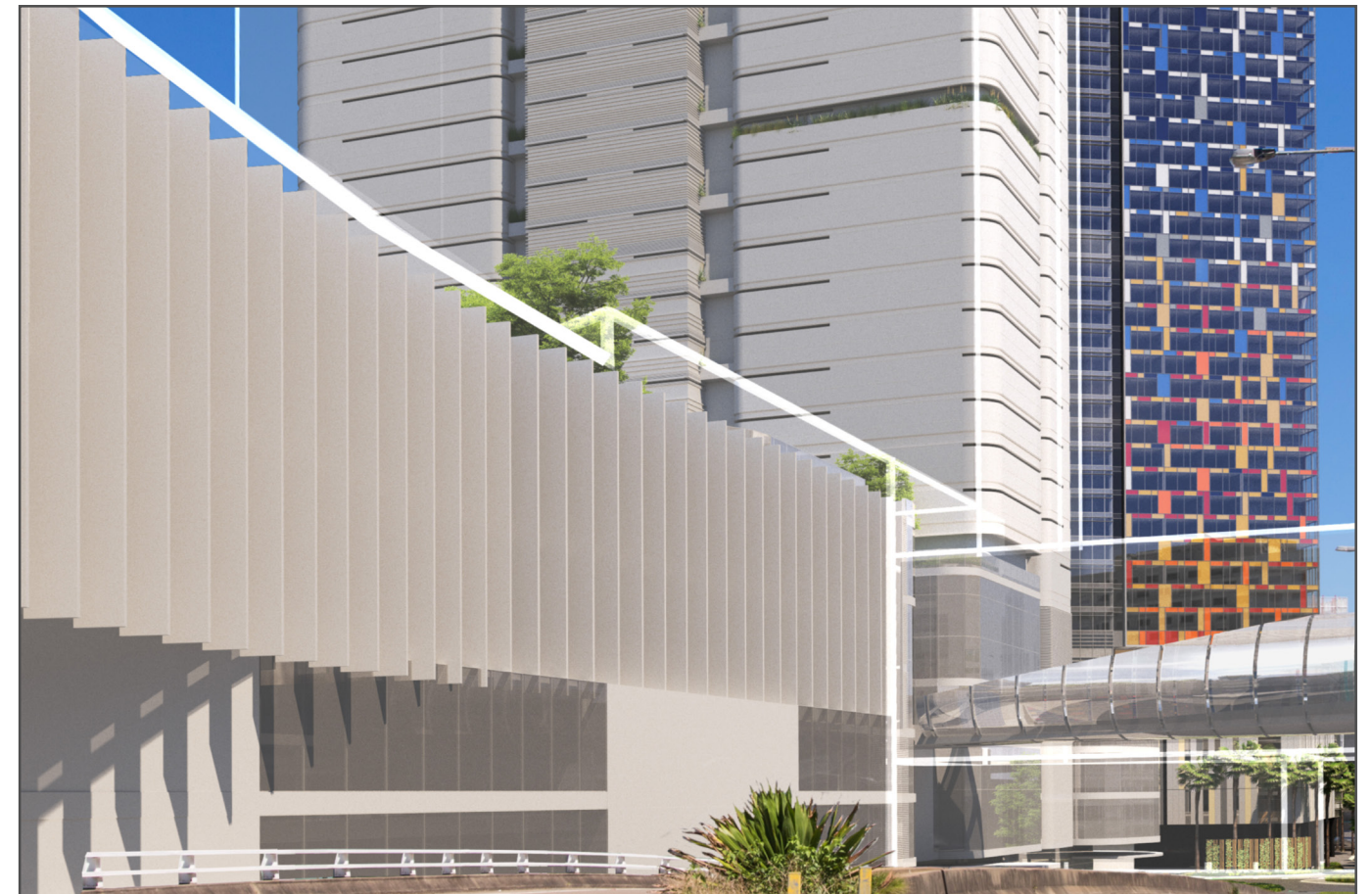
Photo Date - 2nd February 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage



24mm - Original Image (altered)

Photo Date - 2nd February 2016



24mm - Photomontage



50mm equivalent crop of Original Image (altered)



50mm equivalent crop of Photomontage



24mm - Original Image

Photo Date - 2nd February 2016



24mm - Photomontage



50mm equivalent crop of Original Image



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24mm - Photomontage



50mm equivalent crop of Original Image



50mm equivalent crop of Photomontage

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24mm - Original Image

Photo Date - 17th August 2018



24mm - Photomontage



50mm equivalent crop of Original Image



50mm equivalent crop of Photomontage



24mm - Original Image

Photo Date - 17th August 2018



24mm - Photomontage



50mm equivalent crop of Original Image



50mm equivalent crop of Photomontage



24mm - Original Image

Photo Date - 17th August 2018



24mm - Photomontage



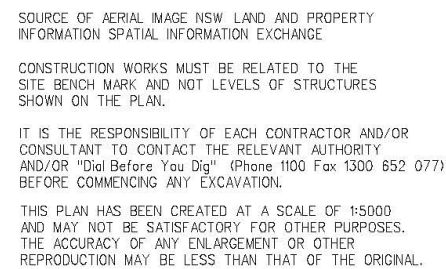
50mm equivalent crop of Original Image



50mm equivalent crop of Photomontage

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1 - Barangaroo Foreshore - 24mm - Original Image

Photo Date - 29th January 2016



2 - King Street Wharf - 24mm - Original Image

Photo Date - 29th January 2016



1 - Barangaroo Foreshore - 50mm equivalent crop of Original Image



2 - King Street Wharf - 50mm equivalent crop of Original Image

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4 - Cockle Bay Pier - 24mm - Original Image

Photo Date - 29th January 2016



5 - Pyrmont Bridge East - 24mm - Original Image

Photo Date - 29th January 2016



4 - Cockle Bay Pier - 50mm equivalent crop of Original Image



5 - Pyrmont Bridge East - 50mm equivalent crop of Original Image

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6 - Cockle Bay East - 24mm - Original Image

Photo Date - 29th January 2016



7 - Tumbalong Park - 24mm - Original Image

Photo Date - 2nd February 2016



6 - Cockle Bay East - 50mm equivalent crop of Original Image



7 - Tumbalong Park - 50mm equivalent crop of Original Image

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8 - Cockle Bay South - 24mm - Original Image

Photo Date - 29th January 2016



9 - Cockle Bay West - 24mm - Original Image

Photo Date - 2nd February 2016



8 - Cockle Bay South - 50mm equivalent crop of Original Image



9 - Cockle Bay West - 50mm equivalent crop of Original Image

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12 - Darling Drive North - 24mm - Original Image

Photo Date - 2nd February 2016



13 - Pyrmont Bridge West - 24mm - Original Image

Photo Date - 2nd February 2016



12 - Darling Drive North - 50mm equivalent crop of Original Image



13 - Pyrmont Bridge West - 50mm equivalent crop of Original Image

DIGITAL CAMERA LENSES FOR PHOTOMONTAGES AND VISUAL IMPACT ASSESSMENTS

The intention of a photomontage rendering is to visually communicate how proposed built form sits in respect to its surroundings. To achieve this, a digitally rendered image from a digital 3D model is superimposed into a digital photograph to provide an accurate representation in terms of light, material, scale, and form.

Camera lens selection also plays an important part in creating a photomontage that communicates visual impact. There are several things to consider with respect to lens selection.

Field of View of the Human Eye

The field of view of the human eye is a topic that varies depending on the source of information. In many cases, the field of view of the eye is stated to be 17mm. Other opinions claim a smaller field of view of around 22-24mm.

Whichever the case, it is accepted that the human eye has a wide field of view. When a person stands close to a subject - for instance a building - their field of vision can potentially read all of the top, sides and bottom of the building simultaneously in a single glance.

In addition to this, the human eye can change focus and target direction extremely rapidly, allowing a person to view a large structure in a very short period of time, effectively making the perceived field of view even larger.

The Perspective of the human eye

It is difficult to accurately reproduce what the human eye sees by the means of a printed image. The eye’s image sensor - the retina - is curved along the back surface of the eyeball, whereas the sensor on a camera is flat. Consequently, the perspective of a photograph can look quite different to how a person views a scene in the real world, especially when comparing to a photo captured with a wide camera lens.

In digital photography circles, it is widely accepted that using a longer lens (approximately 50mm) reduces the amount of perspective in an image and therefore more closely replicates what the human eye would see in reality. This, however, only addresses how the eye perceives perspective and does not consider the field of view of the eye.

If a photo is taken of a scene using a 50mm camera lens, printed out and then held up in front of the viewer against the actual view at the same location as the photo was taken, it is unmistakable that the human eye can see much more of the surrounding context than is captured within the photo.

DIGITAL CAMERA LENSES FOR PHOTOMONTAGES AND VISUAL IMPACT ASSESSMENTS

Changing the field of view on a digital camera

The main difference in using a longer lens vs a wider lens is the amount of information that is displayed at the edges of the subject. Changing the lens to a smaller FOV produces the same result as cropping in on the wide angle image, providing that the position and the angle of the camera remains constant while taking the photographs.

In short, a lens with a wider field of view does not create an image that has incorrect perspective, it simply means that the perspective is extended at the edges of the image showing more of the surrounds in the image.

Summary

With regards to visual assessment, there is no definitive solution for camera lens selection.

Longer lenses produce images that are more faithful to the perspective of the human eye, though the field of view is more limited, making it difficult to capture the entirety of a subject or enough of the surrounding context in which the subject resides.

Conversely, the perspective of wider camera lenses can make subjects appear further away than they would appear through the perspective of the human eye. This also limits a persons ability to accurately assess visual impact.

For these reasons, Virtual Ideas has taken the view that it is not possible to exactly replicate the real world view of the human eye in an image created with a camera and for visual impact photomontages, camera lenses are selected that strike a balance between these two considerations and can accurately display the built form in its surroundings.

The most effective way to accurately gauge visual impact and achieve a real world understanding of scale, is to take prints of the photomontages to the exact site photography locations and compare the prints with the scale of the existing built form.