**Architecture** Interior Design Landscape Architecture Hong Kong SAR **Urban Design** 

Australia China Singapore Thailand **United Kingdom** 

# AMP CIRCULAR QUAY PRECINCT MASTER PLAN\_ SHADOW AND SUN ACCESS REPORT

Prepared for AMP Capital **12 December 2012** 



# Contact

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Introduction

This shadow and sun access report has been prepared for AMP Capital in support of a formal request to the City of Sydney for an amendment to the Sydney LEP 2012 (SLEP) and Sydney DCP 2012 (DCP) and forms part of the Planning Justification Report submission for the AMP Circular Quay Precinct. The shadow and sun access report should be read in conjunction with the urban design report.

The proposed amendments to the SLEP and DCP seek to facilitate a significant redevelopment of the AMP Circular Quay Precinct by transferring a notional floor space entitlement from the Young and Loftus block to the Bridge and Alfred Street block. This transfer of floor space from a constrained site to another more able to accommodate it will enable a significant transformation, reinforcing the economic viability and amenity of one of the key parts of the city.

#### The Precinct

The AMP Circular Quay Precinct is made up of the area bounded by Loftus, Bridge, Phillip and Alfred Streets (but excluding land to the north of Customs House Lane and south of the east-west leg of Loftus Lane), it comprises the following buildings under the control of AMP Capital Investors:

### The Bridge and Alfred Block

- \_50 Bridge Street Tower (AMP Centre)
- \_33 Alfred Street Tower (Sydney Cove Local heritage listed)

### The Young and Loftus Block

- \_5-7 Young Street (Hinchcliff House, State heritage listed)
- \_9-13 Young Street
- \_15-17 Young Street
- \_2-10 Loftus Street (AMP General House)
- \_12 Loftus Street (Gallipoli Club, Local heritage listed)
- \_20 Loftus Street

### **Proposed Built Form Envelope**

The overshadowing studies contained within this report illustrate the shadowing impact of the maximum proposed built form envelope. The proposed built form envelope documents the geometric envelope achievable within the constraints of the site.

### Methodology

The overshadowing studies contained within this report have been produced by HASSELL using 3D Studio Max, and have been based on the following base information (see appendix):

- \_City model supplied by the City of Sydney including city buildings and topography (The supplied model has an accuracy of +/- 300mm)
- \_Survey Drawings prepared by Denny Linker & Co:
  - \_Plan showing detail and levels at First Government House Place and Macquarie Place Park (22/10/2012)
  - \_Plan showing elevations Young Street & Loftus Street (20/07/2012)
- Survey Drawings prepared by Frank M Mason & Co:
  - \_Plan showing spot levels and features over AMP property between Young and Loftus Streets (22/02/2001)
- \_Survey Drawings prepared by PSN:
  - \_Sections showing typical structure north-south
- \_Plan showing location of buildings and structures at 50 Bridge Street (Sheet 1)
- \_Plan showing location of buildings and structures at 50 Bridge Street (Sheet 2)
- The proposed master plan has been based on solar access envelopes described in the 'Solar Impact Report' by PSN Matter (12/09/2011)

The shadow studies contained within this report are accurate to the implied limits of the supplied base information. HASSELL does not accept responsibility for the accuracy of this base information.



### **Built Form Controls Review**

### Clause 6.16 - Sun access planes

### Sydney Local Environment Plan (LEP) 2011 - Draft

The objective of this clause is to ensure that buildings maximise sunlight access to the public places set out in this clause.

The consent authority must not grant consent to development on land if the development will result in any building on the land projecting higher than any part of a sun access plane taken to extend over the land under this clause.

### \_Macquarie Place

Approximately 35 metres above the junction of the eastern alignment of Loftus Street and the northern alignment of Loftus Lane and approximately 35 metres above the junction of the eastern alignment of Loftus Street and the southern alignment of Customs House Lane.

### \_Royal Botanic Gardens

Approximately 45 metres above the western alignment of Macquarie Street where that alignment is directly below the southern alignment of the Cahill expressway and approximately 45 metres above the western alignment of Macquarie Street 94 metres roughly north from the junction of the western alignment of Macquarie Street and the northern alignment of Bent Street.

### Clause 6.18 - Overshadowing of certain public places

### Sydney Local Environment Plan (LEP) 2011 - Draft

The consent authority must not grant consent to development that results in any part of a building causing additional overshadowing between 14 April and 31 August in any year of any of the following locations during the times specified below:

- \_First Government House Place—between 12.00-14.00
- \_Macquarie Place (beyond the shadow that would be cast by a wall with a 35 metre street frontage height on the eastern alignment of Loftus Street) between 10.00–14.00

A development causes additional overshadowing if the total overshadowing of the relevant location during the specified times is greater after the development is carried out than the overshadowing of that location during the specified times caused by buildings existing as at 1 January 2010.

### Section 5 - Specific Areas

### Sydney Development Control Plan (DCP) 2010 - Draft

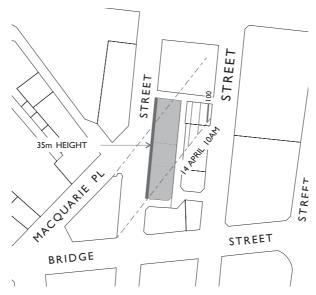


Figure 5.27 - Macquarie Place Controls 14 April 10am

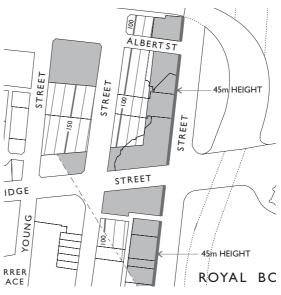
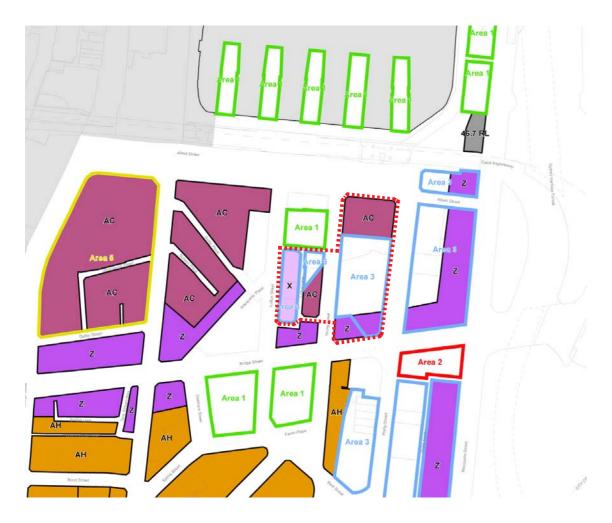
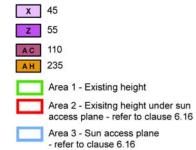


Figure 5.31 - Royal Botanic Gardens Controls 21 June 2pm

# Height of Buildings Map (Sydney Local Environment Plan 2011 Draft)

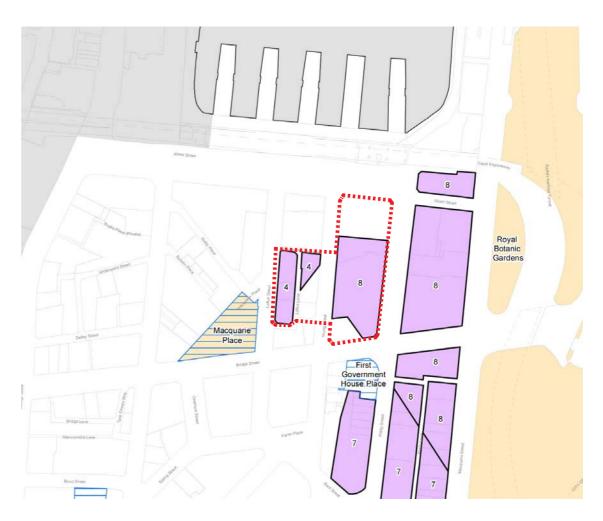
# Maximum Building Height (m)





# Sun Access Protection Map (Sydney Local Environment Plan 2011 Draft)

# Land Affected by Sun Access Planes



4	Macquairie Place 4
7	The Domain 7
8	Royal Botanic Gardens 8
	Protected Area - refer to clauses 6.16 to 6.18
	No Additional Overshadowing - Refer to clause 6.18

Executive Summary

By adopting a precinct-wide approach to the redistribution of floor space the master plan seeks to transfer the unrealised floor space from the Young and Loftus block to the Bridge and Alfred block.

The lower scaled Young and Loftus buildings will provide an increase in morning sunlight to Macquarie Place in mid winter, with the transferred floor space being accommodated within an extension to the 50 Bridge Street tower which whilst projecting through the Botanic Gardens sun access plane does so in a way that ensures no additional overshadowing to the Botanic Gardens at the control time of 2pm on 21st June.

A summary of the shadow and sun access analysis is as follows:

### **Botanic Gardens**

- \_No additional overshadowing to the Botanic Gardens beyond that cast by the existing building at the control time of 2pm on 21st June (mid winter)
- \_Negligible impact to the Botanic Gardens outside of control time (at 2pm on 21st June) beyond that cast by an LEP compliant envelope

### Macquarie Place

- Improved solar access and reduced overshadowing to Macquarie Place \_680 m² increase in solar access at 9am 21st June (mid winter)
- \_460 m² increase in solar access at 10am 21st June (mid winter)
- \_No additional overshadowing to Macquarie Place beyond that cast by an LEP compliant envelope at control times of 10am to 2pm on 14th April
- \_Improved solar access to the Loftus Street and Loftus Lane public domain

### First Government House Place

- \_No additional overshadowing of First Government House place.
- \_A modest net increase in solar access in mid winter has been achieved by offsetting a small (20 m $^2$ ) additional shadow at 12pm with a (30 m $^2$ ) improvement in solar access at 2pm.
- \_See appendix A for detailed study.

### Australia Square and Chifley Square

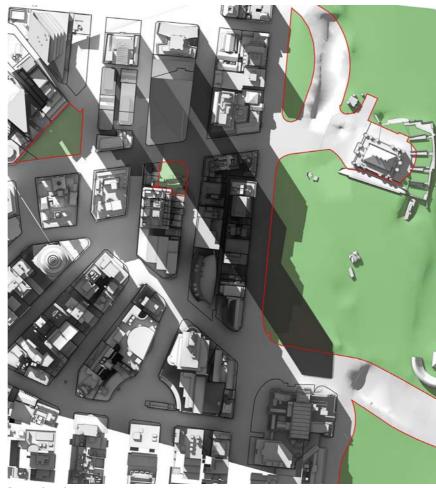
\_No additional overshadowing



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# Botanic Gardens (control time)

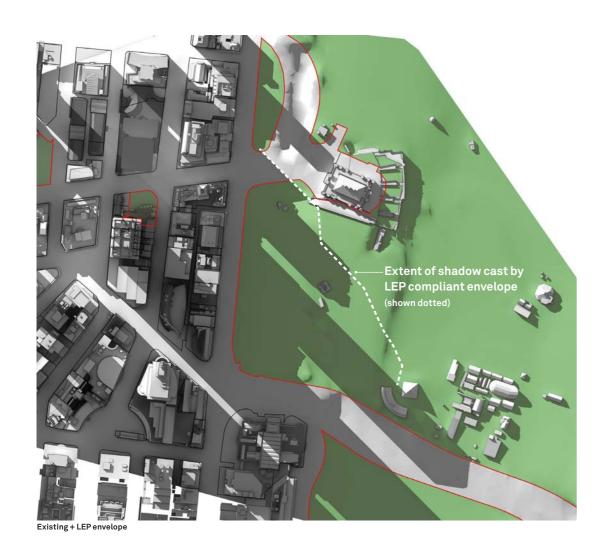


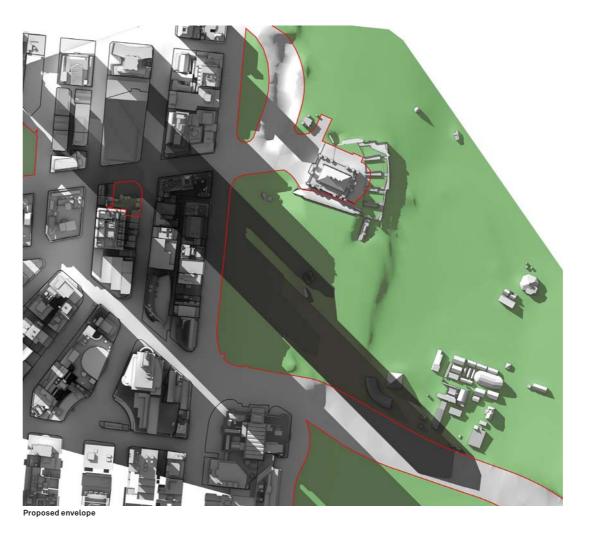


No additional overshadowing to the Botanic Gardens at 2pm in mid winter

Proposed envelope

# Botanic Gardens (beyond control time)

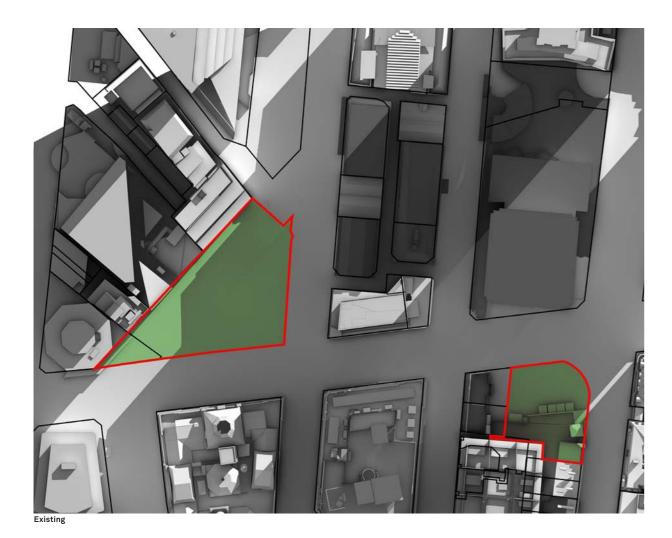




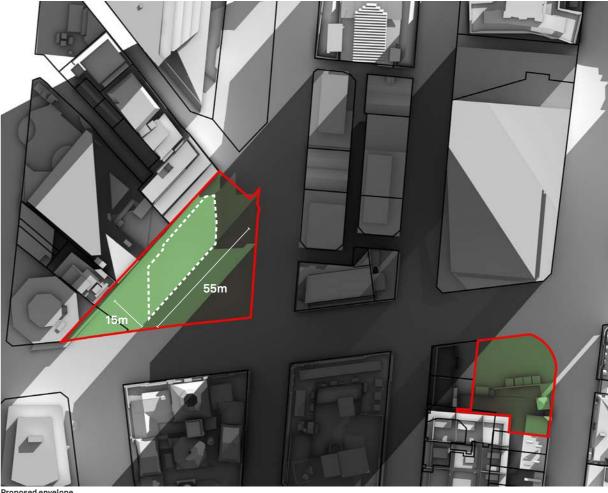
Negligable impact to Botanic Gardens at 3pm beyond that of an LEP compliant envelope

Time 3 pm

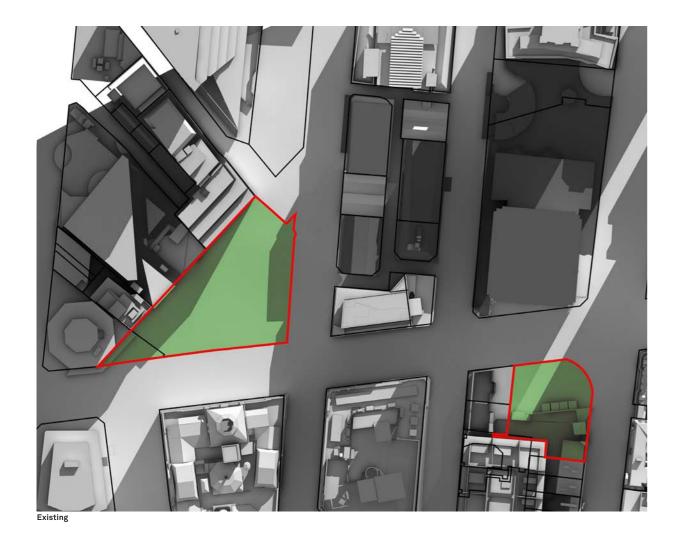
### Macquarie Place



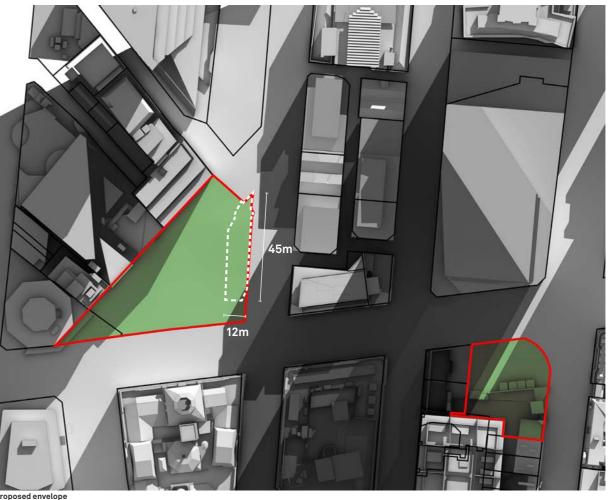
# 680 m<sup>2</sup> additional solar access at 9am in mid winter



### Macquarie Place



# 460 m² additional solar access at 10am in mid winter



Proposed envelope

### First Government House Place

See appendix A for more details

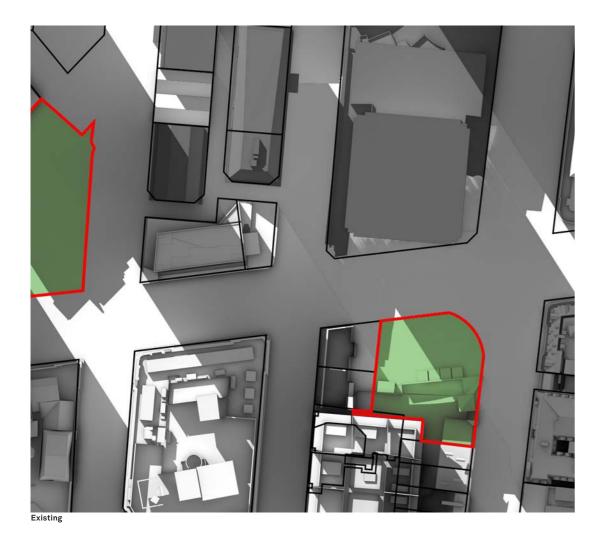


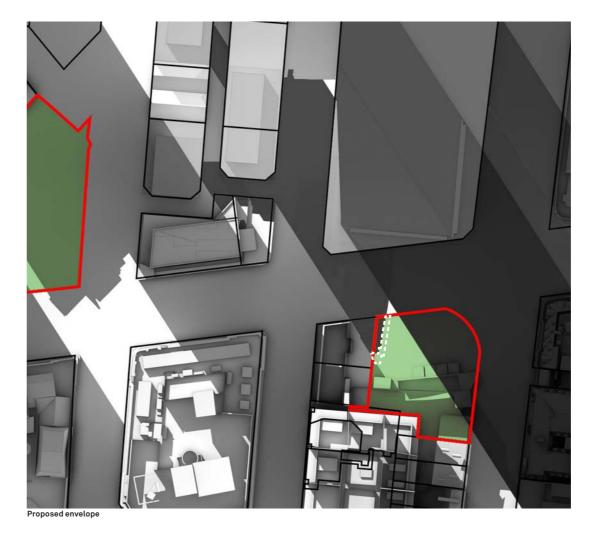


20 m² less solar access at 12pm in mid winter

### First Government House Place

See appendix A for more details

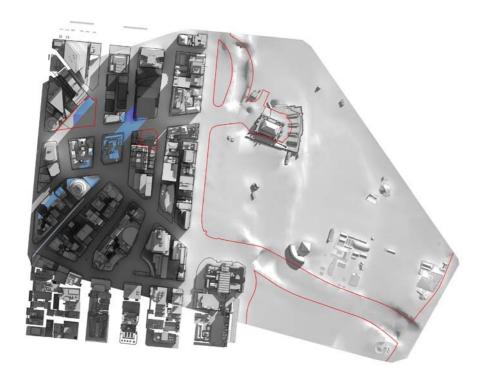


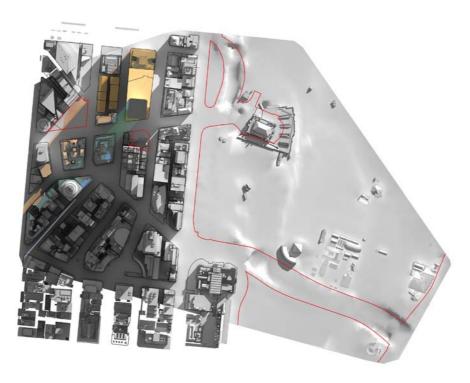


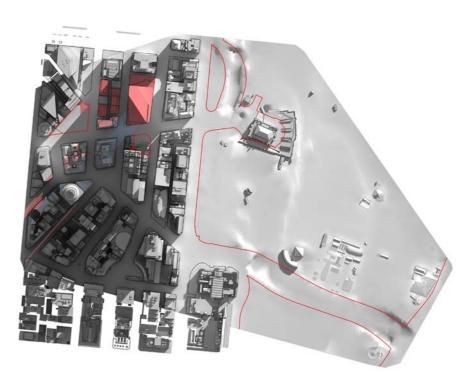
30 m<sup>2</sup> additional solar access at 12pm in mid winter

Time 2 pm

# Winter Solstice







Existing situation

LEP Envelope

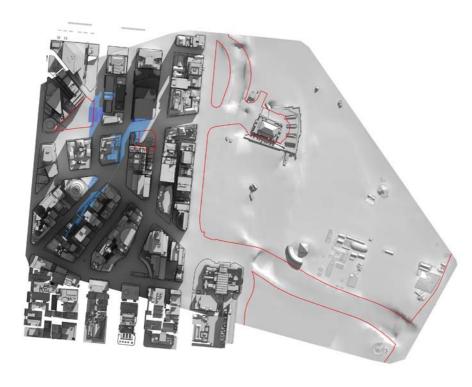
Proposed Envelope

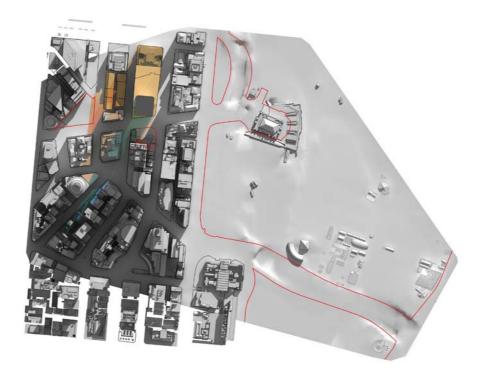
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# Winter Solstice





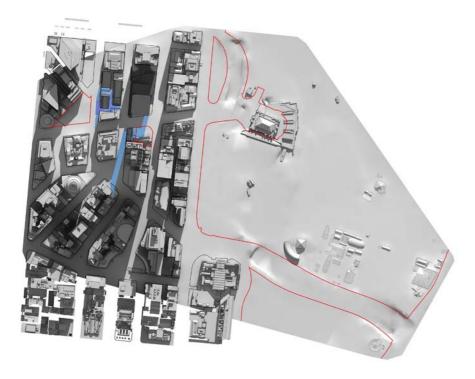


Existing situation LEP envelope Proposed envelope

### Legend



# Winter Solstice







Existing situation

LEP envelope

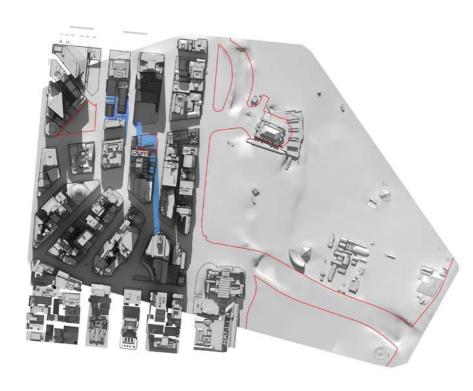
Proposed envelope

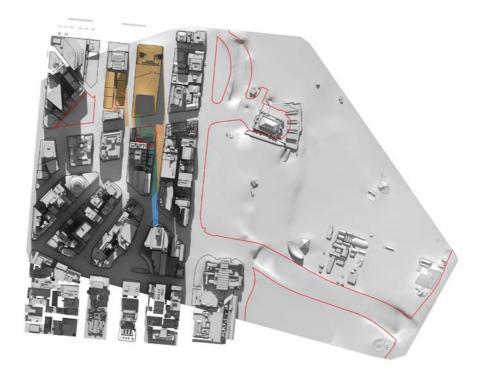
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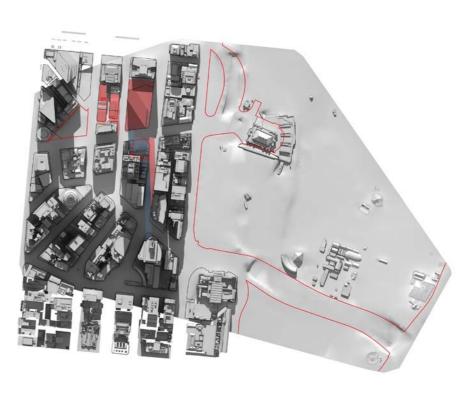




# Winter Solstice





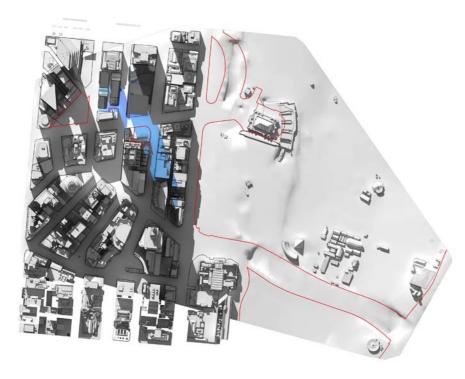


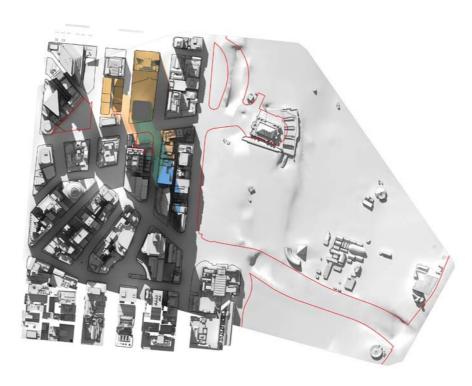
Existing situation LEP envelope Proposed envelope

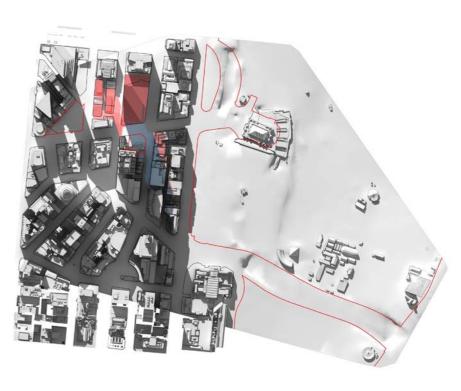
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### Winter Solstice







Existing situation

LEP envelope

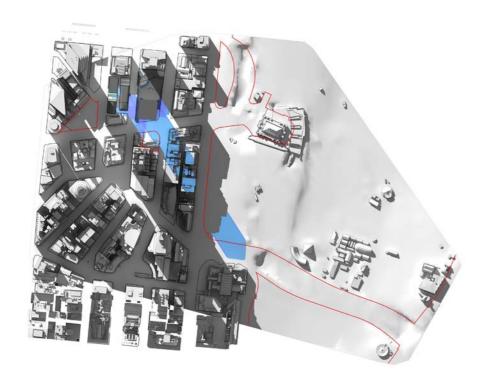
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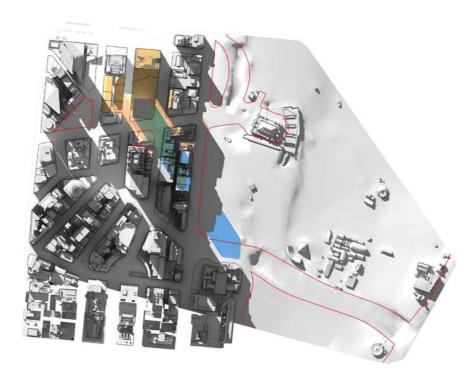
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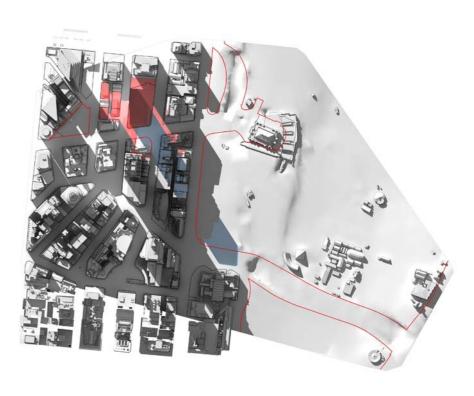




### Winter Solstice





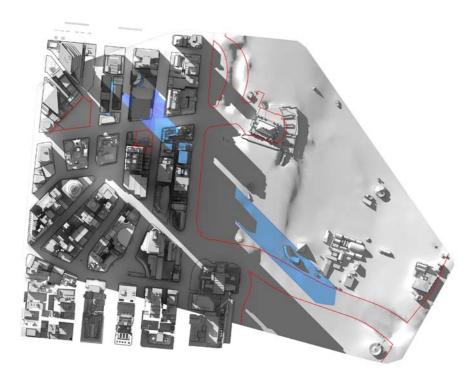


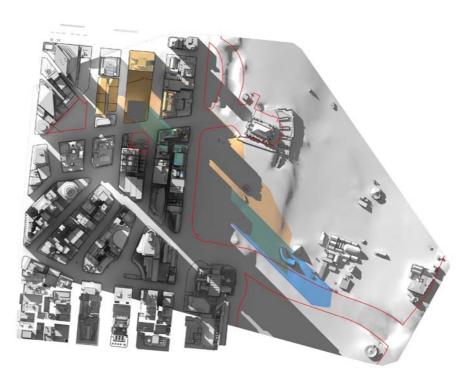
Existing situation LEP envelope Proposed envelope

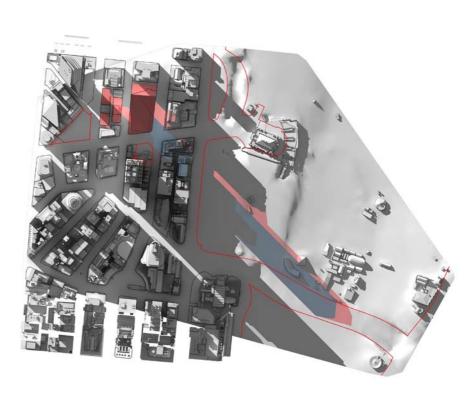
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# Winter Solstice







Existing situation

LEP envelope

Proposed envelope

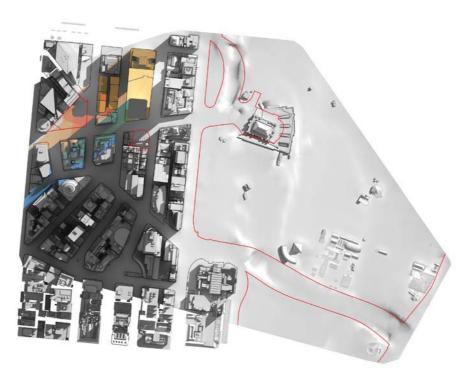
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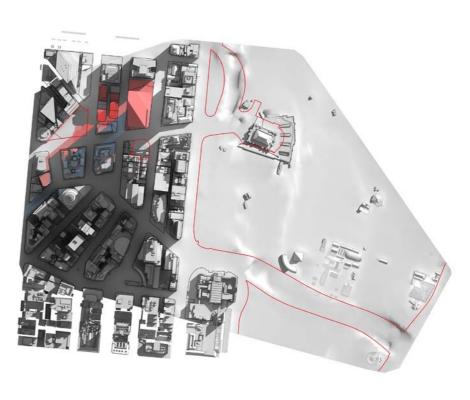




# **LEP Control Date**







Existing situation

LEP envelope

Proposed envelope

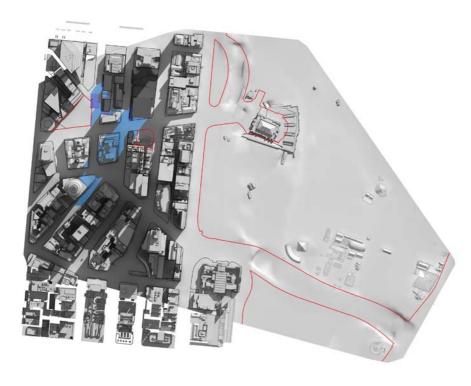
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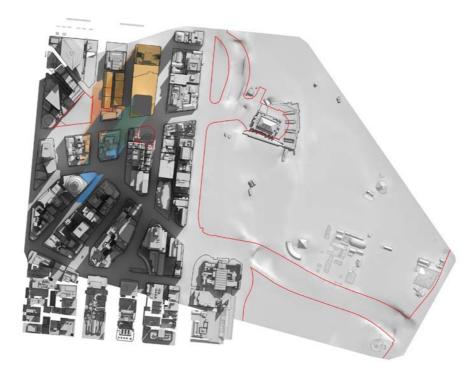


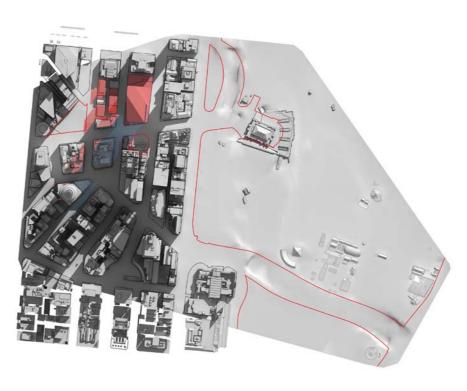


**Date** 14 April

# **LEP Control Date**







Existing situation LEP envelope Proposed envelope

### Legend



## **LEP Control Date**







Existing situation

LEP envelope

Proposed envelope

## Legend



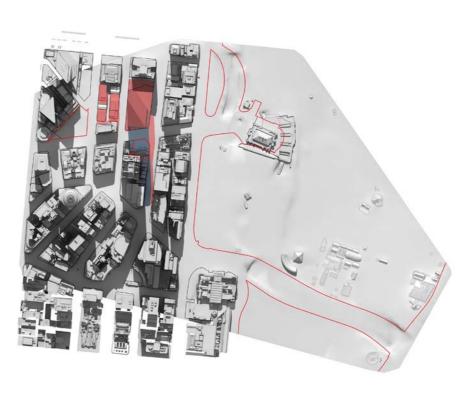


**Date** 14 April

## **LEP Control Date**



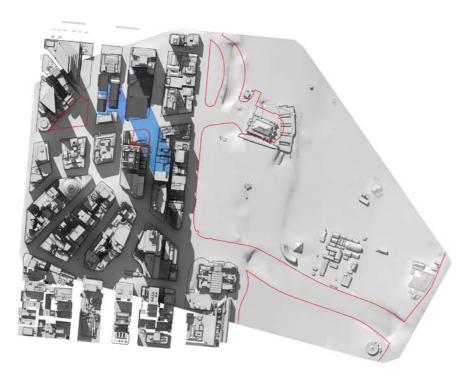


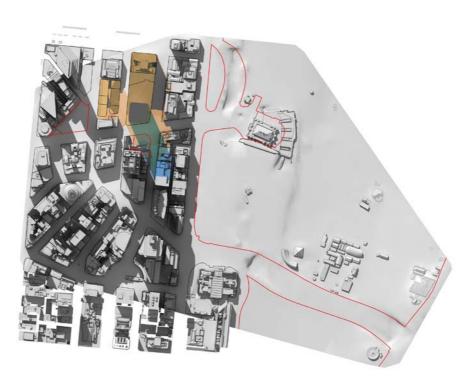


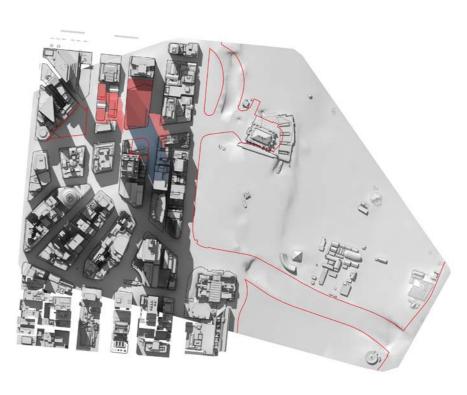
Existing situation LEP envelope Proposed envelope



## **LEP Control Date**







Existing situation LEP envelope Proposed envelope

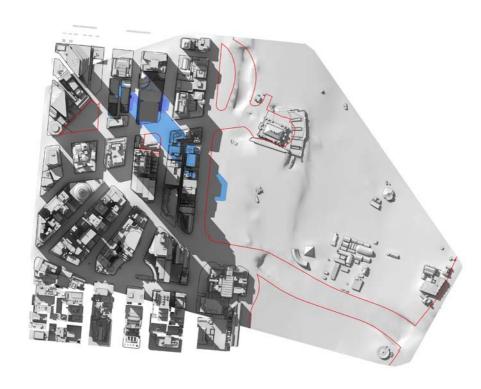
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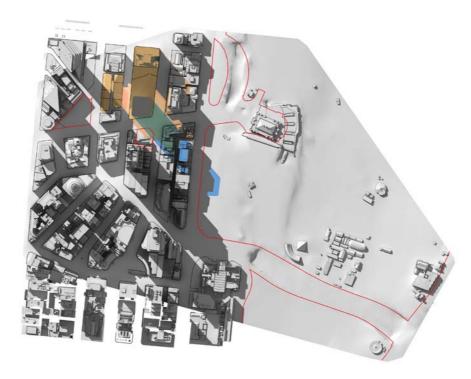


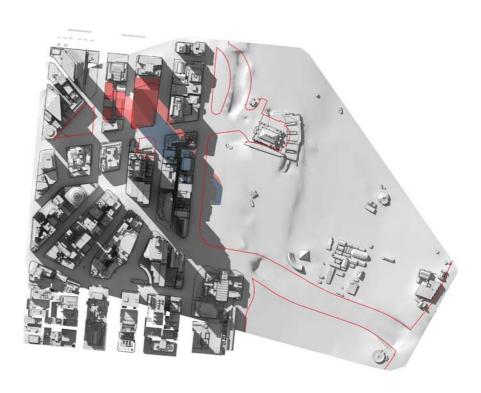


Time 1 pm **Date** 14 April

## **LEP Control Date**



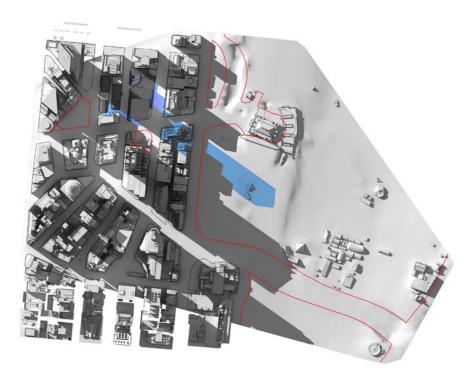


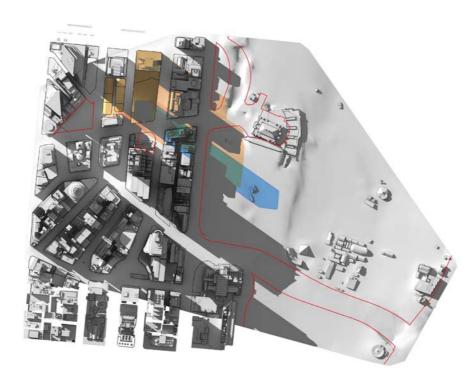


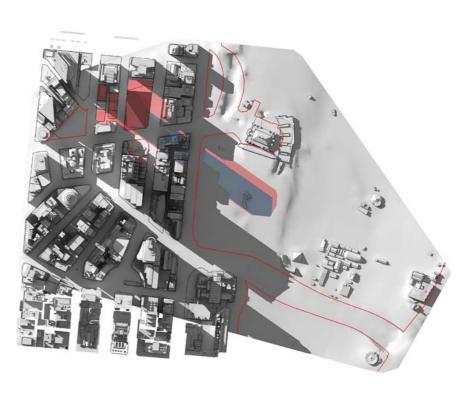
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## **LEP Control Date**







Existing situation LEP envelope Proposed envelope

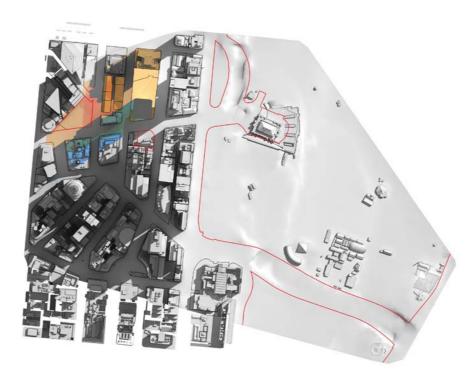




Spring Equinox 23 September

## Spring Equinox







Existing situation

LEP envelope

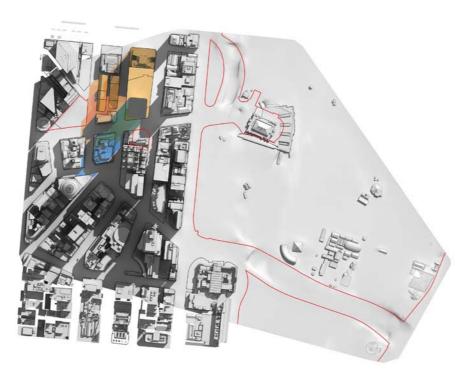
Proposed envelope





## Spring Equinox







Existing situation LEP envelope Proposed envelope



## Spring Equinox







Existing situation

LEP envelope

Proposed envelope

## Legend

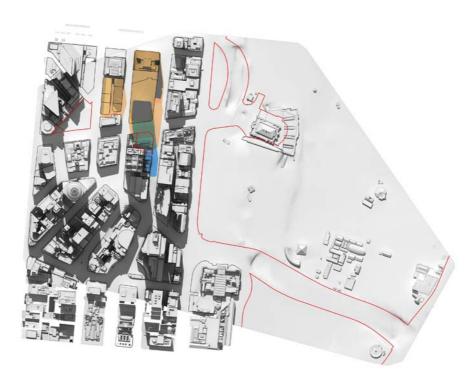




**Date** 23 September

## Spring Equinox



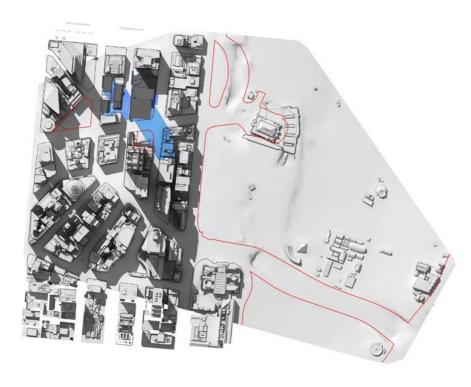


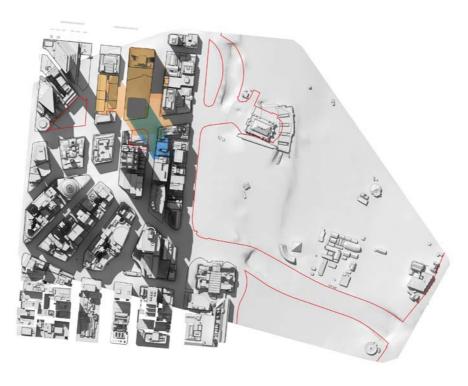


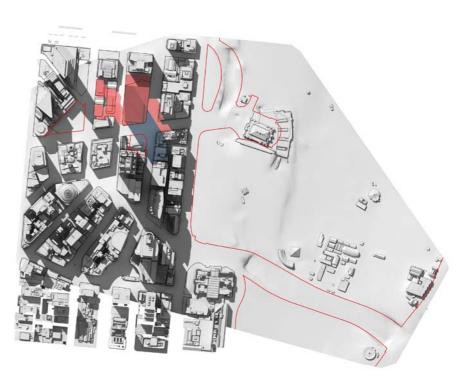
Existing situation LEP envelope Proposed envelope



## Spring Equinox







Existing situation LEP envelope Proposed envelope

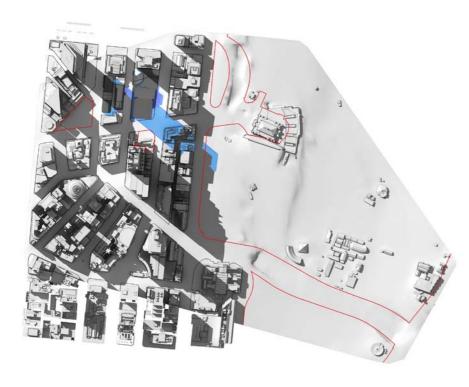
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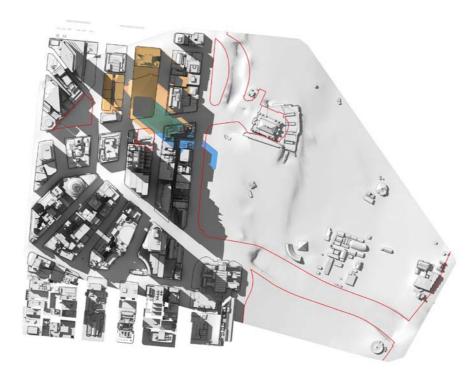


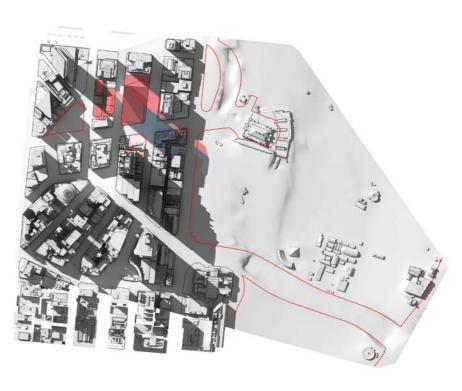
1 pm

**Date** 23 September

## Spring Equinox



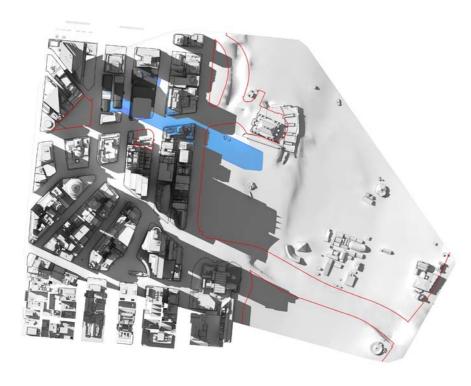


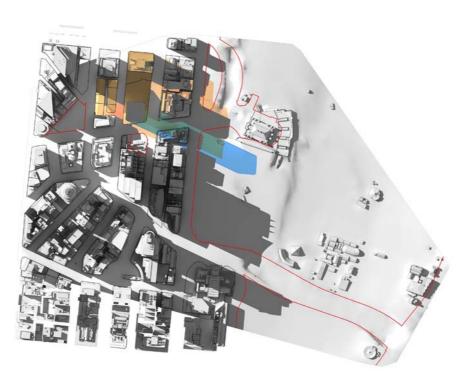


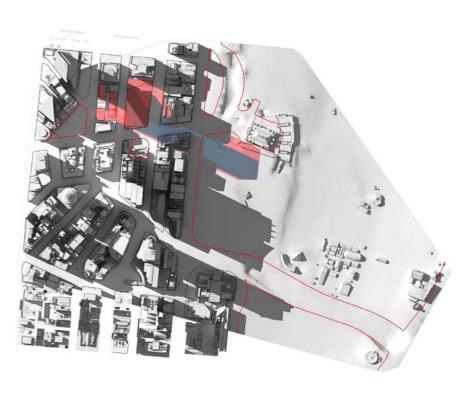
Existing situation LEP Envelope Proposed Envelope



## Spring Equinox







Existing situation LEP Envelope Proposed Envelope

## Legend



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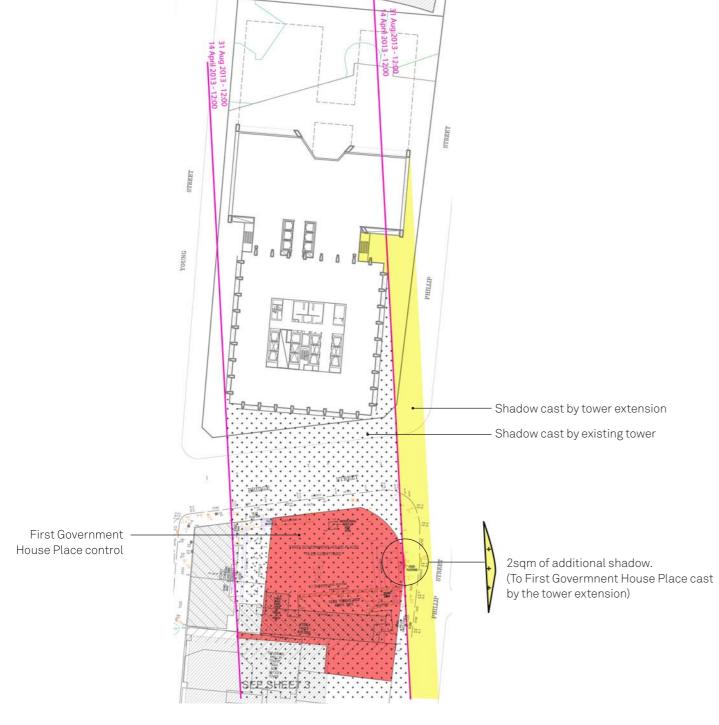
Time 3 pm **Date** 23 September



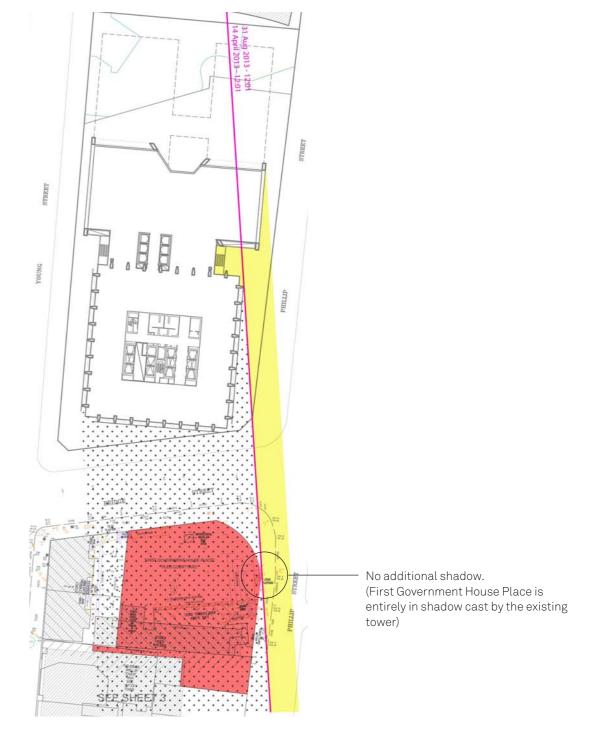
## First Government House Place Study

**0.1%** of the overall control area is overshadowed at 12pm (2sqm of 1,376sqm)

**0.8%** of the control time is overshadowed (1 minute of 2 hours)



12:00 PM | 14 April - 30 August



12:01 PM | 14 April - 30 August

## First Government House Place Study

**1.4%** of the overall control area is overshadowed at 12pm (20sqm of 1,376sqm)

**6.6%** of the control time is overshadowed (4 minutes of 2 hours)

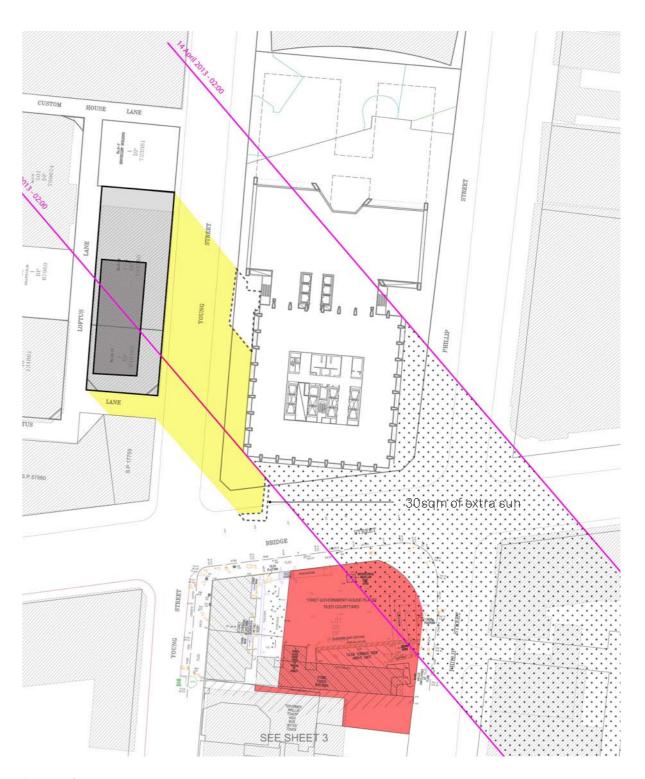




No additional shadow. (First Government House Place is entirely in shadow cast by the existing tower)

12:04 PM | 21 June

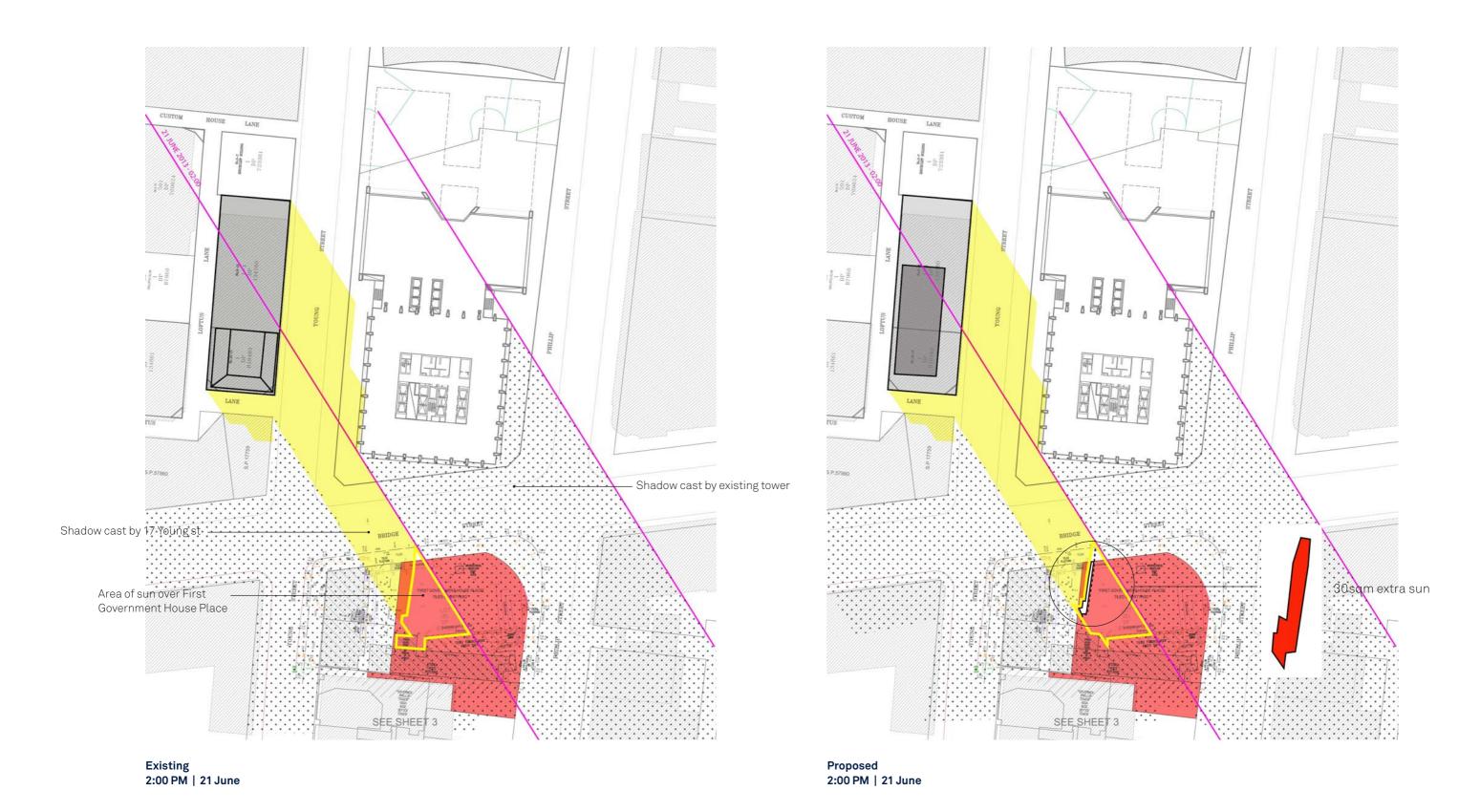




Proposed 2:00 PM | 14 April - 30 August

## First Government House Place Study

# **30m2** extra sun at 2pm (As a result of reduced massing to 17 Young Street building)





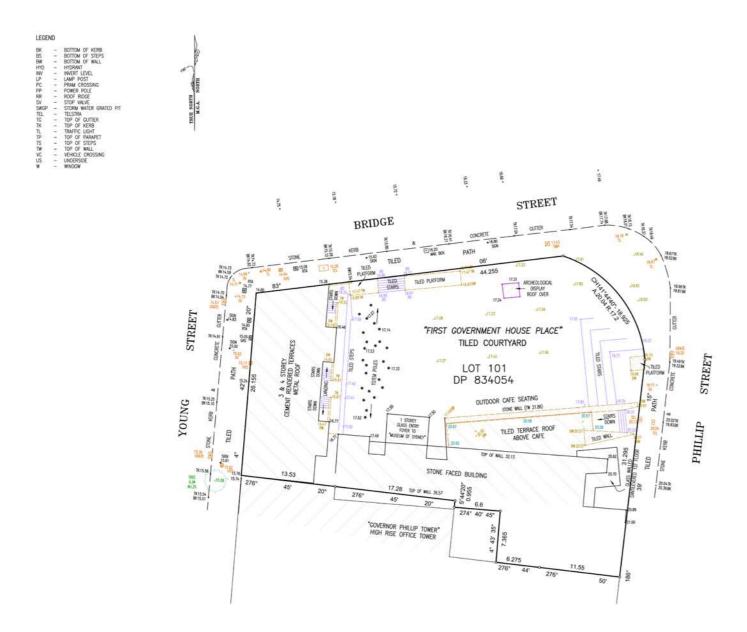




NOTES:								
1.	ORIGIN OF	LEVELS	PM	5000	R	8.775	(AHD.)	

7.	ADJOINING BUILDINGS AND DWELLINGS	HAVE BEEN PLOTTED FOR DIAGRA	MMATIC PURPOSES ONLY AND S	SPECIFIC DETAILS, IF CRITICAL	WILL REQUIRE FURTHER SURV
8.	THE SPREAD & HEIGHT OF EACH TRE	E IS INDICATIVE ONLY AND SPECIF	IC DETAILS, IF CRITICAL, WILL R	REQUIRE FURTHER SURVEY.	

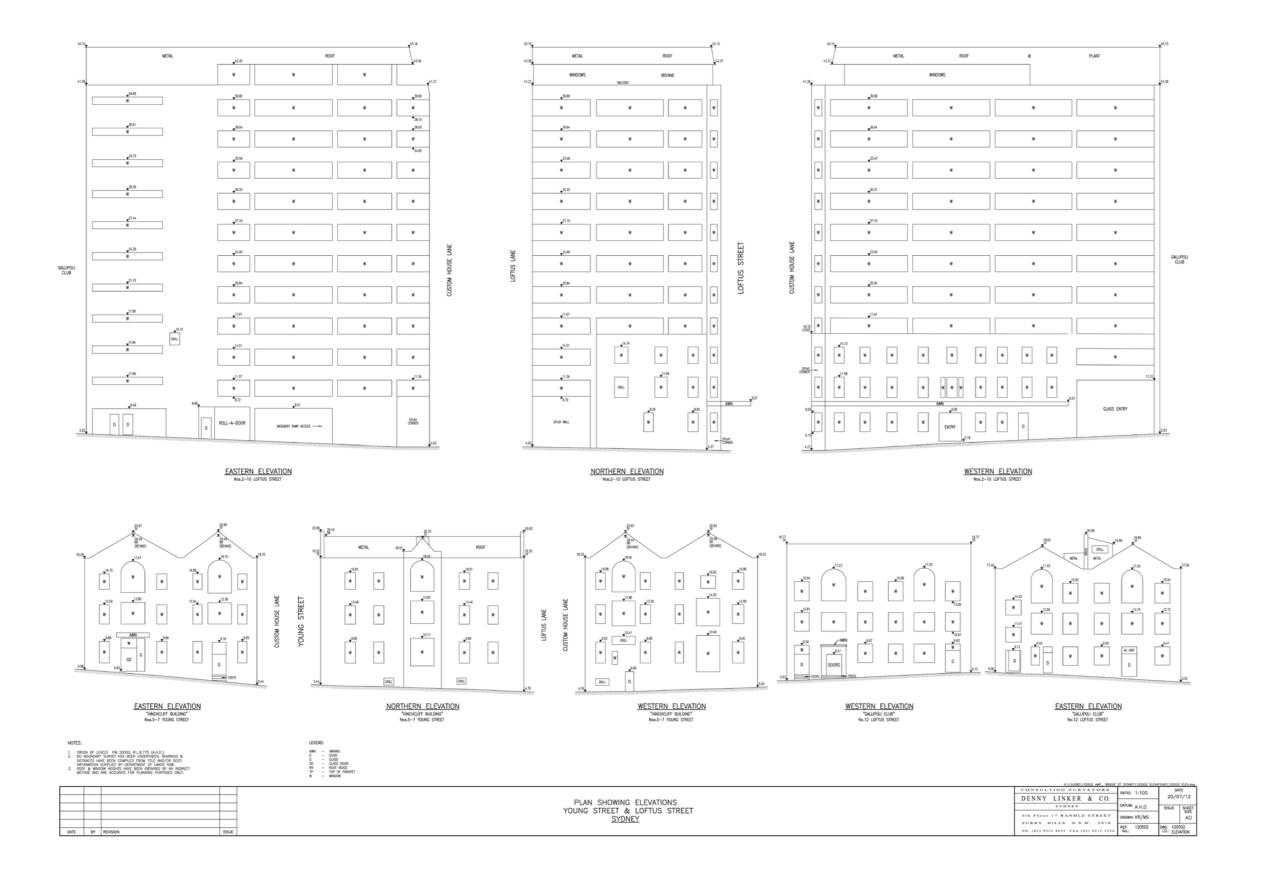
	-	Ÿ-		SHEET 2 OF	SHEETS X:\12J08S\120502 AMP_ BRIDGE ST S	DNEY\DETAIL & LEVELS\1	20502_DETAIL LEVELS.d
					CONSULTING SURVEYORS	RATIO: 1:200	DATE
				PLAN SHOWING DETAIL AND LEVELS AT	DENNY LINKER & CO.	11200	19.10.12
	1			"FIRST GOVERNMENT HOUSE PLACE" & "MACQUARIE PLACE PARK"	SYDNEY	DATUM: A.H.D.	ISSUE SHEE
				BRIDGE STREET	5th Floor 17 RANDLE STREET	DRAWN: KB/DW	A SIZ
12.11.12	KB/DW	SUBJECT BDY ADDED & PLAN SHIFTED TO MGA	A	SYDNEY	SURRY HILLS N.S.W. 2010	REF. 120502	DWG
DATE	BY	REVISION	ISSUE		PH. (02) 9212 4655 FAX (02) 9212 5254	No.:	I.D.:

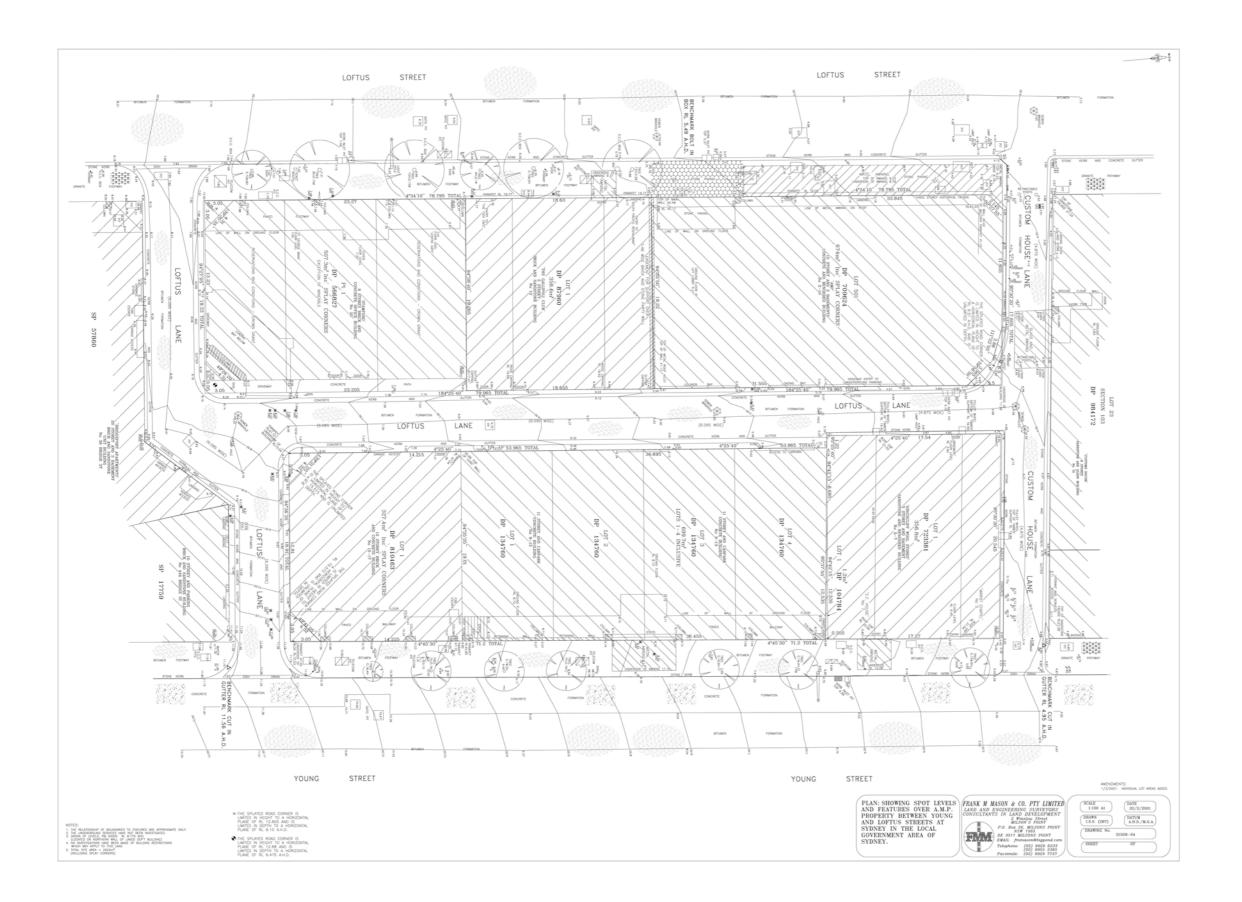


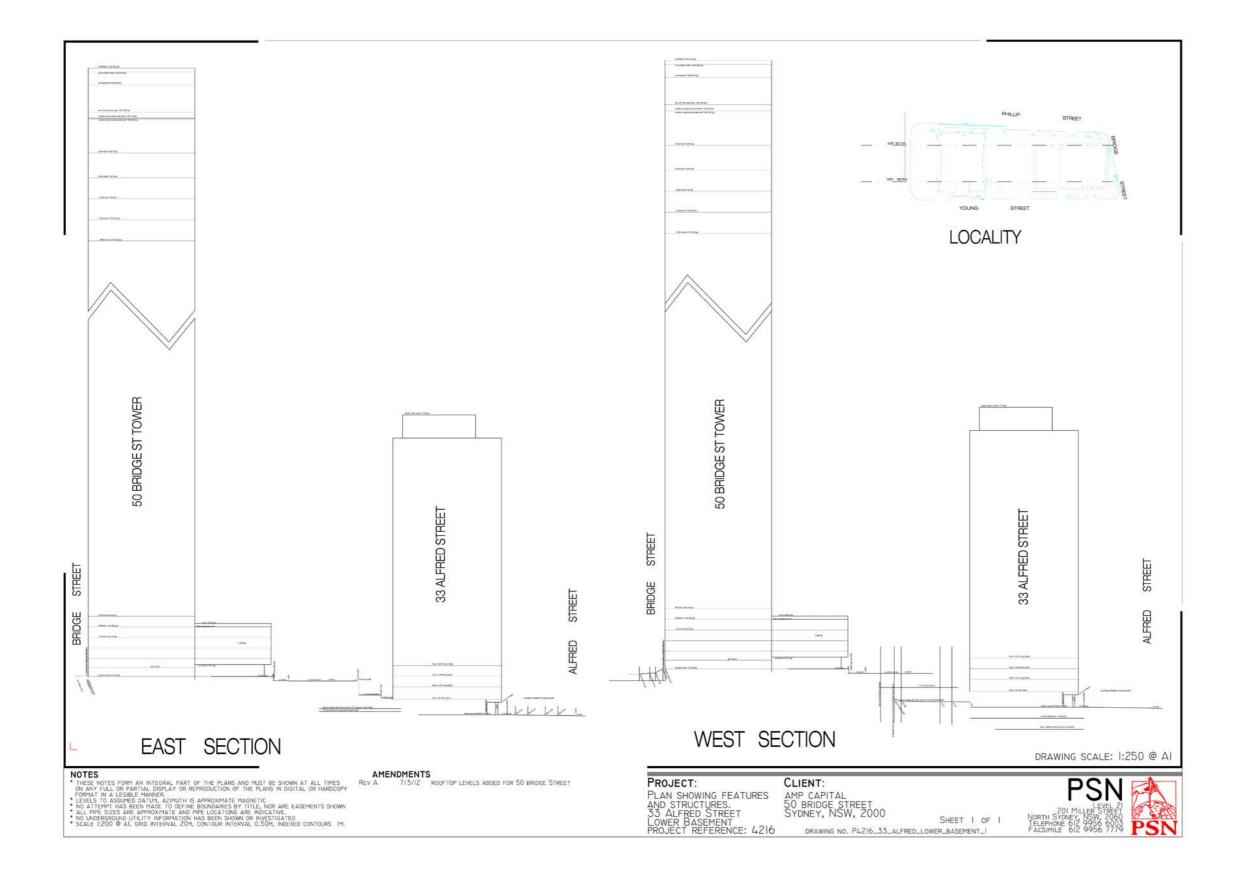
SHEET 3 OF 3 SHEE

				PLAN SHOWING DETAIL AND LEVELS AT
				"FIRST GOVERNMENT HOUSE PLACE" & "MACQUARIE PLACE PARK"
				BRIDGE STREET
2.11.12	KB/DW	SUBJECT BDY ADDED & PLAN SHIFTED TO MGA	A	SYDNEY
DATE	DV	BDASION	icene	

CONSULTING SURVEYORS	RATIO: 1:200	DATE		
DENNY LINKER & CO.	13110. 1.200	19.10.12		
SYDNEY	DATUM: A.H.D.	ISSUE	SHEET	
5th Floor 17 RANDLE STREET	DRAWN: KB/DW	Α	SIZE A1	
SURRY HILLS N.S.W. 2010 PH. (02) 9212 4655 FAX (02) 9212 5254	REF. 120502 No.:	DWG. I.D.;		









NOTES

\* THESE NOTES FORM AN INTEGRAL PART OF THE PLANS AND MUST BE SHOWN AT ALL TIMES ON ANY PULL OR PARTIAL DISPLAY OR REPRODUCTION OF THE PLANS IN DIGITAL OR HARDCOPY FORMAT IN A LEGIBLE MANNER.

\* LEVELS TO AHD (SOURCE PM 50000), AZIMUTH IS MGA - GRID IS MGA PLANE, (ORIGIN SCIMS).

\* BOUNDARY AND TITLE INFORMATION DERIVED FROM DP 1073575

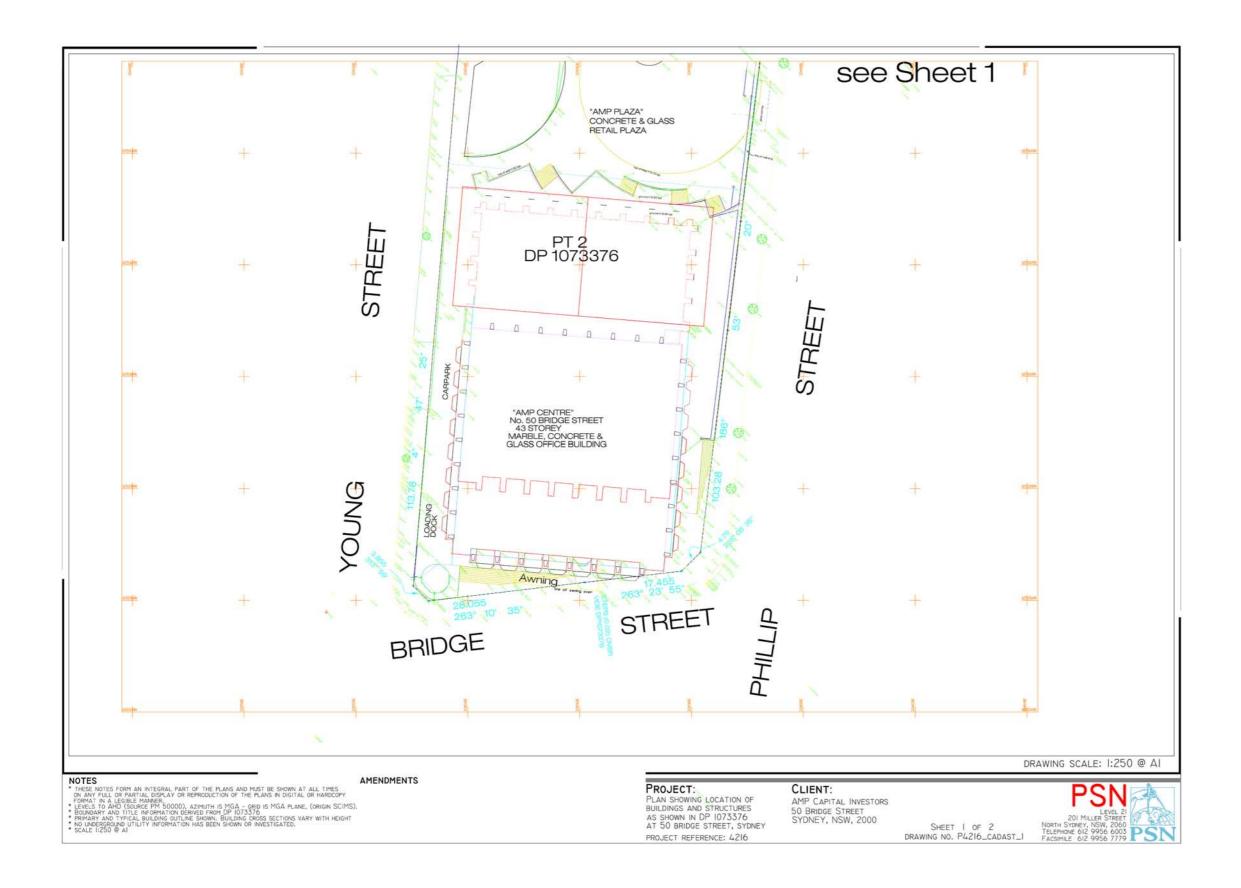
\* PRIMARY AND TYPICAL BUILDING OUTLINE SHOWN. BUILDING CROSS SECTIONS VARY WITH HEIGHT NO UNDERFROUND UTILITY INFORMATION HAS BEEN SHOWN OR INVESTIGATED.

\* SCALE 1:250 @ AI

CLIENT: AMP CAPITAL INVESTORS 50 BRIDGE STREET SYDNEY, NSW, 2000 PLAN SHOWING LOCATION OF BUILDINGS AND STRUCTURES AS SHOWN IN DP 1073376 AT 50 BRIDGE STREET, SYDNEY PROJECT REFERENCE: 4216



SHEET | OF 2 DRAWING NO. P4216\_CADAST\_I



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