VIRTUAL IDEAS

Harbourside

Public View Photomontage Report

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. More specifically this report has been prepared in support of the Further and Final Amended Concept Proposal (see Figure 1 below).

The report includes a comparison between original photographs of the existing site conditions, as captured on the dates noted, as well as full 3D renders, 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.

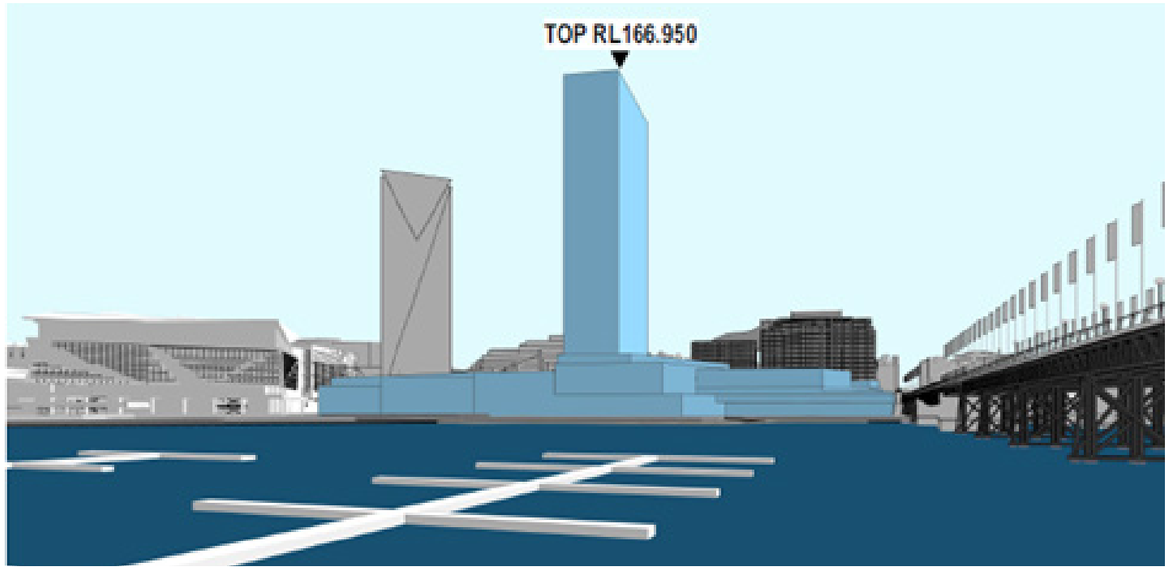

Figure 1 Further and Final Amended Concept Proposal

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.

NOTE:
- THESE IMAGES ARE FOR INFORMATION ONLY.
- THEY HAVE BEEN PREPARED FOR VIEW ANALYSIS PURPOSES ONLY.
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- THE ICC HOTEL BY OTHERS.
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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.

METHODOLOGY

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.

CGI Renders

3D renderings of the building with realistic textures and lighting were created from the 3D cameras.
The resulting images present an accurate representation of the scale and position of the proposed development relative to the existing built form.

3D Camera Position and Lens Selection

For 50 Murray Street, the Ibis Hotel and the ICC Hotel, sectional drawings were referenced to ascertain the floor level RL (refer to Appendix A and B for relevant section drawings). 3D cameras were set-up at a height of 1.6m above the noted floor level RL.

For the Novotel Hotel and Oaks Goldsborough buildings, 3D cameras were set-up relative to previously ascertained survey information of equivalent camera positions surveyed for the private view photomontages (refer to Appendix C for survey mark-up).

For all other buildings where no survey information or sectional drawings were available, 3D cameras were set-up at approximated viewing heights estimated using the context 3D model and Google Street View.

All cameras are showing a 24mm camera lens. Please refer to “Appendix D - Camera Lenses for Photomontages” for a more in-depth discussion on the choice of lens selection.

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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:

Buildings Completed or under construction 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)
- Crown Tower, Barangaroo
- Stage 1B Residential buildings, Barangaroo
- Darling Harbour Square buildings

Buildings with DA approval shown as a solid grey form
- The Ribbon (IMAX Darling Harbour redevelopment under construction)
- Cockle Bay tower

Note on Purpose of the Report

The purpose of this report is purely to provide imagery and media and not to undertake any visual analysis. Refer to the Visual and VIew Impact Analysis report prepared by Ethos Urban for an assessment of visual impacts.

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) Section drawing indicating floor level RLs for 50 Murray Street (refer to Appendix A)
   - Supplied by: Hoffer, Reid and Coombs/Travis Partners
     Level 10, 50 Park St, Sydney, NSW 2000
   - Format: PDF files

6) Section drawing indicating floor level RLs for the ICC Hotel (refer to Appendix B)
   - Supplied by: Lend Lease/FJMT
     Level 5/70 King St, Sydney NSW 2000
   - Format: PDF files

7) Site and Camera Surveyed data (refer to Appendix C)
   - Supplied by: Rygate & Company Pty. Ltd. Registered Land Surveyors
     Level 9, 89 York St, Sydney, NSW 2000
   - Format: DWG and PDF files

8) Site photography
   - Created by: Virtual Ideas Pty Ltd
     Studio 71, 61 Marlborough St, Surry Hills, NSW 2010
   - Format: JPEG file

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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

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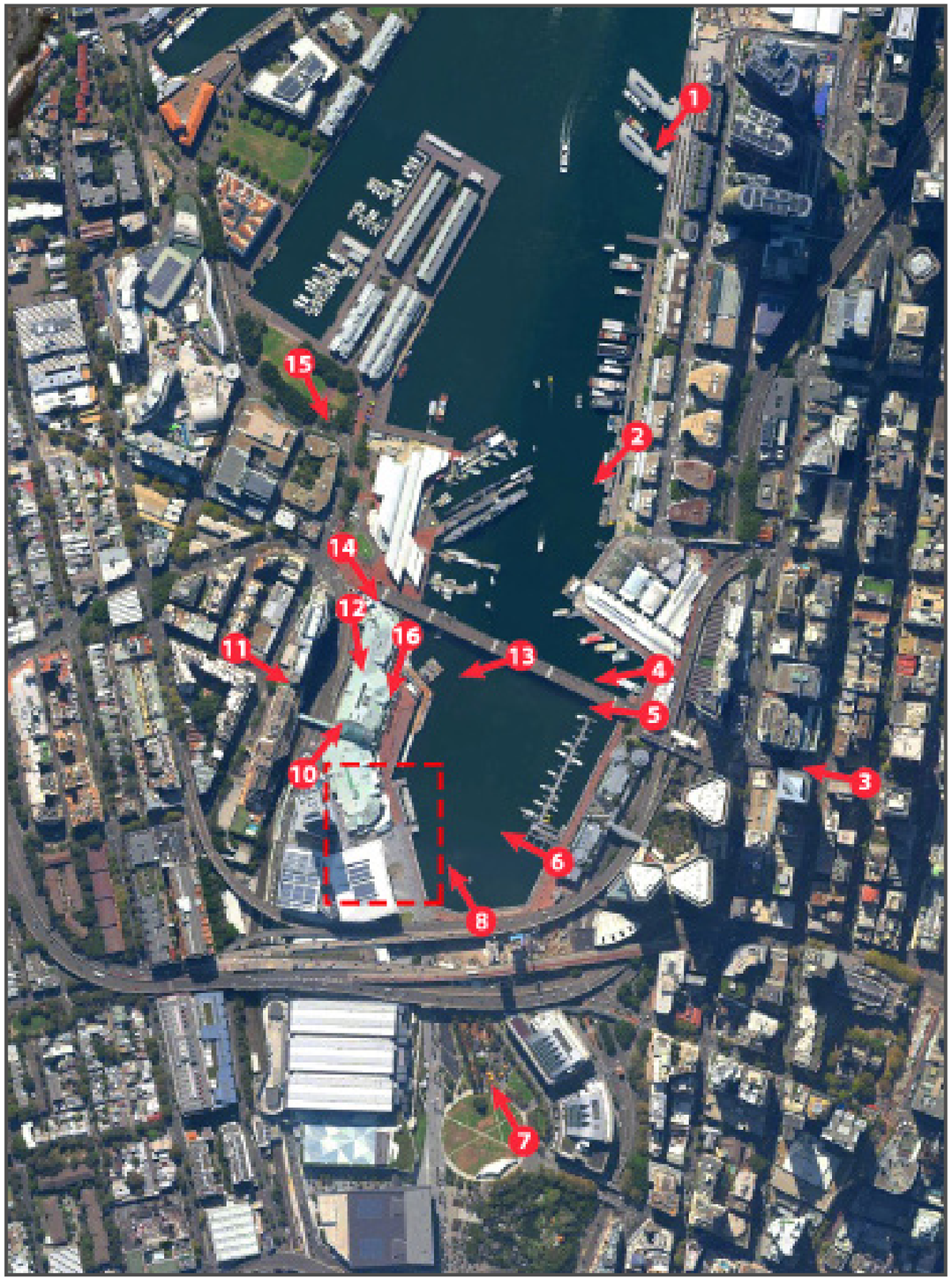

1 - Barangaroo Foreshore
2 - King Street Wharf
3 - Market Street
4 - Cockle Bay Pier
5 - Pyrmont Bridge Pier
6 - Cockle Bay East
7 - Tumbalong Park
8 - Cockle Bay South
9 - Cockle Bay West
10 - Darling Drive South
11 - Bunn Street
12 - Darling Drive North
13 - Pyrmont Bridge West
14 - Forecourt Area 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.

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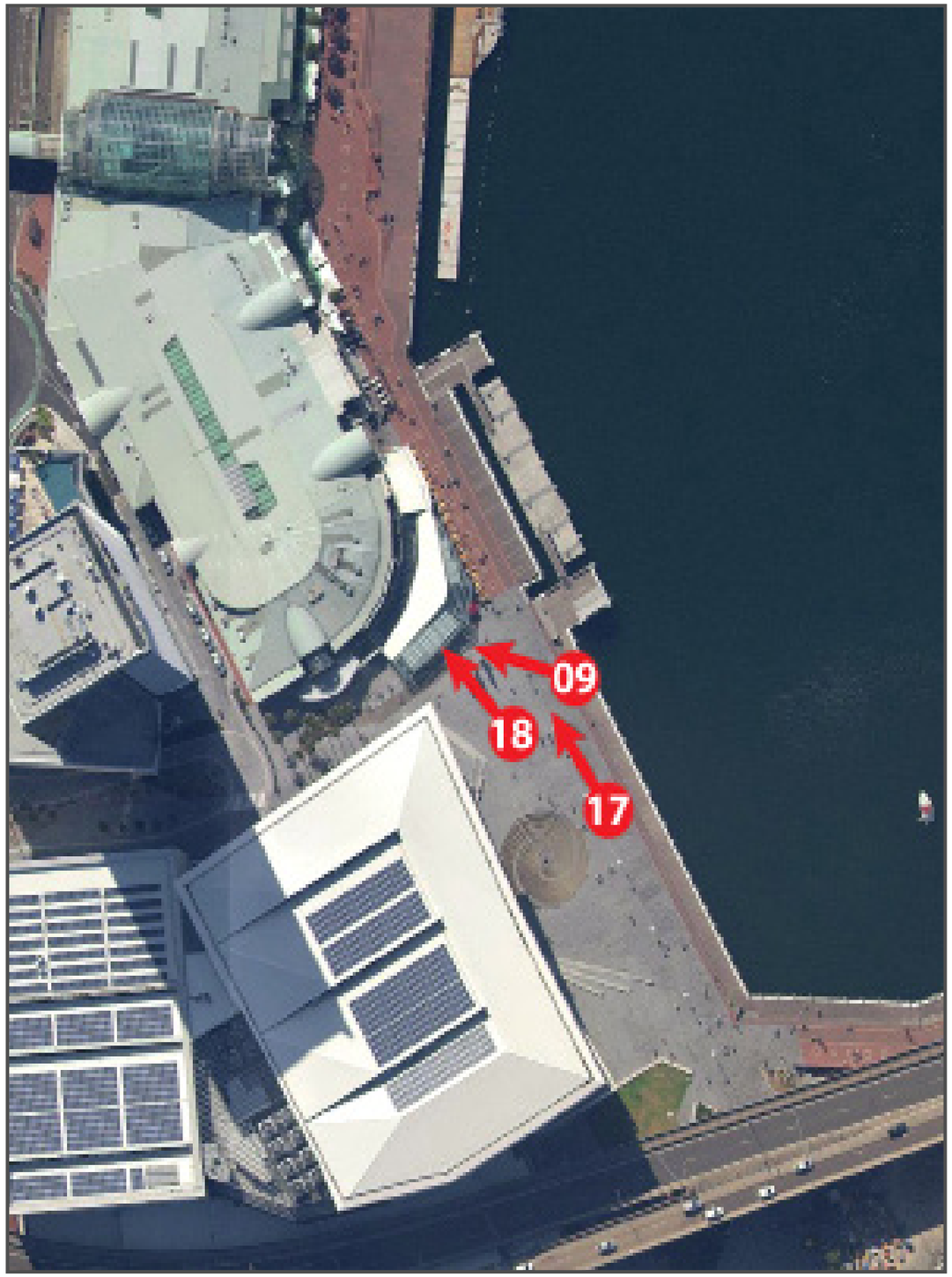

9 - Cockle Bay West
17 - ICC Promenade looking North
18 - Harbourside promenade looking North

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24mm - Original Image (altered)

Photo Date - 29th January 2016

24mm - Photomontage

50mm equivalent crop of Original Image (altered)

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September, 2020

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Rygate & Company Pty Limited

CLIENT: MIRVAC

LOCALITY: DARLING HARBOUR/SYDNEY

L.G.A.: CITY OF SYDNEY

PLAN

SHOWING POSITION OF CAMERA POSITIONS FOR PHOTOMONTAGES HARBOURSIDE SHOPPING CENTER

SURVEYOR	DRAWN	CHECKED	APPROVED	REFERENCE No.	PLAN No.	DATE	SHEET No. 1
TM	TM	TM	TM	77315	77315_AERIAL	27/09/2016	OF 8 SHEETS

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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 - Pyrmoint Bridge East - 24mm - Original Image

Photo Date - 29th January 2016

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

5 - Pyrmoint 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

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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.

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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.

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