DEXUS
PROPERTY GROUP

12 January 2016

The General Manager

Botany Bay City Council
141 Coward Street, Mascot, NSW 2020

DEXUS Projects Pty Limited
ABN: 81 134 991 932
Australia Square Tower
Level 25, 264 George Street
Sydney NSW 2000
PO Box R1822
Royal Exchange NSW 1225
Tel: 02 9017 1100
Fax: 02 9017 1101

Re Further Amendment to the Planning Proposal for 11 – 13 Lord Street, Botany NSW, 1225

Attention Catherine McMahon, Manager Strategic Planning

Cathy

As requested, we have updated the shadow diagrams and Isometric drawings. They have been incorporated into the updated Planning report, together with the associated drawings and attachments. The Amendment includes;

- Updated Planning report January 2016
- Addendum to Economic Impact Assessment – November 2015 (Urbis)
- Addendum to TRAFFIX Traffic Impact Assessment – 12 November 2015
- SK-003 – Ground Floor Plan (original Masterplan)
- C-ADD-007 Option 4 (Alternative Masterplan – Single Loop Road)
- C-ADD-008 Option 4 Site Sections
- C-ADD-011-Option 4 Isometric & Shadow Sections A, B, C
- SK-007-Shadow-Winter Solstice
- SK-008-Shadows-Summer Solstice
- SK-009-Shadows-Equinox

The Alternate Masterplan has been further amended to include a 9.5m setback and a setback to level 3 on buildings A3 & B3, to ensure that the shadows on the Winter Solstice are not increased from that approved by the current Commercial DA. The changes have resulted in the following reductions;

- Building height (above ground) from 28m (whole site) to a stepped profile (23.5m, 20m, 17m & 11m)
- FSR from 2.11 to 2
- GFA from 62,912smq to 54,885sqm, a reduction of 12.8%
- Apartment yield from 658 to 572(estimated)

Please contact me should you require any clarification or additional information. We look forward to presenting the Proposal at the next Council meeting on 9 February 2016.

Yours sincerely

James Mah-Chut
RGM Business Development
Tel: 02 9017 1451
Fax: 02 9017 1101
Mob: 0409 833 874
Email: james.mah-chut@dexus.com

AMENDMENT TO A PLANNING PROPOSAL

Submission to Botany Bay City Council

THE LAKES BUSINESS PARK
SOUTHERN PRECINCT, 11-13 LORD STREET, BOTANY

Prepared by:
Dexus
Integrated Site Design
Tony Caro Architects
Urbis
Traffix

January 2016

Contents

Executive Summary

This report, and the accompanying information and plans prepared by specialist consultants, is an amendment to a Planning Proposal submitted to Botany Bay City Council for the Lakes Business Park, Southern Precinct, 11-13 Lord Street, Botany in May 2015. The material it contains addresses issues raised by Councillors and officers of Botany Bay City Council, and the comments and suggestions made at two community forums on the planning proposal.

This report provides further justification for the proposed amendment to the Botany *Bay Local Environmental Plan 2013* by rezoning the Southern Precinct of the Lakes Business Park (the site) from B7 Business Park Zone to a B4 Mixed Use Zone. It is further proposed that the development standards that apply to the site should range from 23.5m to 11m above ground level for height (the original proposal was 28m above the ground level) with an overall Floor Space Limit (FSR) of 2.0:1 (the original proposal was 2.11:1). The yield in the Alternative Concept Master Plan, in terms of apartments and gross floor area, has been reduced from 658 to 572 apartments, and 62,912m^2 to 54,885m^2 respectively.

The matters raised in the community consultation process were further explored in alternative Concept Master Plans, and the Concept Plan is presented in this report. Both the original Concept Plan and the Alternative Concept Plan demonstrate that the redevelopment of the site can be satisfactorily implemented to achieve the intent of the planning proposal. The Planning Proposal does not seek approval for future development of the site that would exceed the height limits that have already been approved in the current development consent for the site.

The additional independent economic assessment, prepared by Urbis, further demonstrates that the planning proposal should be supported. The assessment of the competitive position of the site relative to the metropolitan and regional industrial land supply; consideration of the requirements of Port Botany and Sydney Airport; and an examination of the industrial land supply and demand analysis in the Botany LGA supports this conclusion. The potential impact on employment and potential industrial land supply is not regarded as significant. The additional housing supply will make a significant contribution to meeting the local demand for housing.

The traffic impacts of the planning proposal will only have moderate impacts on the key intersection of Botany Road/Lord Street during the AM and PM peak periods, which will operate with acceptable delays and degree of saturation.

1 Introduction

This addendum provides additional information to a planning proposal to amend the *Botany Bay Local Environmental Plan 2013* (BBLEP). The planning proposal was prepared in accordance with Section 55 of the *Environmental Planning and Assessment Act 1979* and the Department of Planning guidelines for the preparation of planning proposals.

1.1 The Site

In May 2014 a planning proposal was submitted by Dexus to Botany Bay City Council in relation to land at 11-13 Lord Street, Botany. Dexus is the owner of the Lakes Business Park (and other lands) at Lord Street Botany. This business park is divided into two precincts: a northern precinct, located on the northern side of Lord Street; and a southern precinct, comprising a single parcel of land, on the southern side of Lord Street as shown in Figure 1.

Figure 1: The Lakes Business Park – Northern and Southern Precincts.

The address of the property is 11-13 Lord Street, Botany and the land in the Southern Precinct, which is the subject of the planning proposal, is described as Lot 2 DP 717692 with an area of 29,772m^2.

1.2 Context

The Southern Precinct is occupied by two buildings and associated entrances to Lord Street, with car parking and landscaped areas. The two buildings provide:

- The building parallel to Lord Street contains 2 storeys of office space with a single level of warehousing to the rear; and

- The building at right angles to Lord Street contains 2 and 3 storey office space with a single level warehouse to the rear.

The gross floor area of the two buildings combined is approximately 14,200m^2 and this represents a FSR of just under 0.5:1, which is a significant underutilisation of the site and is exacerbated by a high vacancy rate (>25%). A large hardstand area for parking is located at the rear of the buildings.

The Precinct adjoins the RMS facility to the west, Booralee Park and other open space to the east, and the northern component of the Lords Street Business Park, which is on the opposite side of Lord Street. Medium density residential development is located on part of the southern boundary with frontage to Daphne Street. The site is midway between the Botany and Mascot retail centres – both located on Botany Road to the south and north respectively. The nearest industrial area is the Hale Street Precinct to the south west of the site.

An approved, lawfully commenced, development consent for the site allows varying building heights across the site which already exceed the current planning controls for the site.

1.3 The Planning Proposal

The intended outcome of the planning proposal submitted to Botany Bay City Council is to facilitate the potential use of the Southern Precinct of the Lakes Business Park for a mixed used development. The proposal includes an increase in the existing development standards relating to the height of buildings and the floor space ratio that apply to the site

Table 1 compares the existing controls and proposed changes to BBLEP

The future development of the site under the proposed amendment to BBLEP is likely to include significant residential development. However, the redevelopment of the site will also provide employment opportunities through the provision of retail and commercial activities to support the new development and the surrounding businesses and residential areas. Further, it will make more efficient use of the existing infrastructure and support facilities such as the swimming pool, the parklands and the sporting fields which are all in close proximity.

1.4 Accompanying Material

A substantial environmental investigation accompanied the planning proposal and involved a review and assessment of the site context, the planning context, and all relevant existing site conditions. The following assessment studies were undertaken:

1. An Economic Assessment by Urbis
2. Traffic Assessment by Traffix
3. Flood Assessment by WMA Water
4. Review of Civil Engineering and Infrastructure Services by Costin Roe
5. Environmental Report by Prensa
6. Noise Impact Assessment by Acoustic Logic

The above environmental studies supported the proposed rezoning of the site to the B4 Mixed Use Zone.

The planning proposal was accompanied by an Architectural Concept Master Plan, which described a potential redevelopment of the site, was prepared by Tonty Caro Architects and is shown in Drawing SK_003 and Figure 2.

The original Concept Master Plan proposed three new urban blocks articulated by new public streets within the existing site, all being connected to Lord Street. A perimeter street created an active frontage to Booralee Park, and vehicular and service access across the proposed development at the rear of the property.

The proposed building separation complies with SEPP 65/RFDC for built form. This proposed building separation created a sequence of 18 metre wide streets and communal courtyards across the three blocks. The building forms, car-parking, apartment sizes and mix satisfy Botany Bay Council's DCP and the potential to meet the amenity requirements of SEPP 65 and the RFDC.

The Concept Plan as submitted had the following attributes:

- The buildings fit within an RL 33m height plane consistent with current development consent for the site;
- Finished Floor Level of 5.9m AHD for the ground floor levels;
- An FSR of 2.11 : 1;
- Approximately 658 apartments in a mix of bedroom categories;
- Total commercial gross floor area of 1,174m^2;
- Approximately 1,278 car parking spaces.

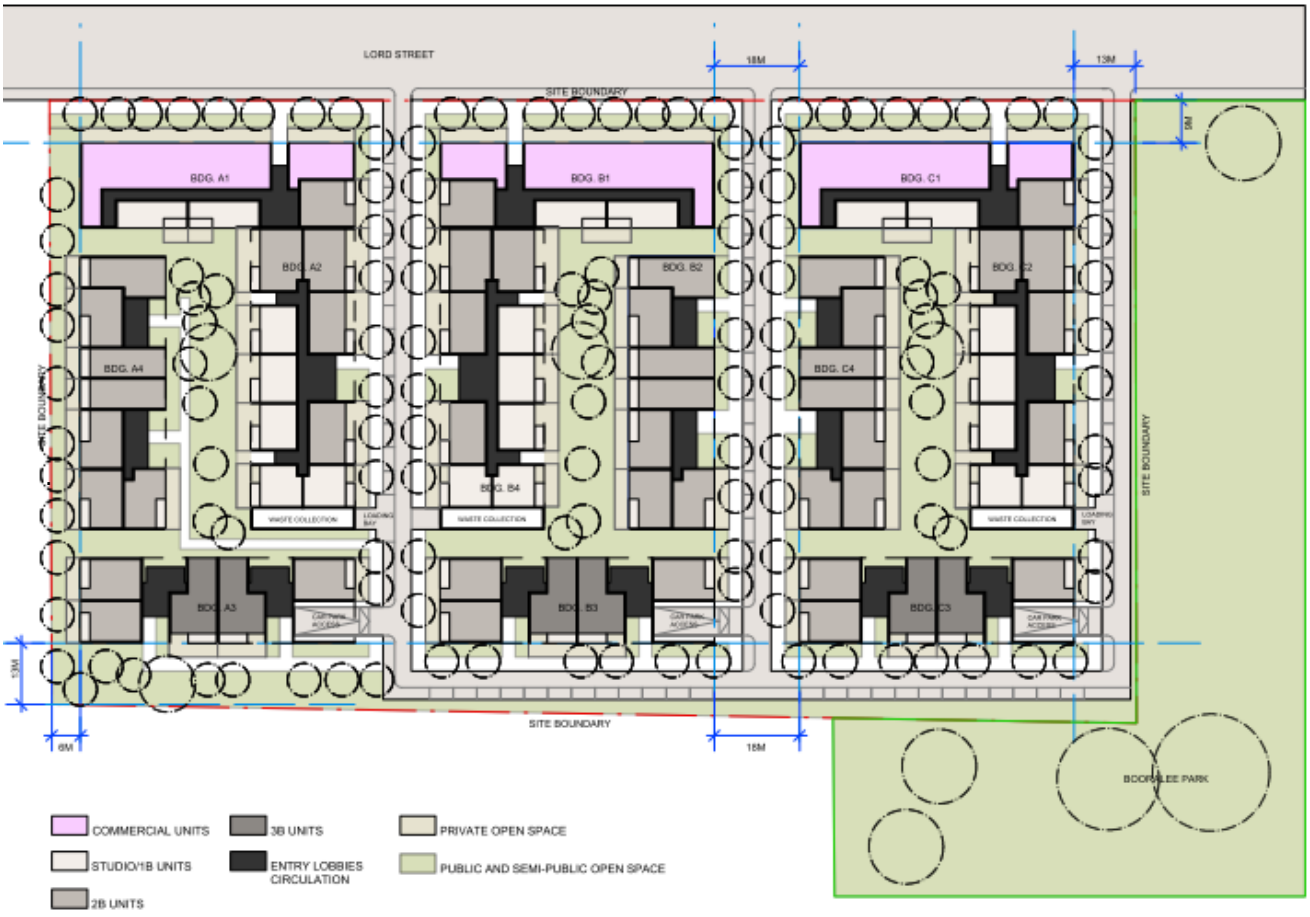


Figure 2 Concept Master Plan from the Planning Proposal.

1.5 Strategic Merit of the Planning Proposal

The planning proposal, as submitted, has strategic merit in terms of the following considerations as discussed in Section 4 of the planning proposal:

- The proposal is consistent with relevant state, regional and subregional strategies and policies prepared by the State government and the strategies for development and housing prepared by Botany Bay City Council;

- The proposal is generally consistent with S117 Directions that apply to the site – the change from a B7 zone to a B4 zone does not of itself lead to a loss land zoned for industrial or office premises and hence employment opportunities; and

- The proposal is in close proximity to existing public transport and infrastructure and will improve both housing choice and proximity to work in the local community.

1.6 Consultation

Following the submission of the planning proposal a process of public consultation was undertaken and its format followed Botany Bay City Council's requirements for public consultation. The planning proposal and accompanying environmental studies were placed on Council's web site, and a public community forum was held for residents of the Southern Precinct at Lord Street on the 8th September 2015. The forum was facilitated by KJA an independent facilitator.

The major concerns raised in the community forum included impacts of overshadowing, loss of privacy, noise impacts, and the potential impact of the proposed southern perimeter street. Accordingly, after further consideration to the issues raised in the second public community forum was held on the 5th November 2015. An alternative concept Master Plan was presented which substantially addressed the local community's concern. Council's Development Committee did not object to the rezoning to the B4 Mixed Use Zone and was satisfied on issues such as potential employment impacts. However, the Development Committee of Council subsequently requested that further consideration be given to replacing a single height for the site with a modulated approach to height limits with further reductions in the height of the each of the buildings in the Concept Master Plan.

Council also asked that consideration also be given to the inclusion of townhouses within the Concept Master Plan. This suggestion has been examined but not included in the amended Planning Proposal for the following reasons:

- This dwelling type is inconsistent with the forms of residential accommodation generally associated with the proposed B4 Mixed Use Zone;

- Does not represent an optimum use of the site for future development;

- Would compromise the urban design principles on which the Concept Master Plan is based; and

- Would result in town houses being located on the Southern Boundary resulting in a significant impact on privacy, or would require a new access road on the southern boundary which would negatively impact on noise an amenity. It should be noted that the concept of an access road on the southern boundary was rejected by residents at the initial consultation meeting.

2 Additional Information

In response to the issues raised in discussions with Council officers and through the community consultative forum the Concept Master Plan has been reviewed and an Alternative Concept Master Plan has been prepared as shown in Drawings C-ADD_007 & 008 and Figure 3.

Additional work has also been undertaken of the economic significance of the proposal and potential traffic impacts.

2.1 Alternative Concept Master Plan

The Alternative Concept Master Plan retains the general layout of the three urban blocks separated by public streets as originally proposed. However, the following changes have been introduced:

- The southern and eastern perimeter roads have been removed and replaced by a single loop one way road and replaced by a continuous landscape zone;
- The height of the buildings on the southern perimeter of the site have been reduced to ensure that the impact of overshadowing at the Winter Solstice is significantly reduced consistent with impacts of the built form currently approved; and
- The amount of commercial floor space has been increased.

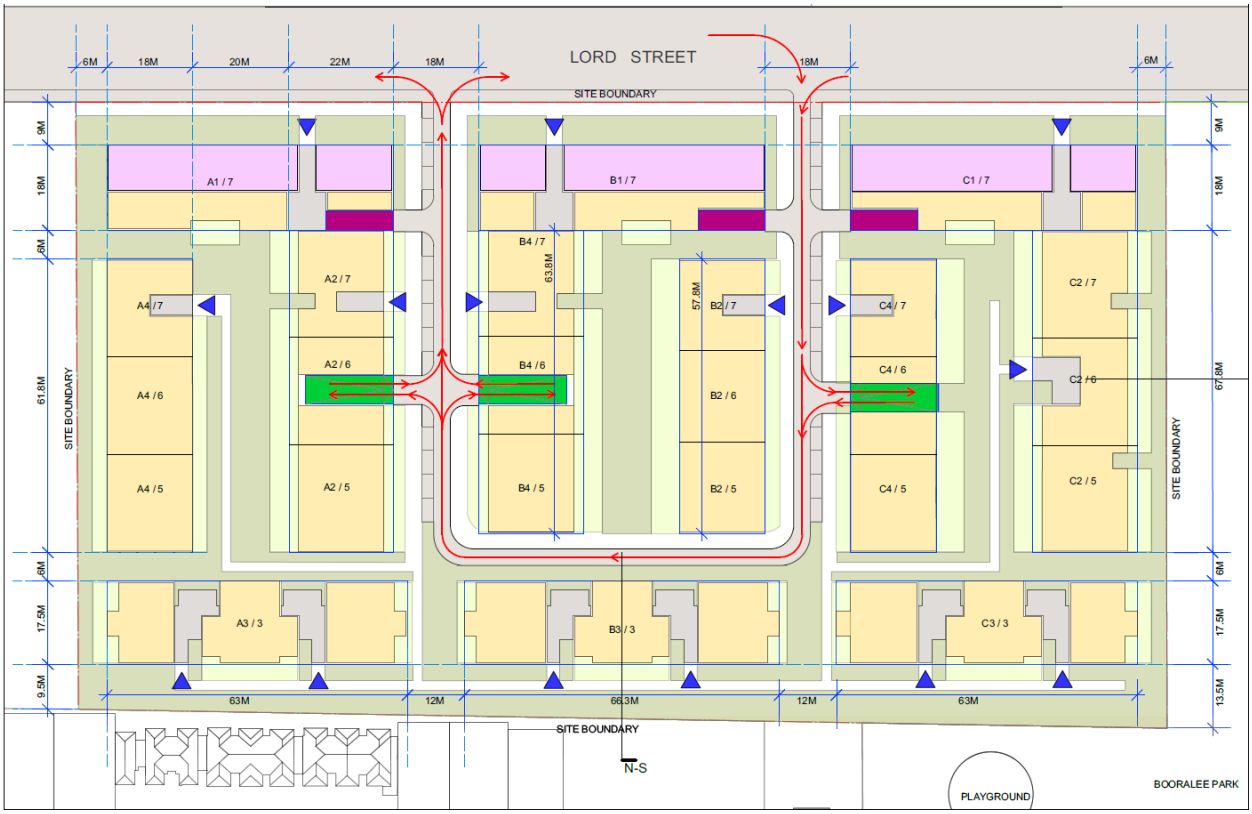


Figure 3 Alternative Concept Master Plan

In summary, the Alternative Concept Master Plan, illustrated in Drawings C-ADD-007 & 008, now provides:

- The buildings remain within the maximum RL 33m height plane and generally consistent with the building heights in the current development consent for the site;
- Finished Floor Level of 5.9m AHD for the ground floor levels have been retained;

- An FSR of 1.84:1;
- 572 apartments in a mix of bedroom categories in accordance with Council's BBDCP;
- Total residential gross floor area of 53,664m^2;
- Total commercial gross floor area of 1,222m^2;
- A Gross Floor Area of 54,885m^2
- A reduction in the number of car parking spaces to 1,119 spaces.

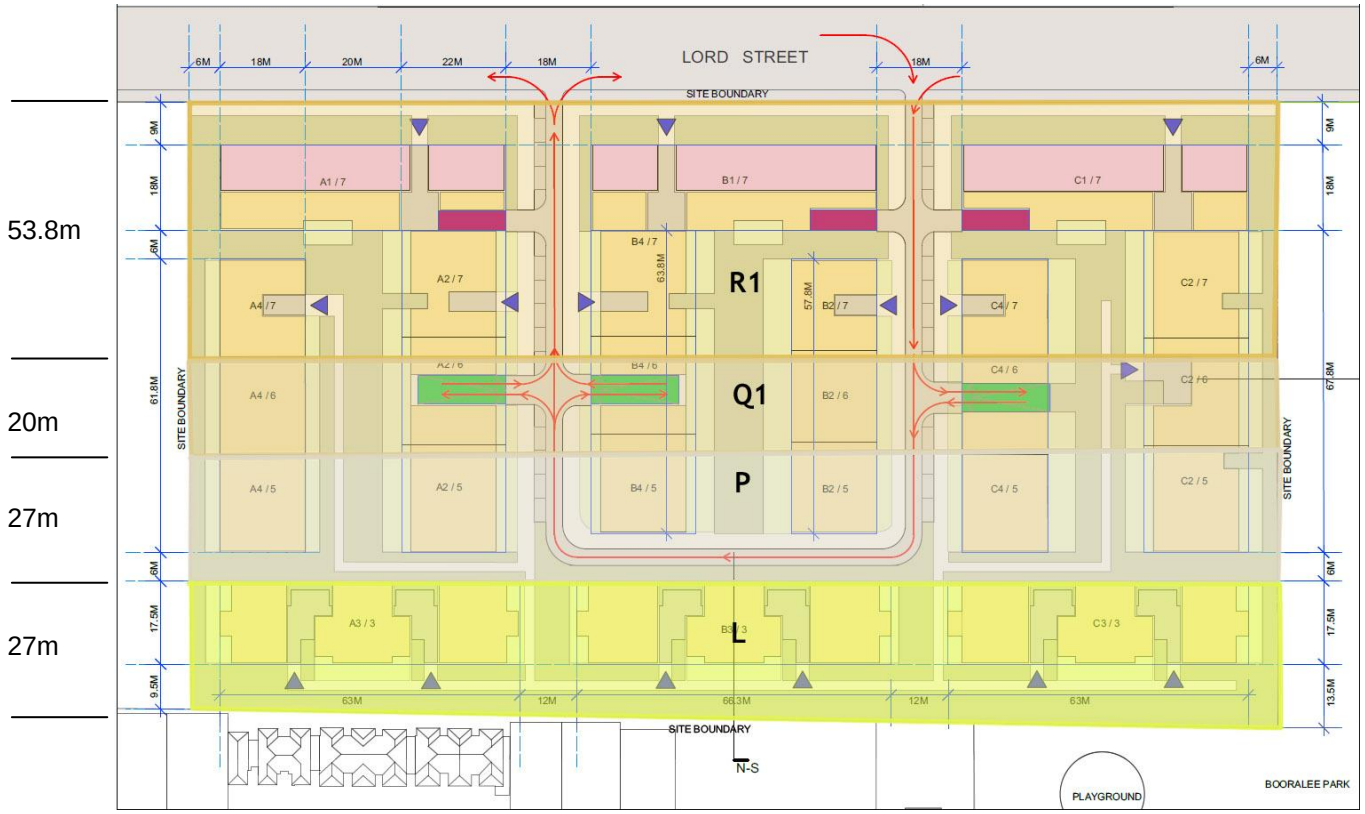
Accordingly, the proposal as summarised in Table 1 is unchanged in terms of the proposed rezoning of the site from the current B7 Business Park zone to the B4 Mixed Use zone; and with reduced development standards for Height and FSR.

Table 1 Summary of Proposed Changes to the Planning Controls

	Current BBLEP	**Initial Proposal**	**Amended Proposal**
Zoning	B7 Business Park	B4 Mixed Use	B4 Mixed Use
Uses permissible with Consent	Child care centres; Dwelling houses; Food and drink premises; Home industries; Light industries; Neighbourhood shops; Office premises; Passenger transport facilities; Respite day care centres; Roads; Vehicle sales or hire premises; Warehouse or distribution centres; Any other development not specified as permitted without consent or prohibited	Boarding houses; Child care centres; Commercial premises; Community facilities; Dwelling houses; Educational establishments; Entertainment facilities; Function centres; Hotel or motel accommodation; Information and education facilities; Light industries; Medical centres; Passenger transport facilities; Recreation facilities (indoor); Registered clubs; Residential flat buildings; Respite day care centres; Restricted premises; Roads; Seniors housing; Shop top housing; Any other development not specified as permitted without consent or prohibited.	Boarding houses; Child care centres; Commercial premises; Community facilities; Dwelling houses; Educational establishments; Entertainment facilities; Function centres; Hotel or motel accommodation; Information and education facilities; Light industries; Medical centres; Passenger transport facilities; Recreation facilities (indoor); Registered clubs; Residential flat buildings; Respite day care centres; Restricted premises; Roads; Seniors housing; Shop top housing; Any other development not specified as permitted without consent or prohibited.
Height of Buildings	22m above ground level. (R)	28m above ground level	Modulated Heights Limits across the site as shown in Figure 4 • 23.5m above ground level (R1) • 20m above ground level (Q1) • 17m above ground level (P) • 11m above ground level (L)
Floor Space Ratio	1.0:1 (N)	2.1 :1	2.0:1 (T)

The current approved development consent for the site gives building heights that were equivalent to 28m above the ground level. This was the height proposed in the Planning Proposal as submitted. The Alternative Concept Master Plan shown in Drawing C ADD 007 allows a maximum building height of 23.5m above the ground level which is significantly below what was originally proposed in the

Planning Proposal and in the approved DA. Consequently, there has also been a significant reduction in the indicative number of apartments from 658 to 572, and a reduction in the Gross Floor Area from 62,912m^2 to 54,885m^2. In consequence the development standard for FSR has been reduced from 2.11:1 to 2.0:1 and the height limits modulated. This is not an architectural design submitted for development consent; however, it is more than sufficient to demonstrate that a satisfactory urban design is possible within the proposed development standards, Council's DCP for residential development, and the amenity requirements of SEPP 65 and the RFDC.



R1 **23.5m above ground level**

Q1 **20m above ground level**

P **17m above ground level**

L **11m above ground level**

Figure 4 **Proposed Development Standard for Heights across the Site. (Height Zones shown in metres)**

2.2 Economic Assessment

The economic implications of the initial revision of the Concept Master Plan were independently assessed by Urbis, which built on the original economic assessment included in the original planning proposal. A copy of the additional economic assessment report from Urbis is contained in Attachment A.

The original report found that the proposal can make a positive contribution to employment growth and housing choice in the Botany LGA and the local area. The salient points of the further economic assessment, which applies equally to the amended planning proposal, are as follows:

- The loss of existing employment opportunities resulting from the proposed amendment to BBLEP will be minimal;

- In the broader Metropolitan Sydney context the Southern Precinct of the Lakes Business Park is not strategic industrial land; nor is it critically important to port and airport operations. Other employment lands in the Botany local government area have a stronger competitive position.

- The demand for warehousing at Lakes Business Park South is low as evidenced by the current high 25% vacancy rate. Current uses consist mainly of small ancillary warehousing attached to office uses such as show rooms, spare parts and minor assembly rather than manufacturing or distribution.

- The rezoning of the subject site will not have a significant impact on the supply of warehouses in the Botany Bay LGA as the site accounts for a very low 0.6% proportion of industrial land supply and 0.1% of warehousing jobs in the Botany Bay LGA. Furthermore, there is more than 30 years of supply of undeveloped industrial land in the Botany Bay LGA - sufficient to cater for future employment growth even without the subject site.

- The proposed development will increase the supply of housing product where demand for housing is high.

Accordingly, the Urbis report recommends that the proposed rezoning of the Southern part of the Lakes Business Park from the B7 Business Park to the B4 Mixed Use Zone should be supported.

2.3 Traffic Assessment

Similarly, the traffic impacts of the planning proposal and the alternative Concept Master Plan have been undertaken by Traffix. A copy of the addendum to the original Traffix's report submitted with the planning proposal is contained in Attachment B.

The study confirms that in the worst case of full development of the Northern and Southern Precincts of Lord Street there will only be moderate impacts on the key intersection of Botany Road/Lord Street during the AM and PM peak period. This intersection will operate with acceptable delays and degree of saturation. As the Alternative Concept Master Plan has fewer apartments, parking spaces, and overall gross floor area, the traffic generated and potential impacts of future traffic movements will be less than that assessed.

3 Conclusion

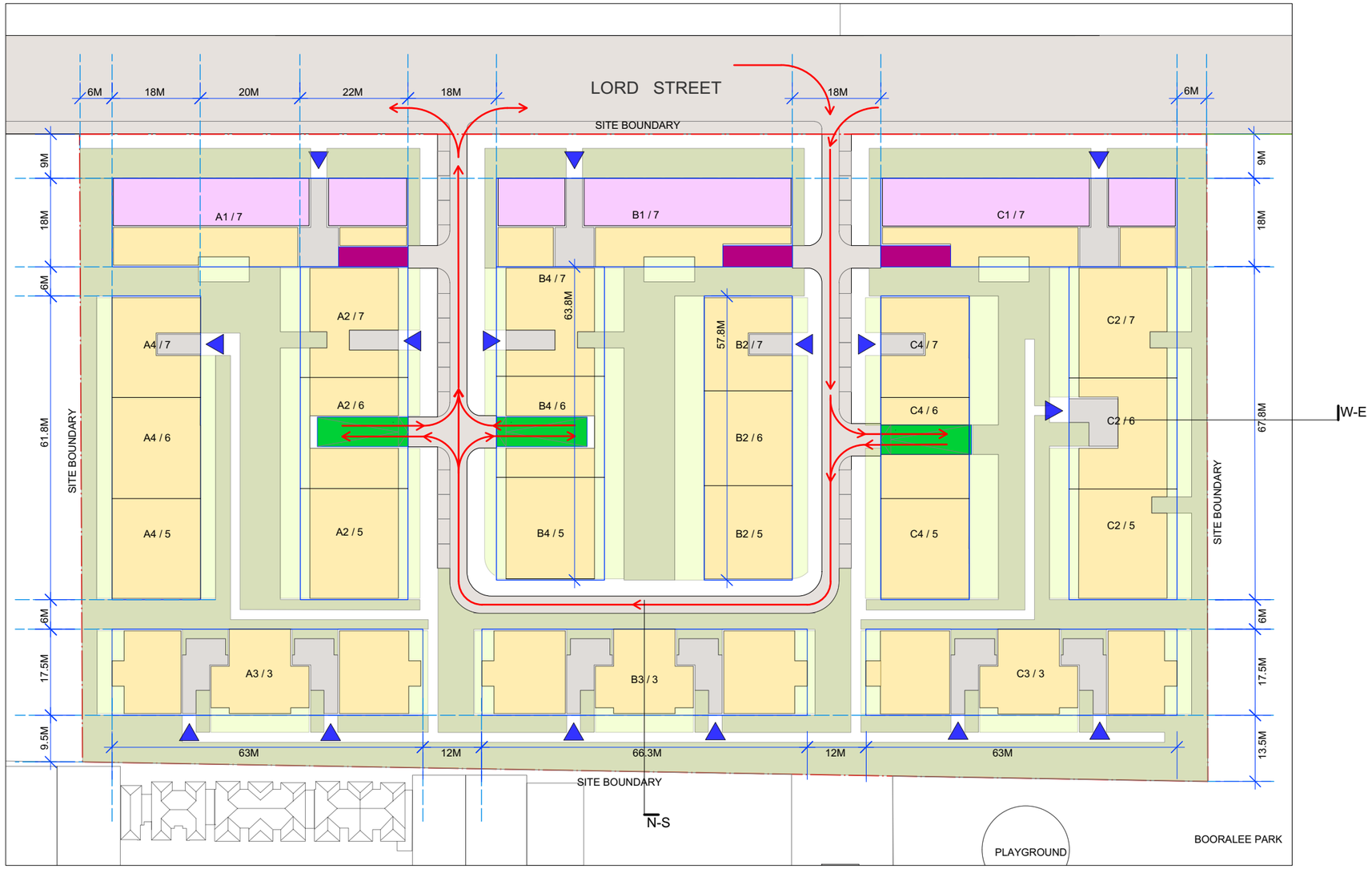
The additional information presented with this report confirms the justification for the adoption of the original Planning Proposal for the rezoning of the Southern Precinct of the Lord Street Business Park to a B4 Mixed Use Zone, with increases in the development standards for height and FSR.

An alternative Concept Master Plan is presented to demonstrate that the site can be developed to meet local community concerns in relation to amenity issues. The number of storeys proposed has been reduced leading to a reduction in the number of residential apartments from 658 to 572. The gross floor area has been reduced from 62,912m^2 to 54,885m^2 – a reduction of over 12%.

In terms of building forms, car-parking, apartment sizes and mix both the original Concept Master Plan and the Alternative Concept Master Plan satisfy Botany Bay Council's DCP and the amenity requirements of SEPP 65 and the RFDC.

The economic justification for the proposal has clearly been demonstrated by the additional independent economic assessment prepared by Urbis. The assessment of the competitive position of the site relative to the metropolitan and regional land supply; the relationship to the port and airport; and an examination of the industrial land supply and demand in the Botany area, supports the proposed rezoning. Overall, the potential impact on employment and potential industrial land supply is not regarded as significant. The additional housing supply will make a significant contribution to meeting the local demand for housing. In terms of traffic impacts of the planning proposal the impacts will be moderate impacts and the local road network will continue to operate in an acceptable manner.

The overall benefits of the proposal are positive and will allow a mix of commercial and residential development of the site consistent with the State government's and Botany Bay City Council's strategic goals. Accordingly, the planning proposal should be fully supported.



PLAN

A1 / 4 = LETTER+FIGURE INDICATE BUILDING NAME. SUBSEQUENT FIGURES INDICATE BUILDING LEVELS

BUILDING HEIGHTS

BUILDINGS	A1	A2	A2	A2	A3	A4	A4	A4	B1	B2	B2	B2	B3	B4	B4	B4	C1	C2	C2	C2	C3	C4	C4	C4
LEVELS	7	7	6	5	2.5	7	6	5	7	7	6	5	2.5	7	6	5	7	7	6	5	3	7	6	5

GFA SUMMARY

TOTAL GFA	54'885	FSR	1.84:1
RESIDENTIAL GFA	53'664	TOTAL APARTMENTS	572
COMMERCIAL GFA	1'222	TOTAL CAR SPACES	1'119

RESIDENTIAL
COMMERCIAL
ENTRY LOBBIES
ACCESS TO CARPARK
LANDSCAPED AREAS
PRIVATE COURTYARDS
PUBLIC PATHS
WASTE COLLECTION
PEDESTRIAN ACCESS
VEHICULAR CIRCULATION

TONY CARO ARCHITECTURE PTY LTD
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LAKES BUSINESS PARK SOUTH PRECINCT

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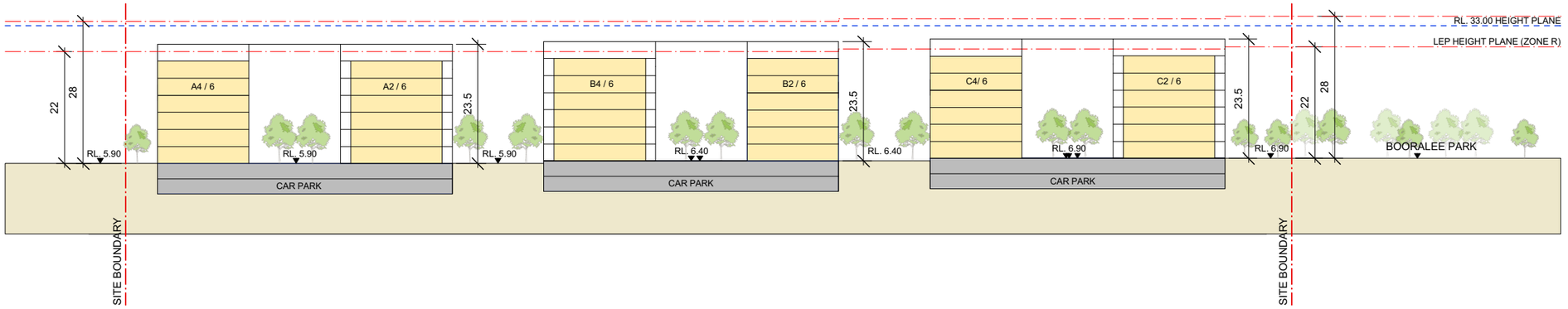
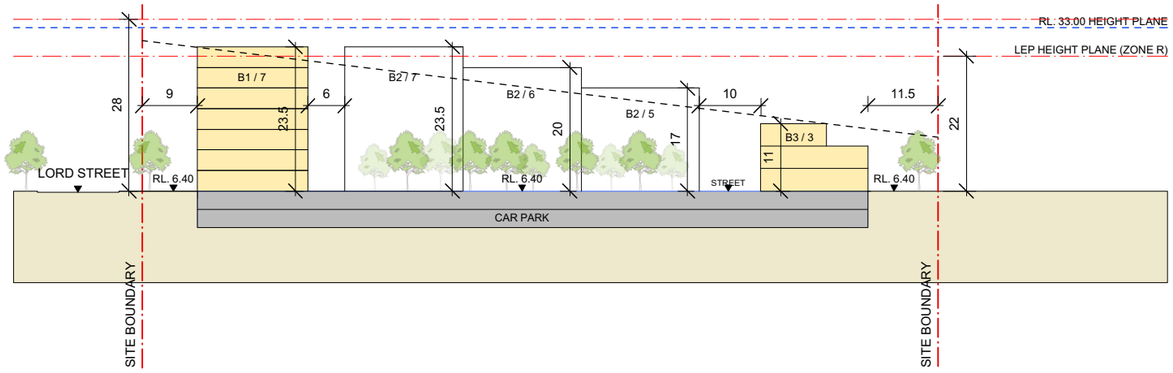
OPTION 4

DWG NO. **C_ADD_007**
PROJECT No. **1503**
PLOT DATE **28/12/15**
SCALE **1:1000@A3**



SECTION WEST-EAST



SECTION NORTH-SOUTH

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LEVEL 1, 2 GLEN ST MILSONS POINT
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T 99649100 F 99649133
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OPTION 4_SITE SECTIONS

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PROJECT No.	**1503**
PLOT DATE	**28/12/15**
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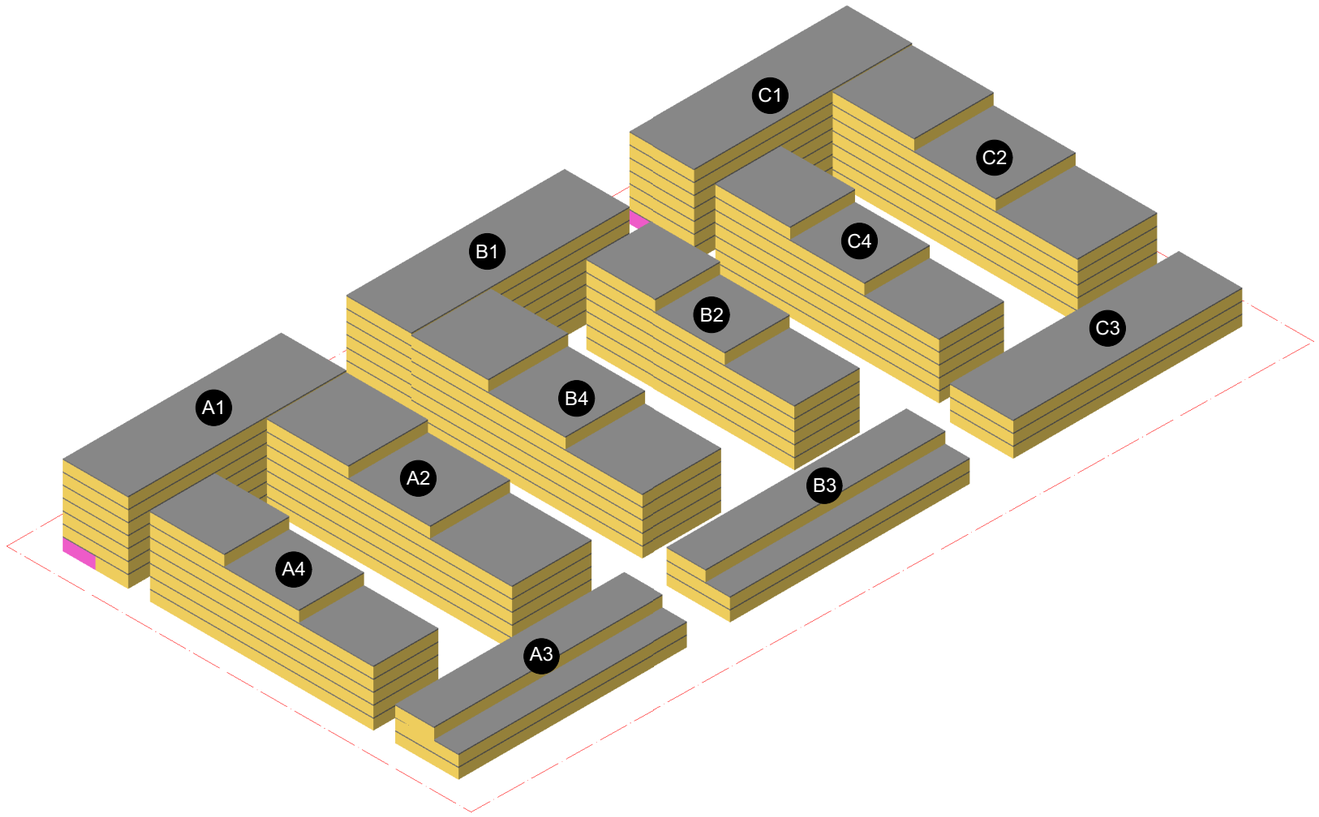
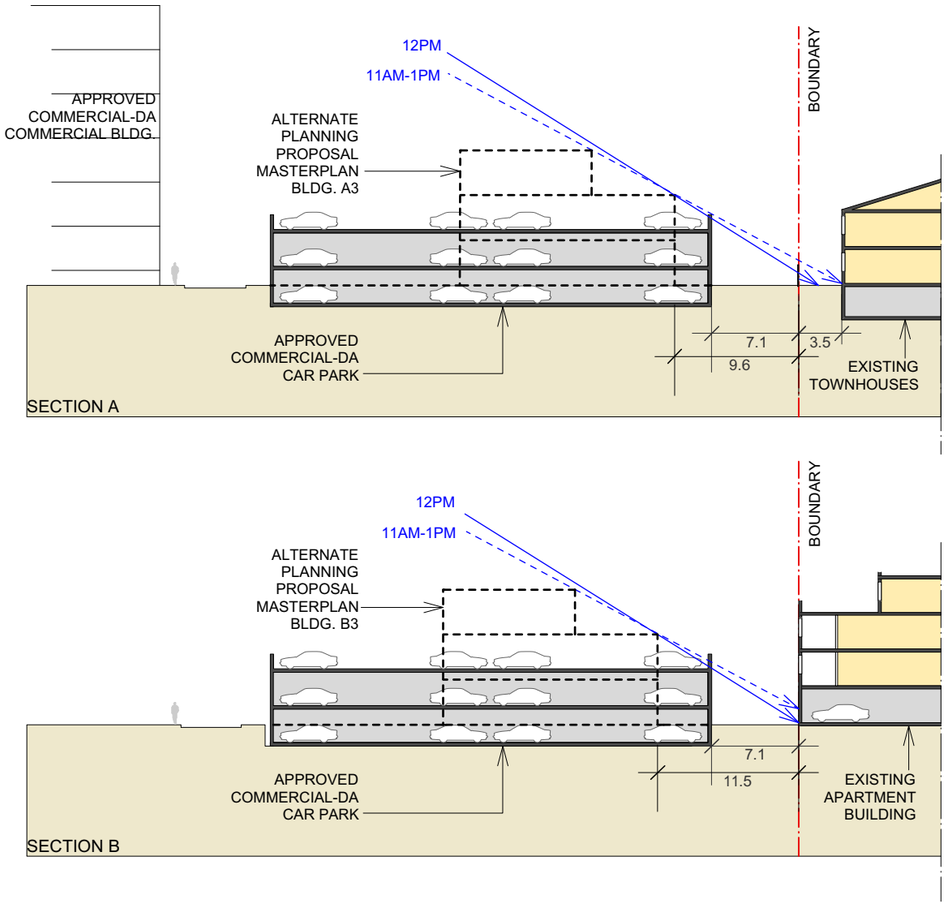
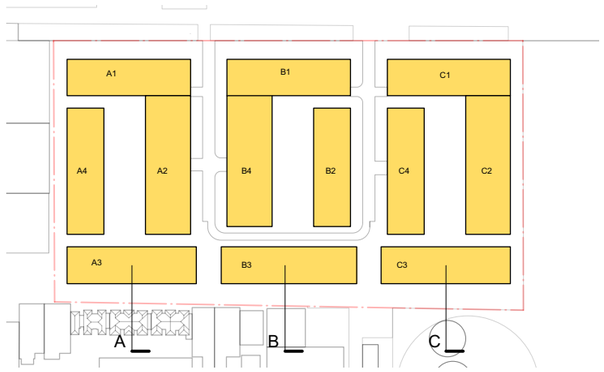
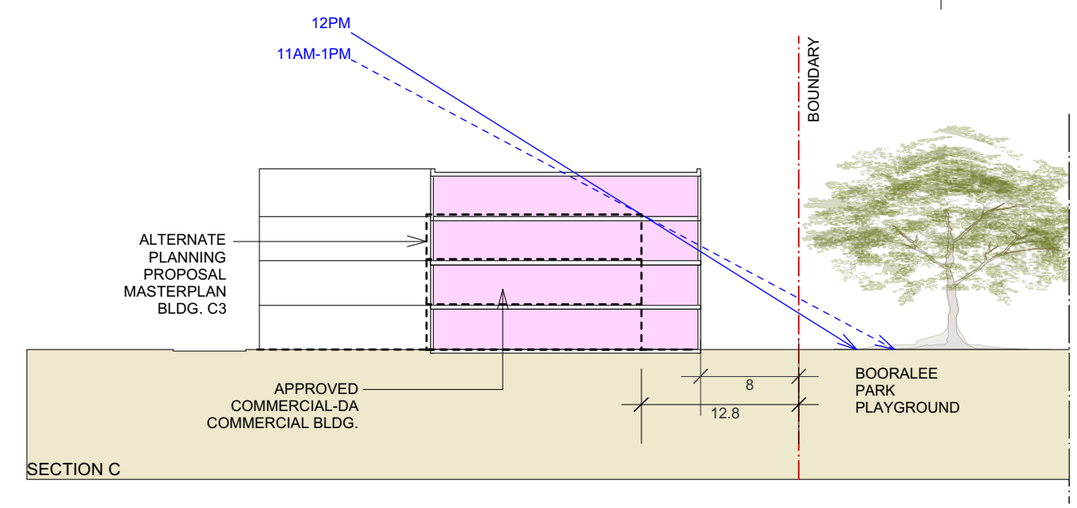


PLANNING PROPOSAL MASTERPLAN_ISOMETRIC (NTS)





KEY TO SECTIONS



SCHEMATIC SECTIONS 1:500@A3 - WINTER SOLSTICE

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LEVEL 1, 2 GLEN ST MILSONS POINT
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VEHICULAR CIRCULATION

LAKES BUSINESS PARK SOUTH PRECINCT

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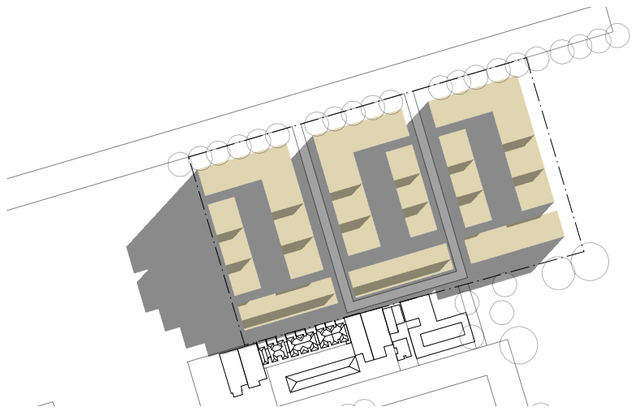
OPTION 4_ISOMETRIC & SHADOW SECTIONS A, B, C

DWG NO.	**C_ADD_011**
PROJECT No.	**1503**
PLOT DATE	**8/1/16**
SCALE	



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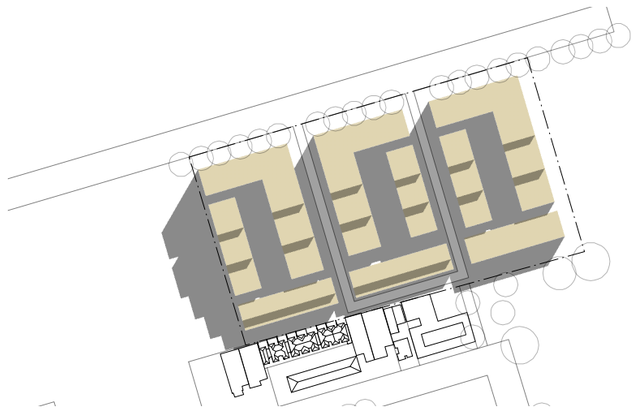
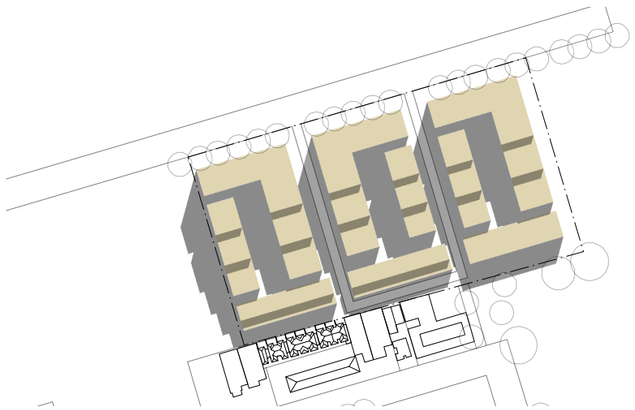
1:4000



2 SHADOWS - 10:00am
1: 4000



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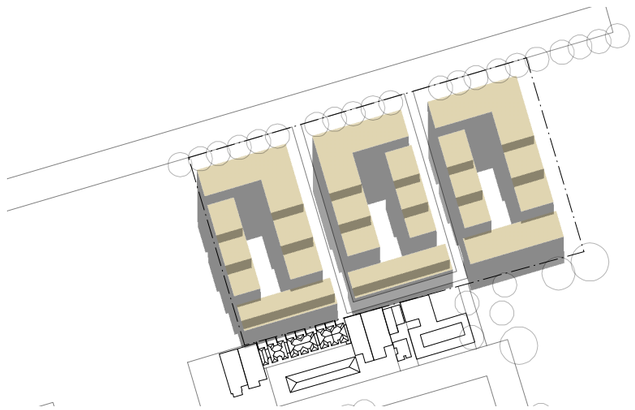

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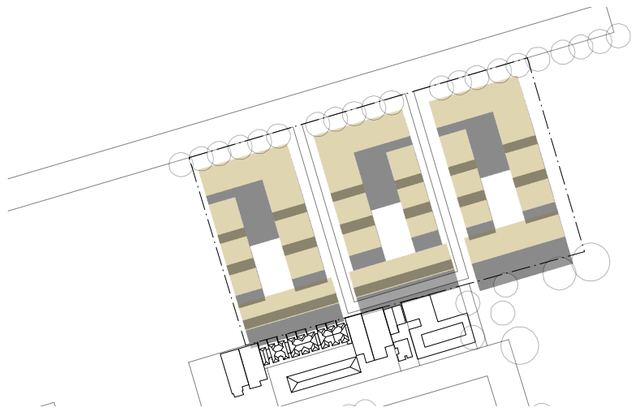
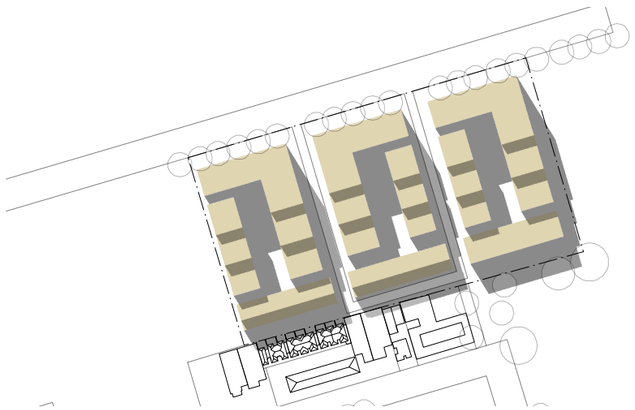


5 SHADOWS - 1:00pm
1: 4000



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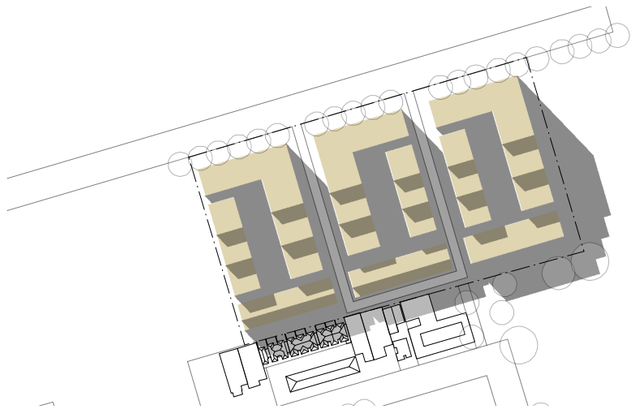

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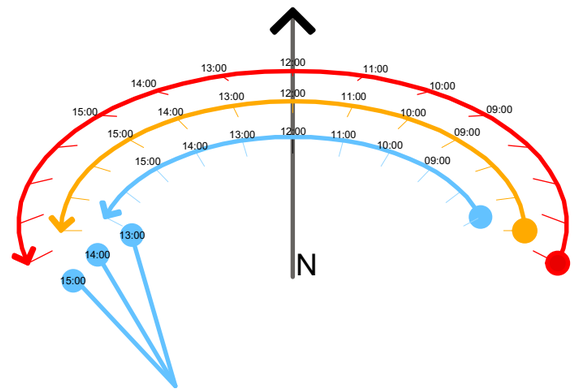

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LAKES BUSINESS PARK SOUTH PRECINCT

DEXUS

SHADOWS - WINTER SOLSTICE

DWG NO.	**SK_007**
PROJECT No.	**1503**
PLOT DATE	**8/1/16**
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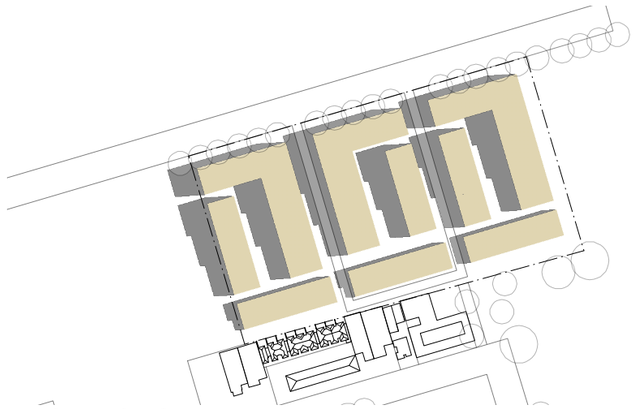

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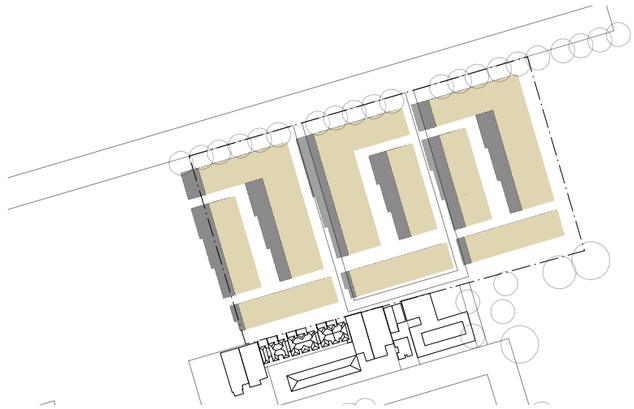

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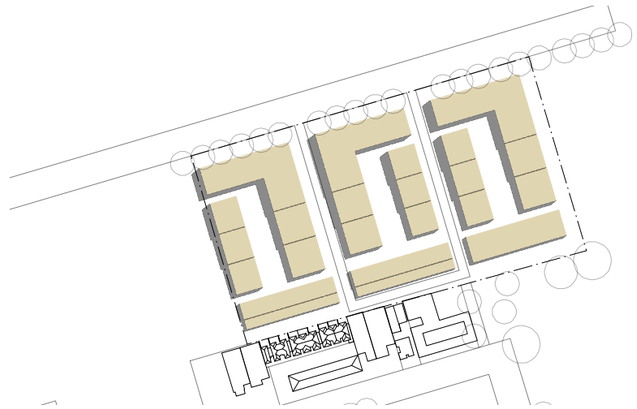

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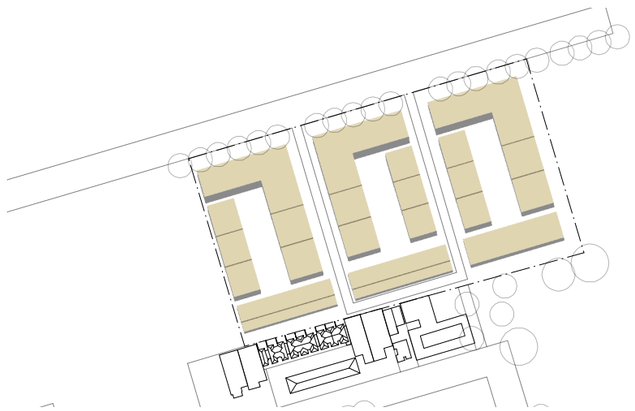

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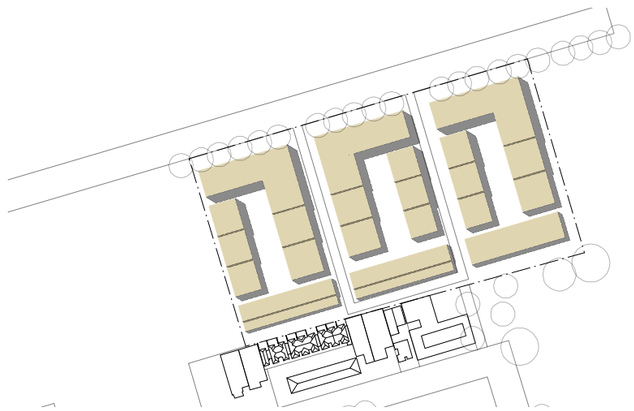

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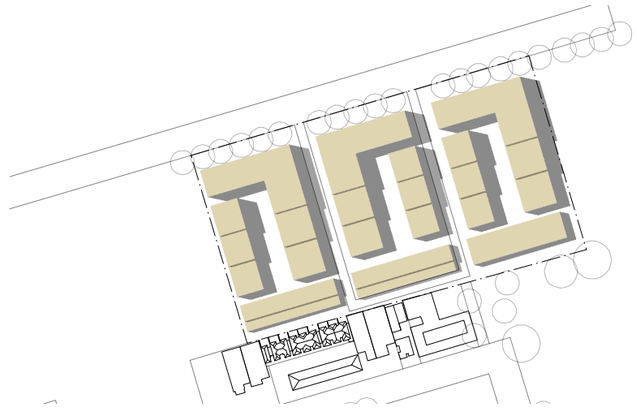

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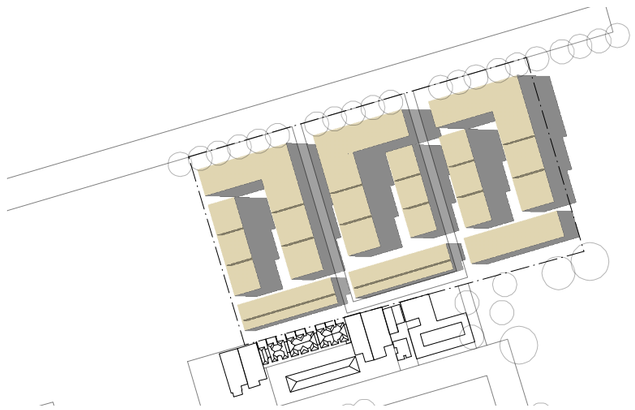

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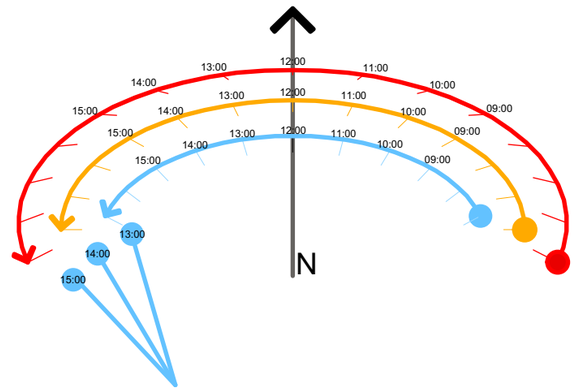

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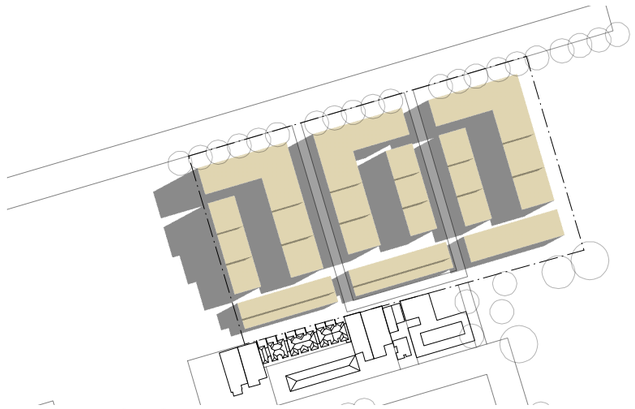
LAKES BUSINESS PARK SOUTH PRECINCT

DEXUS

SHADOWS - SUMMER SOLSTICE

DWG NO.	**SK_008**
PROJECT No.	**1503**
PLOT DATE	**8/1/16**
SCALE	**1:500 @ A3**



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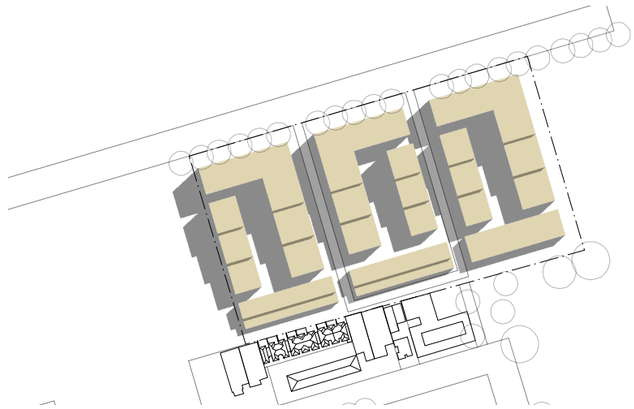

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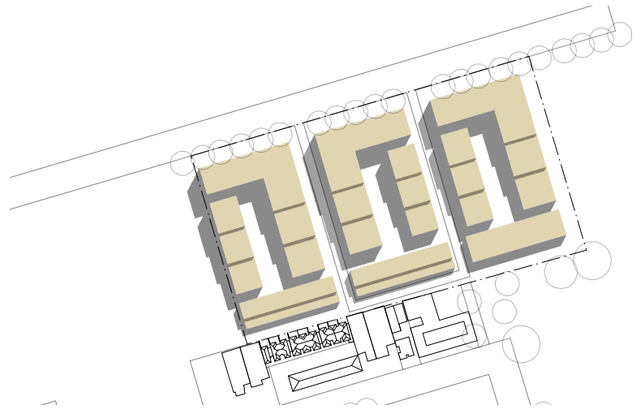

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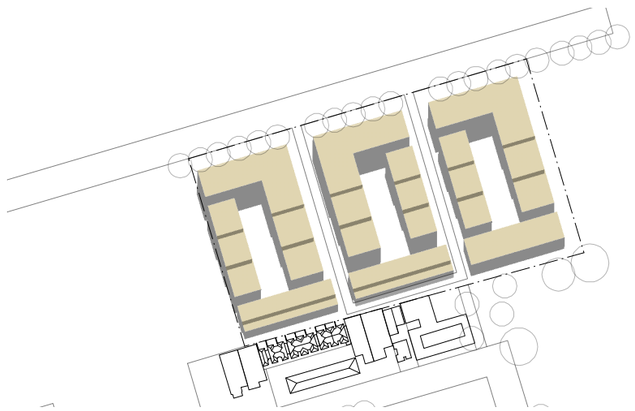

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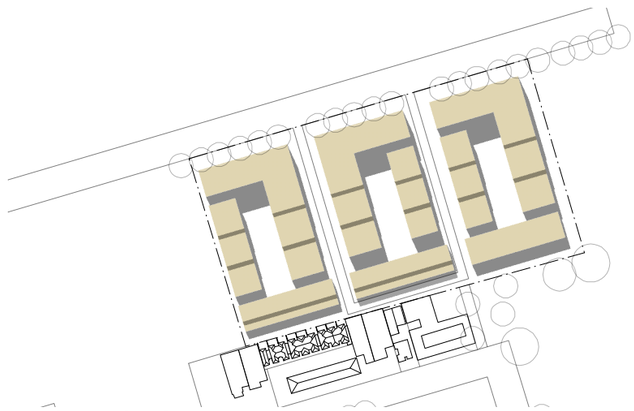

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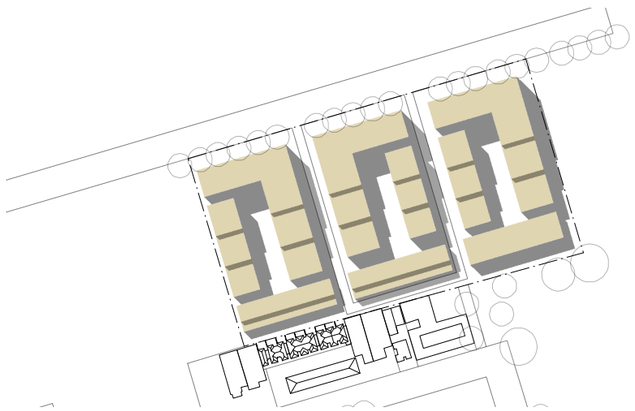

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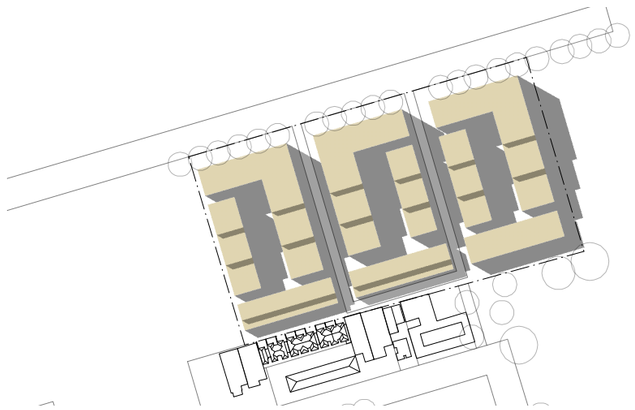

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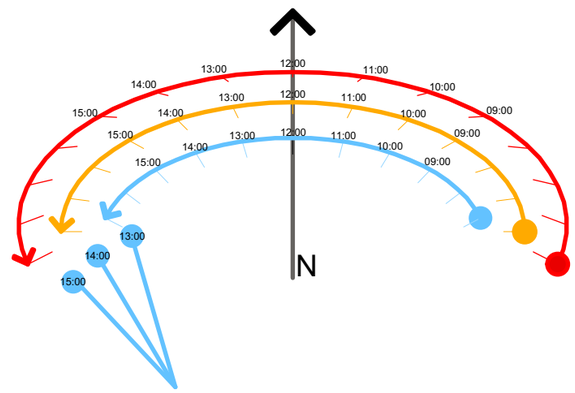

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LAKES BUSINESS PARK SOUTH PRECINCT

DEXUS

SHADOWS - EQUINOX

DWG NO.	**SK_009**
PROJECT No.	**1503**
PLOT DATE	**8/1/16**
SCALE	**1:500 @ A3**

Lakes Business Park

Addendum to Economic Impact Assessment

November 2015

urbis

URBIS STAFF RESPONSIBLE FOR THIS REPORT WERE:

Director	Princess Ventura
Associate Director	David Wilcox
Senior Consultant	Ryan McKenzie
Research Analyst	Chinmay Chitale
Job Code	SPE0517
Report Number	Addendum

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TABLE OF CONTENTS

Executive Summary

This report is an Addendum to the Urbis report entitled Lakes Business Park, Botany Economic Impact Assessment dated May 2015. It addresses the Botany Bay Council's comments and request for further information regarding the May 2015 Economic Impact Assessment Report.

This report finds that the proposed rezoning of the southern part of the Lakes Business Park (subject site) at 11-13 Lord Street, Botany from B7 Business Park to B4 Mixed Use should be supported on the basis of the following findings:

1. The subject site is not strategically critical industrial land within the broader Metropolitan Sydney context.

2. The subject site is not strategically important to port and airport operations. Port and airport related jobs are located elsewhere in the LGA with a particularly dense clustering further north and west of the subject site.

3. The Lord Street Precinct, in which the subject site is located, is only one of a number of industrial precincts within the Botany Bay LGA. Further, there are a number of industrial precincts within the LGA such as Banksmeadow, Hale Street and Mascot in particular that have a stronger competitive position than the Lord Street Precinct.

4. The trend with warehousing demand in Metropolitan Sydney is for office and warehouse functions to separate with warehousing relocating to low cost, large warehouses with good transport access. Many warehouse and logistic functions being outsourced to third party logistics operators (3PL).

5. The demand for warehousing at Lakes Business Park South is low as evidenced by the current high 25% vacancy rate. Current uses consist mainly of small ancillary warehousing attached to office uses such as show rooms, spare parts and minor assembly rather than manufacturing or distribution.

6. The rezoning of the subject site will not have a significant impact on the supply of warehouses in the Botany Bay LGA as the site accounts for a very low 0.6% proportion of industrial land supply and 0.1% of warehousing jobs in the Botany Bay LGA.

7. There is more than 30 years of supply of undeveloped industrial land in the Botany Bay LGA to cater to future employment growth even without the subject site.

8. The proposed development will increase the supply of housing product where demand for housing is high.

1 Competitive Positioning

This section considers the industrial precincts in and around Port Botany and the Sydney Airport, by reviewing the opportunities and constraints afforded by each industrial precinct. It compares Lakes Business Park South to other competing precincts in the study area, considering key drivers of demand from Port and Airport related industry sectors such as:

- Current road infrastructure access
- Future road infrastructure access
- Clustering of related industrial (like uses/agglomeration)
- Available supply of developable land
- Proximity to sensitive noise receptors.

The existing industrial land supply in this area is quantified and measured against the above criteria to assess their competiveness relative to the subject site. In addition, this section provides a metropolitan view of the trends in the industrial market in terms of the location of industrial land in Metropolitan Sydney.

1.1 SYDNEY METROPOLITAN CONTEXT

Over the years many industrial-type businesses have relocated to larger sites along the major motorways, including the M4, M5 and M7, in order to reduce costs and improve accessibility. As a result, demand for industrial land has been trending further west of Sydney and Botany LGA. This is consistent with the NSW strategy highlighted in *A Plan for Growing Sydney*; that is to shift and expand the economic role of Western Sydney, in turn raising Sydney's overall productivity.

Map 2.1 overleaf illustrates the industrial precincts of the south-west and west subregions that lie adjacent to a major motorway, highlighting the following:

1. The Western Sydney Employment Area (WSEA), has strong connectivity with major motorways (e.g. M4 and M7)

2. Major Western Sydney employment precincts consist of large contiguous industrial zoned land reducing potential land use conflicts – this has the effect of supporting industry agglomeration and mitigates land use/traffic conflicts

3. As the WSEA constitutes the largest greenfield supply of industrial land in Sydney it is also well placed to produce large industrial lots that would service major freight and distribution tenants, which may result in these tenants relocating from more expensive constrained and urbanised locations.

In a metropolitan context, the following conclusions about the subject site's competitiveness can be drawn:

1. Botany Bay LGA while containing Port Botany and Sydney Airport, is constrained by conflicting land uses and traffic (i.e. freight and commuter)

2. The Lakes Business Park South is isolated, without direct B Double access to a main road or other transport infrastructure

3. The Lakes Business Park South is a small industrial area when compared to other industrial precincts in Botany LGA and Western Sydney, comprising 0.6% of industrial zoned land in Botany LGA and is constrained from any expansion potential with residential properties abutting the southern site boundary, Boralee Park to the immediate east and the NSW Roads and Maritime Services to west.

4. A broader choice of land size / floor plate ranges are available in larger less constrained Western Sydney industrial precincts such as Erskine Park and Eastern Creek

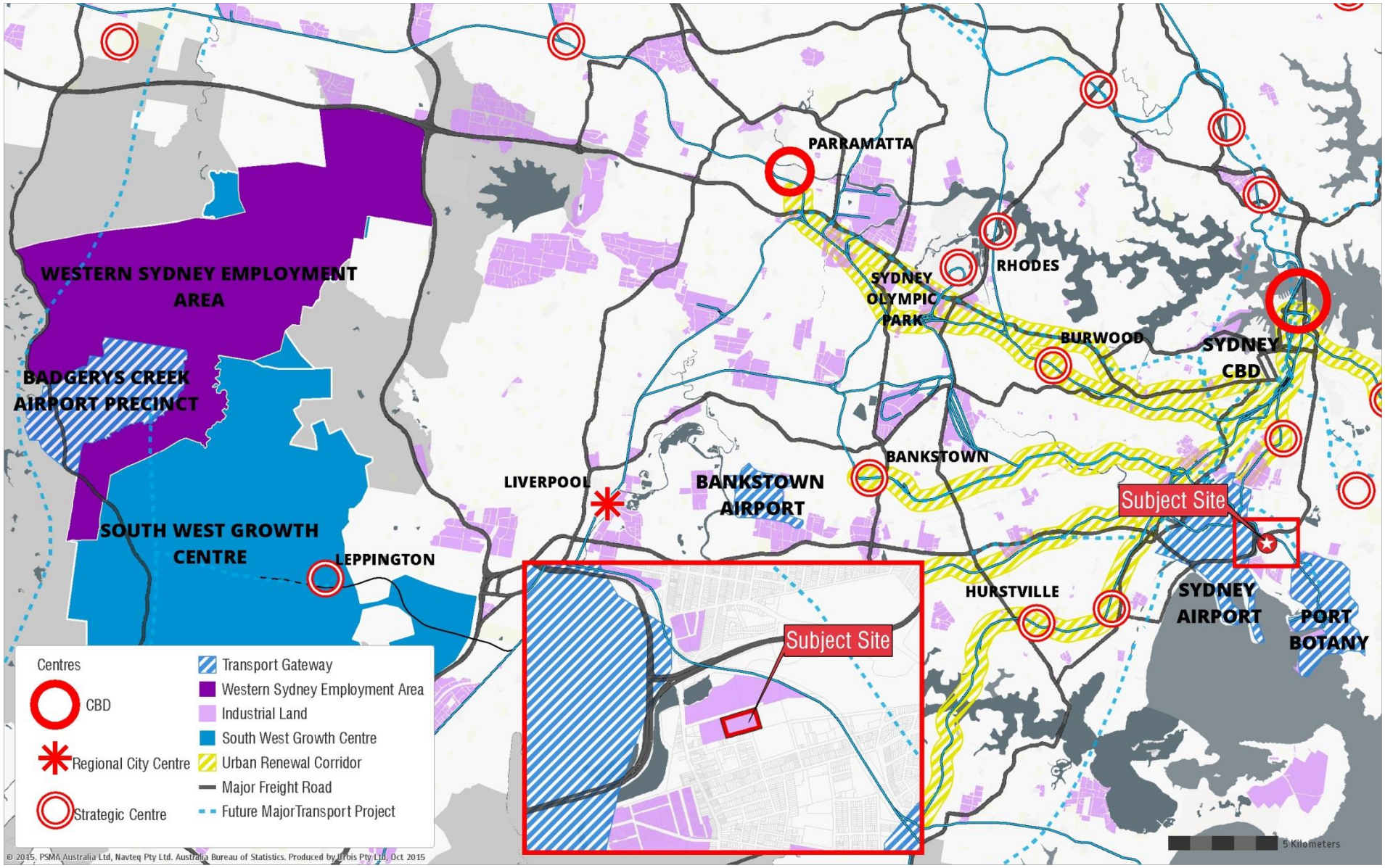
5. The larger lot sizes available in the WSEA could have the effect of attracting freight and distribution tenants from smaller more constrained inner city industrial precincts

6. WSEA is a contiguous employment precinct, and does not conflict with residential land. The Botany LGA while containing large industrial precincts has a mixture of land uses including residential. Lakes Business Park South in particular is constrained by land use conflicts as it abuts a residential area to the south, restricting the site from operating after hours and creating traffic conflicts.

7. The WSEA dominates in scale and scope and therefore has the largest potential for accommodating existing businesses (relocating) as well as new entrants into the industrial market. Coupled with infrastructure investment (i.e. future major transport projects) will further support the growth of jobs in the WSEA.

8. Existing industrial precincts and Banksmeadow (north and south) as well as Hale Street are best suited to general industrial and warehousing uses

The trend with warehousing is for office and warehouse functions to separate with warehousing relocating to low cost, large warehouses with good transport access, with many warehouse and logistic functions being outsourced to 3PL logistic operators.


PARRAMATTA
WESTERN SYDNEY EMPLOYMENT AREA
BADGERYS CREEK AIRPORT PRECINCT
SOUTH WEST GROWTH CENTRE
LEPPINGTON
LIVERPOOL
BANKSTOWN AIRPORT
BANKSTOWN
RHODES
SYDNEY OLYMPIC PARK
BURWOOD
SYDNEY CBD
HURSTVILLE
SYDNEY AIRPORT
PORT BOTANY
Subject Site
Subject Site
Centres
CBD
Regional City Centre
Strategic Centre
Transport Gateway
Western Sydney Employment Area
Industrial Land
South West Growth Centre
Urban Renewal Corridor
Major Freight Road
Future MajorTransport Project
5 Kilometers
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1.2 BOTANY BAY LGA AND SURROUNDS

Table 1 overleaf provides a summary of the competitive positioning of the subject site and other industrial precincts within the Botany Bay LGA. A more detailed assessment table is provided in Appendix A.

Port Botany itself is not considered in the analysis as the majority of the port land area sit outside the Botany Bay LGA and has limited industrial land uses, and is instead primarily focused on the loading and unloading of shipping containers.

The table demonstrates that there are a number of precincts across the LGA that currently support industrial activity and which are well positioned to continue in this role for the foreseeable future.

Due to the relatively compact nature of the Botany LGA, the majority of these precincts benefit from good road connectivity to the Sydney orbital motorway network. Northbound access to Sydney CBD and beyond is typically provided between General Holmes Drive and Wentworth Avenue. Southbound access is provided via General Holmes Drive and Foreshore Road.

Precincts with direct connectivity to the motorway network, with the fewest number of turning movements, are most favoured by logistics business. Direct connectivity permits quicker transportation times and also reduces the need for trucks to use air brakes, which can lead to noise impact issues close to residential areas.

Precincts located closest to Foreshore Road, for example Banksmeadow, Hale Street and Hillsdale have the added benefit of access to a recognised freight route connecting Port Botany to the motorway network. In future, WestConnex should also assist in increasing the efficiency of road freight movement between Botany and Western Sydney.

The subject site is disadvantaged by the fact that the current access road layout does not allow the use of b-double trucks, thereby limiting its capacity as a warehousing and logistics destination. Unlike other precincts, goods vehicle access is limited to rigid trucks and vans. B Double trucks are prohibited from accessing Lord Street.

The scale of the Banksmeadow precinct, and its proximity to Port Botany dedicated freight rail network means that it is ideally located to maintain a supply of available industrial land for development as the demands of the current heavy industrial uses on the site change over time.

Most precincts in the LGA are required to contend with proximity to residential areas and therefore manage and mitigate noise and operational issues. Banksmeadow (by virtue of its size) and Hale Street (by virtue of its location adjacent to the airport) benefit from the best separation from residential areas. By contrast, Hillsdale abuts residential areas on three sides of the precinct, meaning that it has a higher potential for amenity issues with adjoining neighbours.

The established nature of the industrial precincts within the LGA such as Hillsdale and Banksmeadow means that clusters of similar uses have emerged. The proximity to Port Botany and Sydney airport means that there is a strong presence of warehousing, distribution and light industrial uses in these precincts.

The proximity to the Port and Airport will support ongoing demand for industrial land; however this can be accommodated in both the undeveloped land located in Banksmeadow precinct and through infill development and reuse of existing vacant premises.

Banksmeadow remains the major opportunity to construct new warehouse and industrial buildings on under-utilised land.

TABLE 1 – BOTANY LGA INDUSTRIAL PRECINCTS COMPETITIVENESS RANKING

PRECINCT	SCALE	UNDEVELOPED LAND	ACCESSIBILITY	CLUSTERING	SENSITIVE RECEPTORS	INDUSTRIAL LAND DEVELOPMENT / REUSE POTENTIAL	OVERALL INDUSTRIAL VIABILITY RANKING
Hillsdale	Low	Medium	High	High	Medium	Medium	**Medium**
Banksmeadow North	High	High	High	High	High	High	**High**
Banksmeadow South	High	High	High	High	High	High	**High**
Pagewood	Medium	Low	High	High	High	Medium	**Medium / High**
Hale Street	Medium	Low	High	High	High	Medium	**High**
Mascot Station and Environs	High	Low	High	High	Medium	Medium	**High**
Lakes Business Park South	Low	Low	Medium	Low	High	Low	**Low**

1.3 QUALITY OF WAREHOUSING

Tables 2 to 4 on the following pages set out an assessment of the quality of warehouse provision within industrial precincts in the Botany LGA as well as key competing precincts in Western Sydney. The table uses a detailed set of indicators to assess the quality of warehouse space in each precinct, under the broad headings of access and property attributes together with an overall ranking. The tables demonstrate that overall, there is a broad range and quality of existing warehouse provision in Botany and in Western Sydney. Each of these precincts tends to score more favourable against key criteria than Lakes Business Park South.

Table 2 compares the preferred geographic attributes for warehouse location, including Botany Bay LGA and Western Sydney precincts.

Table 3 compares the preferred design attributes for warehouse and distribution centres location, including Botany Bay LGA and Western Sydney precincts.

TABLE 2 – BOTANY LGA AND COMPETITOR INDUSTRIAL PRECINCTS WAREHOUSE COMPETITIVENESS: ACCESS

PREFERRED GEOGRAPHIC ATTRIBUTES	HILLSDALE	BANKSMEADOW (N)	BANKSMEADOW (S)	PAGEWOOD	HALE STREET	MASCOT STATION & ENVIRONS	LAKES SOUTH	EASTERN CREEK	MOOREBANK	INGLEBURN	SILVERWATER / HOMEBUSH
B Double access	Low	Low	High	High	High	Low	Low	High	High	High	High
Motorway proximity and access	Medium	Medium	Medium	Medium	Medium	Medium	Medium	High	High	High	High
Number of turns between warehouse and freeway	High	High	High	High	High	Medium	Medium	High	High	High	High
Freight rail proximity and access	High	High	High	High	Medium	Medium	Medium	Low	High	High	Medium
Airport proximity and access	Medium	Medium	Medium	Medium	Medium	High	Low	Low	Medium	Medium	Low
Seaport proximity and access	High	High	High	High	Medium	Medium	Medium	Low	Medium	Low	Low
24/7 operations	High	High	High	High	High	High	Low	High	High	High	High
Overall Access	High	High	High	High	Medium	Medium	Medium	High	High	High	High

TABLE 3 – BOTANY LGA AND COMPETITOR INDUSTRIAL PRECINCTS WAREHOUSE COMPETITIVENESS: PROPERTY ATTRIBUTES

DESIGN ATTRIBUTES FOR WAREHOUSES	HILLSDALE	BANKSMEADOW (N)	BANKSMEADOW (S)	PAGEWOOD	HALE STREET	MASCOT STATION & ENVIRONS	LAKES SOUTH	EASTERN CREEK	MOOREBANK	INGLEBURN	SILVERWATER / HOMEBUSH
Low office content compared to warehouse area	Low	n/a	Medium	Low	Low	Low	Low	High	High	High	Medium
High spring height (10m+)	Low	n/a	Medium	Low	Low	Low	Low	High	High	High	Medium
Site cover – less than 50%	Low	Low	Medium	Low	Low	Low	Medium	High	High	High	Medium
Standard warehouse 5,000 to 15,000 sq.m	Low	n/a	Medium	Low	Low	Low	Low	Medium	Medium	Medium	Medium
Distribution centres warehouse min size +15,000 sq.m	Low	n/a	Medium	Low	Low	Low	Low	High	High	High	High
Overall Property Attributes	Low	n/a	Medium	Low	Low	Low	Low	High	High	High	Medium

TABLE 4 – BOTANY LGA AND COMPETITOR INDUSTRIAL PRECINCTS WAREHOUSE COMPETITIVENESS: OVERALL RANKING

CRITERIA	HILLSDALE	BANKSMEADOW (N)	BANKSMEADOW (S)	PAGEWOOD	HALE STREET	MASCOT STATION & ENVIRONS	LAKES SOUTH	EASTERN CREEK	MOOREBANK	INGLEBURN	SILVERWATER / HOMEBUSH
Overall	Medium	High	High	Medium	Medium	Medium / Low	Low	High	High	High	High

2 Contribution to Industrial and Warehousing Jobs and Land

Lakes Business Park South comprises a minor component of the Botany Bay LGA's industrial land supply, with a site area of 2.97 hectares comprising 0.6% of Botany Bay LGA's industrial land.

As such, it also accounts for a low share of Botany Bay's warehousing jobs. Warehousing jobs make up about 20 of the total 170 jobs on the subject site, which comprises 0.1% of Botany Bay LGA's Transport, Postal and Warehousing jobs.

The current floorspace vacancy in Lakes Business Park South is 25% which reflect the low demand for this product (warehouses). The demand for warehousing at Lakes Business Park South is for small ancillary warehousing attached to office uses, warehouses are used for show rooms, spare parts, minor assembly, not manufacturing or distribution.

Given that the industrial land and warehousing jobs on site account for a very small share of the LGA's overall supply, the subject site's rezoning will not have a material impact on the LGA's warehousing stock.

TABLE 5 – INDUSTRIAL LAND SUPPLY

Industrial Land Supply	Hectares
Lakes Business Park South	2.97
Botany Bay LGA	483.1
Lakes Business Park South Contribution	**0.6%**

Source: Urbis; Dexus; ELDP 2015

TABLE 6 – WAREHOUSING JOBS

Warehousing Jobs	Jobs
Lakes Business Park South	20
Botany Bay LGA[1]	20,654
Lakes Business Park South's Contribution	**0.1%**

[1] *Transport, Postal and Warehousing jobs 2011*

Source: Urbis; Dexus; ELDP 2015

3 Port and Airport Related Employment

Map 3.1 overleaf illustrates that port and airport related jobs are located elsewhere in the LGA with a particularly dense clustering further north and west of the subject site.

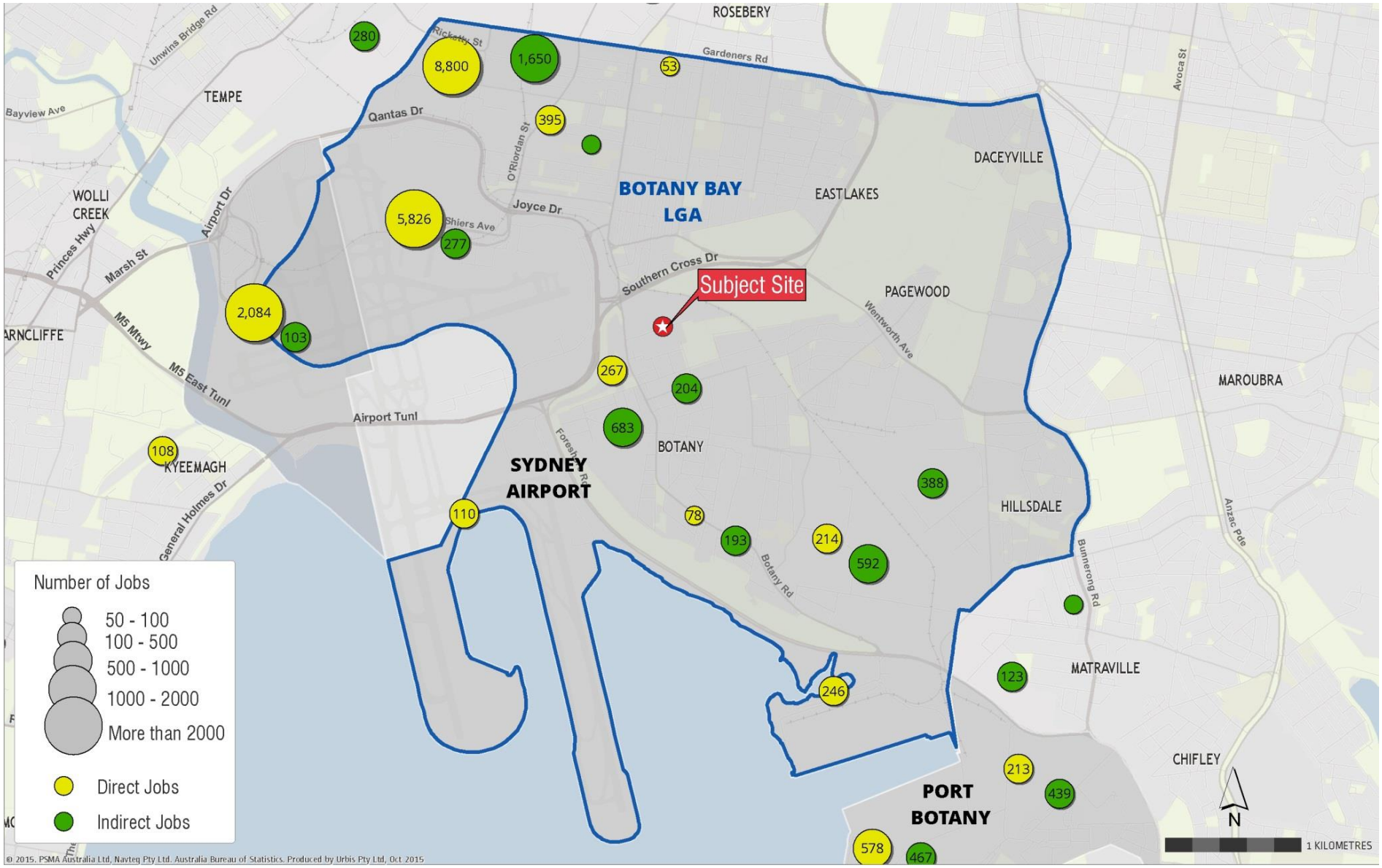
It shows that the area containing Lakes Business Park South does not accommodate a concentration of these jobs relative to other industrial precincts, and as such is not critical to Port Botany's or Mascot Airport's operations.

The industry sectors that we have identified as having a direct and indirect relationship with Port and Airport operations are outlined in Table 6.

TABLE 6 – PORT AND AIRPORT RELATED JOBS

Direct	Indirect
Air and Space Transport	Road Freight Transport
Catering Services	Freight Forwarding Services
Airport Operations and Other Air Transport Support Services	Other Warehousing and Storage Services
Investigation and Security Services	Transport, Postal and Warehousing, nfd
Stevedoring Services	Other Transport Support Services, nec
Port and Water Transport Terminal Operations	Other Water Transport Support Services
Water Freight Transport	Other Transport Support Services, nfd.
Customs Agency Services	
Aircraft Manufacturing and Repair Services	
Rail Freight Transport.	

Source: Urbis; Australian Bureau of Statistics
Nfd – 'Not further defined' – Refers to Census respondents whose job cannot be attributed to a more detailed category, due to a lack of respondent information.
Nec – 'Not elsewhere classified' - Allows responses from a Census form which don't fit into a suitable industry category in the classification to still be included.


ROSEBERY
Unwins Bridge Rd
Ricketty St
Gardeners Rd
Avoca St
TEMPE
Bayview Ave
Qantas Dr
O'Riordan St
DACEYVILLE
BOTANY BAY LGA
EASTLAKES
WOLLI CREEK
Airport Dr
Joyce Dr
Shiers Ave
Princes Hwy
Marsh St
Southern Cross Dr
Subject Site
PAGEWOOD
Wentworth Ave
ARNCLIFFE
M5 Mtwy
M5 East Tunl
Airport Tunl
MAROUBRA
KYEEMAGH
General Holmes Dr
SYDNEY AIRPORT
BOTANY
Foreshore Rd
HILLSDALE
Anzac Pde
Botany Rd
Bunnerong Rd
MATRAVILLE
CHIFLEY
PORT BOTANY
280
8,800
1,650
53
395
5,826
277
2,084
103
267
204
683
108
110
78
193
214
592
388
123
246
213
439
578
467
Number of Jobs
50 - 100
100 - 500
500 - 1000
1000 - 2000
More than 2000
Direct Jobs
Indirect Jobs
N
1 KILOMETRES
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4 Industrial Land Supply and Demand Analysis

Table 7 shows a supply and demand analysis of undeveloped industrial land within the Botany LGA from the period 2015 to 2036.

Based on industrial jobs growth of 74 jobs per annum and a job per hectare benchmark of 100, it is expected that there will be annual demand for 0.7 ha of industrial land within Botany Bay LGA per year.

As at 2015 the ELDP identified 24 hectares of available undeveloped industrial land within Botany Bay LGA, which equates to a high 32 years of industrial land supply based on the 0.7ha per annum industrial land demand even with the rezoning of the subject site to B4 Mixed Use.

TABLE 7 – INDUSTRIAL LAND SUPPLY AND DEMAND, BOTANY LGA

INDUSTRIAL LAND DEMAND	
Projected Industrial Jobs per annum, 2015-36	74
Jobs per Hectare of Land	100
Annual Industrial Land Demand, 2015-36 (Ha)	0.7
Undeveloped Industrial Land Supply	24
Years of Industrial Land Supply (+Supply / -Deficit)	**+32**

Source: Urbis; Bureau of Transport Statistics; ELDP 2015

5 Employment Impact

The proposed rezoning of Lakes Business Park South will result in a slight reduction in the employment yield compared to its existing use.

The proposed retail floorspace will yield a higher density of jobs than the existing industrial / warehousing uses.

As such, the proposed retail floorspace is expected to result in a net employment decline of 96 jobs over the mixed warehouse / office floorspace currently occupying the subject site.

TABLE 8 – EMPLOYMENT IMPACT, FROM PROPOSED NON-RESIDENTIAL FLOORSPACE

LAND USE	FLOORSPACE	SQ.M PER JOB	EMPLOYMENT
Retail Floorspace	1,222	16.5	74
Existing Lakes Business Park South	14,185	83.4	170
Net Employment Uplift			**-96**

Source: Urbis; Dexus

6 Housing Market

In addition to supporting higher employment on the subject site, the proposed rezoning will increase housing supply in a market where demand is high.

Table 9 below outlines three housing market indicators. Given that the supply of housing is largely constrained by Government land use policy, sales transactions are not a true reflection of the demand for new housing product and have not been considered.

Both price growth and average days on the market provide an indication of housing demand. Price growth occurs when supply cannot respond, or fully respond, to growth in housing demand. As such it provides an indication of demand in a supply constrained market while average days on market indicate how quickly housing product is sold.

Both indicators in Table 9 below indicate demand is strong in Botany Bay relative to other inner city LGAs:

- Botany Bay has the highest 5 year unit price growth rate, compared to a number of comparable inner ring LGAs, indicating that housing supply has not responded to growth in demand

- Apart from Marrickville, Botany Bay units sell faster than all other LGAs benchmarks, indicating a higher degree of interest in Botany Bay housing product when it is available.

The hold period illustrates how tightly held established housing stock is. Despite high price growth established owners are holding housing product on average longer than other inner city LGAs (with the exception of Ashfield).

Without new housing supply the combination of a tightly held housing market with high underlying demand may result in a housing shortage and affordability constraints.

Overall the picture of the Botany Bay housing market points to high demand relative to other inner Sydney LGA, with limited housing options available indicating the need for additional housing supply.

Housing Demand Indicators

BOTANY BAY AND COMPARABLE LOCAL GOVERNMENT AREAS TABLE 9

Housing Demand Indicators	Ashfield	Botany Bay	Leichhardt	Marrickville	Rockdale	Canada Bay
Unit Price Growth (5 years)	56%	60%	39%	52%	42%	31%
Average Days on Market	51	39	41	37	42	53
Average Hold Period (Years)	10.3	9.5	8.3	8.9	7.6	7.6

Source : Urbis; RP Data

Disclaimer

This report is dated October 2015 and incorporates information and events up to that date only and excludes any information arising, or event occurring, after that date which may affect the validity of Urbis Pty Ltd's (**Urbis**) opinion in this report. Urbis prepared this report on the instructions, and for the benefit only, of Dexus (**Instructing Party**) for the purpose of Economic Impact Assessment (**Purpose**) and not for any other purpose or use. To the extent permitted by applicable law, Urbis expressly disclaims all liability, whether direct or indirect, to the Instructing Party which relies or purports to rely on this report for any purpose other than the Purpose, and to any other person which relies or purports to rely on this report for any purpose whatsoever (including the Purpose).

In preparing this report, Urbis was required to make judgements which may be affected by unforeseen future events, the likelihood and effects of which are not capable of precise assessment.

All surveys, forecasts, projections and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to Urbis at the date of this report, and upon which Urbis relied. Achievement of the projections and budgets set out in this report will depend, among other things, on the actions of others over which Urbis has no control.

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This report has been prepared with due care and diligence by Urbis and the statements and opinions given by Urbis in this report are given in good faith and in the reasonable belief that they are correct and not misleading, subject to the limitations above.

Appendix A Competitive Positioning

PRECINCT	SIZE (HA)	SUPPLY OF UNDEVELOPED LAND (HA)	ACCESSIBILITY ROAD INFRASTUCTURE (EXISTING AND PROPOSED)	CLUSTERING OF RELATED INDUSTRIES	PROXIMITY TO SENSITIVE NOISE RECEPTORS	INDUSTRIAL DEVELOPMENT OPPORTUNITIES	INDUSTRIAL COMPETITIVE POSITIONING
Hillsdale	10.3	2	**Good connections to motorway network and freight precincts via B-Double approved roads:** • Existing warehouse configuration supports b-double access • 2.4km from motorway (northbound) at Southern Cross Drive. Requires only 2 turning movements • 5km from motorway (southbound) at General Holmes Drive via Foreshore Road. Requires only 2 turning movements • 7.5km from Emirate SkyCargo terminal at Sydney Airport • 3km from Port Botany	Automotive, warehousing	**Partial Separation:** • Dwellings on north and east side. Grace Campbell reserve provides separation on southern side. Banksmeadow (north) located on the western side of Denison Street	• Development of vacant land • Reuse of vacant buildings	• Medium
Banksmeadow North	113*	10.7*	**Good connections to motorway network and freight precincts via B-Double approved roads:** • Primary Access via Dennison Street • Supports b-double access • 5.3km from motorway (northbound) via Foreshore Road and Southern Cross Drive. Requires 4 turning movements from Botany Road • 4.5km from motorway (southbound) at General Holmes Drive via Foreshore Road. Requires only 1 turning movement from Botany Road • 8.5km from Emirate SkyCargo terminal at Sydney Airport via Foreshore Road • 3km from Port Botany	Oil, Gas and Chemicals	**Excellent Separation:** • The scale of landholdings within Banksmeadow means that future warehousing uses can be adequately positioned away from sensitive noise receptors • Scale, proximity to Port Botany and access via Foreshore Road supports 24 hour operations	• Development of significant areas of vacant land	• Strong
Banksmeadow South	113*	10.7*	**Good connections to motorway network and freight precincts via B-Double approved roads:** • Primary access via Exell Street • Supports b-double access • 5.5km from motorway (northbound) at Southern Cross Drive. Requires only 2 turning movements • 5km from motorway (southbound) at General Holmes Drive via Foreshore Road. Requires only 2 turning movements • 7.5km from Emirate SkyCargo terminal at Sydney Airport • 3km from Port Botany	Oil, Gas and Chemicals Adjacent to Port Botany	**Excellent Separation:** • The scale of landholdings within Banksmeadow means that future warehousing uses can be adequately positioned away from sensitive noise receptors • Scale, proximity to Port Botany and access via Foreshore Road supports 24 hour operations	• Development of significant areas of vacant land	• Strong
Pagewood	20.2	1.7	**Good connections to motorway network and freight precincts via B-Double approved roads:** • Primary access via Green Street • 1.8 km from motorway (northbound) at Southern Cross Drive. Requires 3 turning movements • 3.8km from motorway (southbound) at Mill Pond via Wentworth Avenue. Requires 5 turning movements • 6.4 km from Emirate SkyCargo terminal at Sydney Airport • 4.7 km from Port Botany	Warehousing, industrial	**Good Separation:** • Proximity to Banksmeadow in the south limits exposure to sensitive receptors • The precinct abuts residential areas to the north west Proximity to Mutch Park and Eastgardens to the north provides further residential separation	• Reuse of vacant buildings	• Medium
Hale Street	37.4	0	**Good connections to motorway network and freight precincts via B-Double approved roads:** • Truck access via Foreshore Road • Supports b-double access (via Foreshore Road)	Warehousing, industrial, manufacturing	**Good Separation:** • The precinct is bounded by Mill Pond to the north and Foreshore Road to the south and west	• Reuse of vacant buildings	• Strong

PRECINCT	SIZE (HA)	SUPPLY OF UNDEVELOPED LAND (HA)	ACCESSIBILITY ROAD INFRASTUCTURE (EXISTING AND PROPOSED)	CLUSTERING OF RELATED INDUSTRIES	PROXIMITY TO SENSITIVE NOISE RECEPTORS	INDUSTRIAL DEVELOPMENT OPPORTUNITIES	INDUSTRIAL COMPETITIVE POSITIONING
			• 1.7 km from motorway (northbound) at Southern Cross Drive. Requires 3 turning movements • 0.6km from motorway southbound at General Holmes drive. Requires 1 turning movement • 5 km from Emirate SkyCargo terminal at Sydney Airport • 5 km from Port Botany		• The precinct abuts residential dwellings to the east between Folkestone Parade and Botany Road. Traffic calming measures on Hale Street itself reduce heavy goods vehicle access from Botany Road to the benefit of local residents		
Mascot Station & Environs	125.7	0	**Good connections to motorway network and freight precincts via B-Double approved roads:** • Primary access via Coward Street / Kent Road intersection • Supports b-double access • 3.5 km from motorway (northbound) at Southern Cross Drive. Requires 5 turning movements • 2.5km from motorway (southbound) via Joyce Drive. Requires 3 turning movements • 3.7 km from Emirate SkyCargo terminal at Sydney Airport • 8.7 km from Port Botany	Warehousing, Logistics, aviation services	**Good separation:** • Within Mascot Industrial activities south of Coward Street are separated from the majority of apartment development • The location of Sydney Airport and Alexandra Canal also provides significant separation from residential uses	• Reuse of vacant buildings	• Strong
Lakes Business Park South	2.97	0	**Good connections to motorway network and freight precincts, however B-Double access is prohibited** • Primary access via Botany Road • Current configuration does not accommodate b-double access • 2.5 km from motorway (northbound) at Southern Cross Drive. Requires 2 turning movements • 1.3km from motorway (southbound) via Botany Road and Southern Cross Drive. Requires 2 turning movement • 4.4 km from Emirate SkyCargo terminal at Sydney Airport • 5.6 km from Port Botany (via Botany Road)	Business Park	**Good Separation:** • Separation from residential uses is provided to the north, east and west through a combination of Lakes Business Park (north), Boralee Park and the RTA vehicle service centre • The site abuts residential apartments along its southern boundary	• Potential for additional business park development through implementation of approved masterplan. Limited potential for industrial development	• Low

** Assumes even split of total Banksmeadow precinct as defined in NSW Planning & Environment Employment Lands Development Program. Total precinct = 226.2 hectares and 21.4 hectares of undeveloped land*

Sydney
Tower 2, Level 23, Darling Park
201 Sussex Street Sydney, NSW 2000
t +02 8233 9900
f +02 8233 9966

Brisbane
Level 7, 123 Albert Street
Brisbane, QLD 4000
t +07 3007 3800
f +07 3007 3811

Melbourne
Level 12, 120 Collins Street
Melbourne, VIC 3000
t +03 8663 4888
f +03 8663 4999

Perth
Level 1, 55 St Georges Terrace
Perth, WA 6000
t +08 9346 0500
f +08 9221 1779

Australia • Asia • Middle East
w urbis.com.au **e** info@urbis.com.au

Reference: 15.094r02v02

traffix
traffic & transport planners

Suite 2.08
50 Holt Street
Surry Hills NSW 2010
PO Box 1124
Strawberry Hills NSW 2012
t: +61 2 8324 8700
f: +61 2 9380 4481
w: www.traffix.com.au
director Graham Pindar
acn: 065132961
abn: 66065132961

12 November 2015

Dexus Property Group
Level 25, Australia Square
264-278 George Street
Sydney NSW 2000

Attention: James Mah-Chut

Re: Planning Proposal for Lakes Business Park – Southern Precinct
11-13 Lord Street, Botany
Addendum to TRAFFIX Traffic Impact Assessment

Dear James,

The following provides an addendum to TRAFFIX Traffic Impact Assessment (TIA) report (*ref: 15.094r01v02*) dated 15th May 2015, in relation to the Planning Proposal for Lakes Business Park – Southern Precinct located at 11-13 Lord Street, Botany. This addendum has been prepared in response to comments received from the general public at the community consultation meeting held on the 8th September 2015 and specifically includes an assessment of the potential traffic impacts under various development options of the Lakes Business Park as well discussion on the revised access and traffic circulation arrangements. These are discussed separately below:

Revised Access & Traffic Circulation Arrangements

As a means of overcoming some concerns raised at the community consultation meeting, the access and traffic circulation arrangements have been amended as shown by the revised Site Concept Plan included in **Attachment 1**. Access is now proposed via two (2) separate driveways onto Lord Street (i.e. a reduction of one driveway compared to previous scheme). The easternmost driveway will now accommodate all entry movements whilst the westernmost driveway will accommodate all exit movements.

These will be connected via a single internal roadway which will accommodate one-way (clockwise) traffic flow. The internal roadway no longer traverse the eastern and southern property boundaries, as a means of overcoming concerns raised regarding the impact of noise generated by vehicular traffic by adjacent residents.

Potential Development Options

For comparative purposes, an assessment of the traffic generation potential of three (3) development options of Lakes Business Park has been undertaken. These potential development options are discussed overleaf.

- *Option 1 – Approved Master Plan:*

Northern Precinct: Demolish existing development and construct approved commercial development having a total Gross Floor Area (GFA) of 48,480m^2.

Southern Precinct: Demolish existing development and construct approved commercial development having a total GFA of 29,770m^2.

- *Option 2 – Approved Master Plan (Northern Precinct) & Planning Proposal (Southern Precinct):*

Northern Precinct: Same as Option 1.

Southern Precinct: Demolish existing development and construct Planning Proposal development (658 residential units & 1,222m^2 of commercial GFA).

- *Option 3 – Expand Existing Development (Northern Precinct) & Planning Proposal (Southern Precinct):*

Northern Precinct: Expand existing development to include an additional 14,100m^2 of commercial GFA.

Southern Precinct: Same as Option 2.

Traffic Generation & Modelling

The traffic generation of the potential development options has been assessed having regard for the traffic generation rates outlined in TRAFFIX TIA report (*ref: 15.094r01v02*) which are presented below for reference:

Residential -	AM & PM Peak:	0.35 trips / apartment
Commercial -	AM Peak:	1.6 trips / 100m^2 GFA
	PM Peak:	1.2 trips / 100m^2 GFA

The above traffic generation rates were applied to each of the potential development options to assess the 'gross' traffic generation. These are not a net increase however as the traffic generation associated with both the existing Northern and Southern Precincts is required to be taken into consideration. In this regard, the 'net' change in traffic generation under each potential development option is therefore shown by **Table 1** overleaf.

Table 1: Traffic Generation of Potential Development Options

Option	Peak Period	Net Change in Traffic Generation (vehicles per hour)		
		IN	OUT	Total
Option 1	AM	405	101	***506***
	PM	76	304	***380***
Option 2	AM	199	227	***426***
	PM	221	145	***366***
Option 3	AM	164	218	***382***
	PM	214	119	***333***

The above net change in traffic volumes were distributed as per the assumptions outlined in TRAFFIX TIA report (*ref: 15.094r01v02*) and analysed using SIDRA. A summary of the modelling results provided in **Table 2** overleaf with detailed SIDRA movement summaries provided in **Attachment 2**.

Table 2: Intersection Performance - Existing & Future Scenario

Intersection Description	Scenario	Control Type	Period	Degree of Saturation	Average Delay	Level of Service
Botany Road / Lord Street	existing	signals	AM	0.503	10.1	A
			PM	0.463	19.4	B
	Option 1	signals	AM	0.629	13.7	A
			PM	0.706	29.9	C
	Option 2	signals	AM	0.602	17.0	B
			PM	0.590	21.6	B
	Option 3	signals	AM	0.610	17.5	B
			PM	0.565	21.3	B

It can be seen from Table 2 that each of the potential development options will have only moderate impacts on the operation of the key intersection of Botany Road / Lord Street during both the AM and PM peak periods which will operate with acceptable delays and degree of saturation. In addition, a Level of Service B would be experienced during the AM peak period and Level of Service C during the PM peak period, under the 'worst case' potential development scenario which demonstrates that the intersection would still have capacity to accommodate additional traffic volumes with no upgrades required.

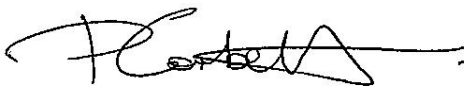
Accordingly, the traffic impacts under each potential development options would be accommodated by the existing intersection arrangements, with no external improvements required. The traffic impacts of the development would therefore be considered acceptable under any of the above potential development options.

The revised access and traffic circulation arrangements will also operate safely and efficiently and are considered to overcome concerns raised by the general public.

We trust the above is of assistance. Please contact the undersigned should you have any queries or require any further information regarding the above.

Yours faithfully,

traffix

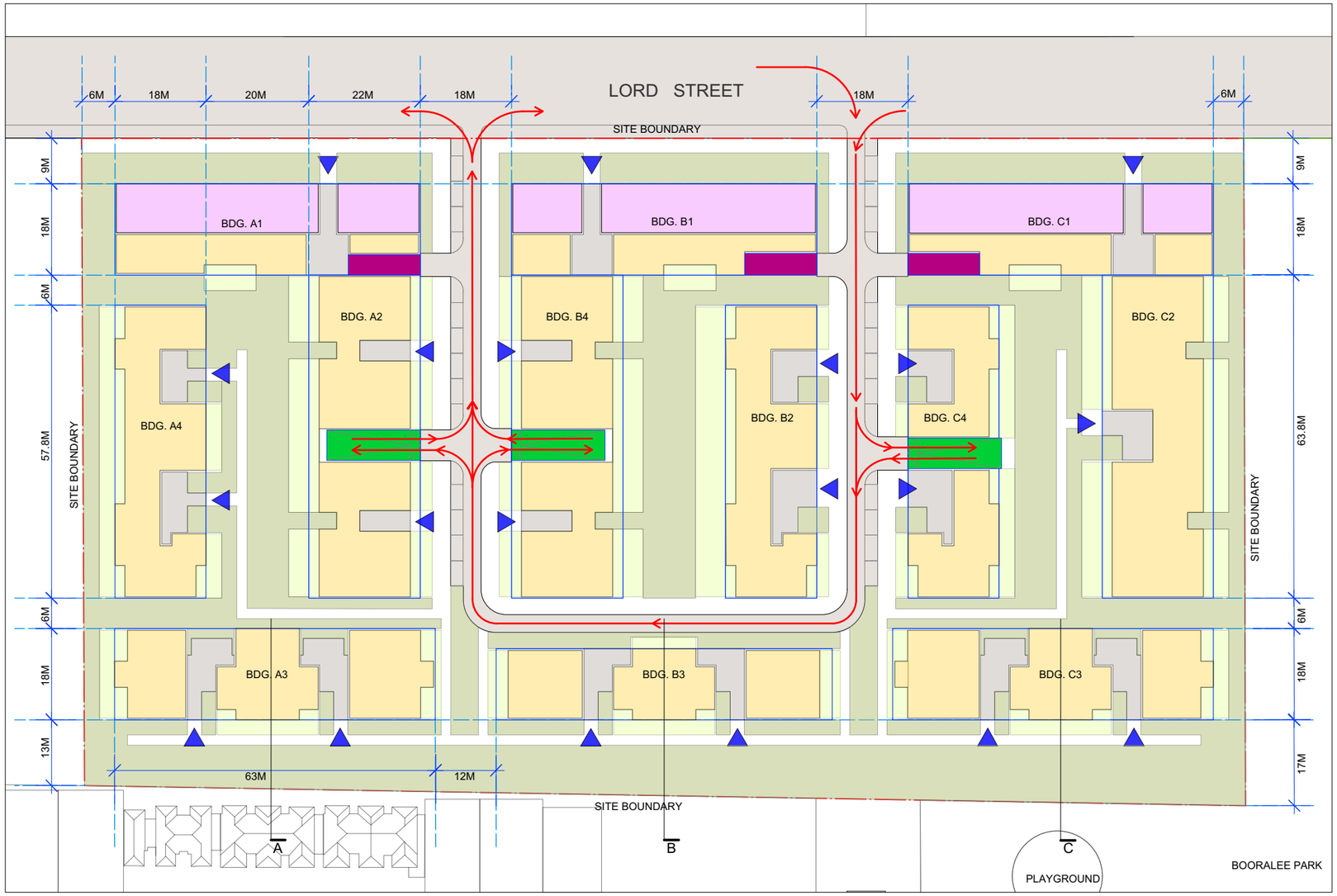


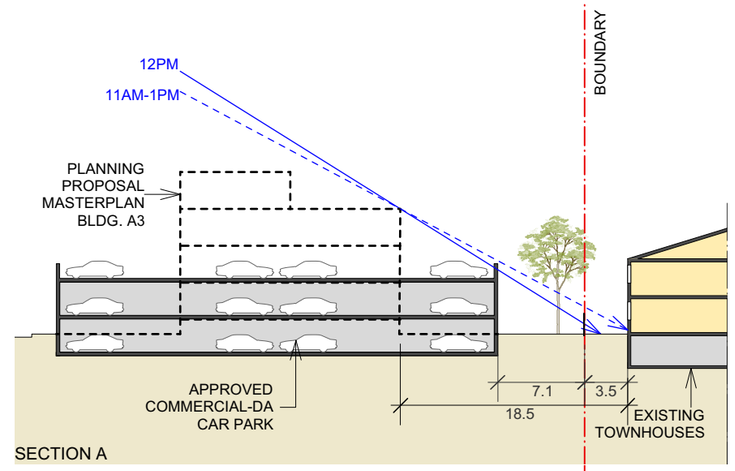
Paul Corbett
Senior Engineer

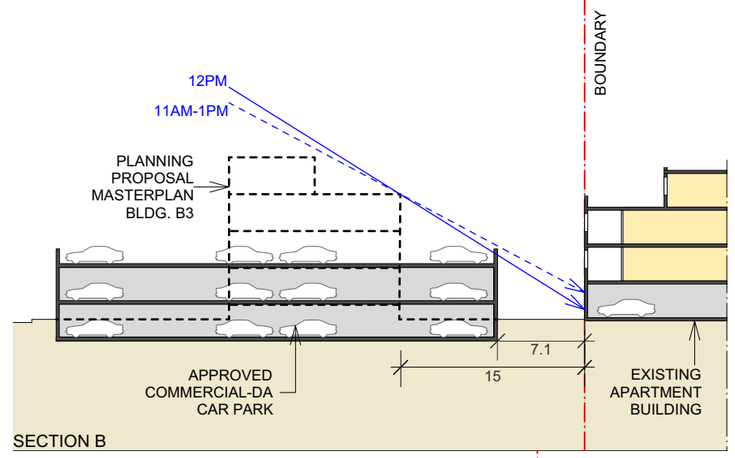
Email: paul.corbett@traffix.com.au

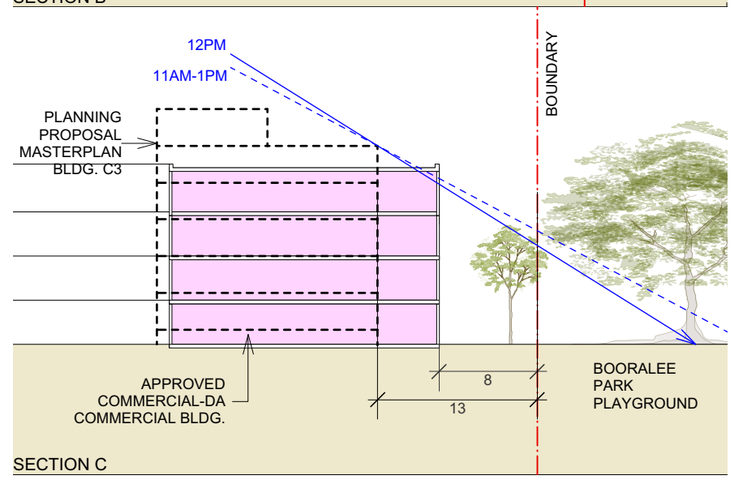
Attachments: 1) Revised Site Concept Plan
2) SIDRA Outputs

Attachment 1









BUILDING HEIGHTS												
BUILDINGS	A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
LEVELS	8	8	3.5	6	8	6	3.5	8	8	8	5.5	6

GFA SUMMARY			
TOTAL GFA	62'805	FSR	2.11:1
RESIDENTIAL GFA	61'584	TOTAL APARTMENTS	658
COMMERCIAL GFA	1'222	TOTAL CAR SPACES	1'267

SCHEMATIC SECTIONS 1:500@A3 - WINTER SOLSTICE

RESIDENTIAL
COMMERCIAL
ENTRY LOBBIES
ACCESS TO CARPARK
LANDSCAPED AREAS
PRIVATE COURTYARDS
PUBLIC PATHS
WASTE COLLECTION
PEDESTRIAN ACCESS
VEHICULAR CIRCULATION

TONY CARO ARCHITECTURE PTY LTD
LEVEL 1, 2 GLEN ST MILSONS POINT
NSW 2061 SYDNEY AUSTRALIA
T 99649100 F 99649133
WWW.TONYCAROARCHITECTURE.COM.AU

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LAKES BUSINESS PARK SOUTH PRECINCT

DEXUS

SINGLE LOOP ONE WAY ROAD

DWG NO.	**CM_ADD_004**
PROJECT No.	**1503**
PLOT DATE	**22/10/15**
SCALE	**1:1000@A3**

Attachment 2

MOVEMENT SUMMARY

Site: Botany Rd x Lord St Existing - AM Peak

Scenario: Existing
Period: AM Peak
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Rd											
2	T1	1028	3.8	0.381	4.7	LOS A	10.5	75.6	0.35	0.31	43.2
3	R2	87	1.2	0.286	12.6	LOS A	1.5	10.3	0.54	0.68	38.9
Approach		1116	3.6	0.381	5.3	LOS A	10.5	75.6	0.36	0.34	42.6
East: Lord St											
4	L2	37	0.0	0.243	32.1	LOS C	2.5	17.6	0.89	0.75	29.3
6	R2	89	4.7	0.243	47.6	LOS D	3.1	22.8	0.92	0.75	26.9
Approach		126	3.3	0.243	43.1	LOS D	3.1	22.8	0.91	0.75	27.5
North: Botany Rd											
7	L2	494	0.6	0.503	12.5	LOS A	16.9	120.2	0.48	0.64	41.2
8	T1	803	5.4	0.503	10.0	LOS A	18.2	133.2	0.53	0.53	36.8
Approach		1297	3.6	0.503	11.0	LOS A	18.2	133.2	0.51	0.57	39.0
All Vehicles		2539	3.6	0.503	10.1	LOS A	18.2	133.2	0.47	0.48	39.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	10.4	LOS B	0.1	0.1	0.42	0.42
All Pedestrians		105	32.4	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Botany Rd x Lord St Existing - PM Peak

Scenario: Existing
Period: PM Peak
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Rd											
2	T1	1006	2.7	0.463	13.8	LOS A	17.0	121.5	0.59	0.52	34.3
3	R2	31	0.0	0.112	24.9	LOS B	1.0	7.3	0.60	0.68	32.2
Approach		1037	2.6	0.463	14.1	LOS A	17.0	121.5	0.59	0.53	34.2
East: Lord St											
4	L2	43	0.0	0.455	41.4	LOS C	11.8	82.3	0.86	0.83	26.2
6	R2	466	0.0	0.455	41.3	LOS C	12.0	84.1	0.86	0.81	28.7
Approach		509	0.0	0.455	41.3	LOS C	12.0	84.1	0.86	0.81	28.5
North: Botany Rd											
7	L2	64	0.0	0.444	18.0	LOS B	15.7	111.8	0.58	0.56	39.6
8	T1	957	2.5	0.444	13.7	LOS A	16.0	114.4	0.59	0.54	34.1
Approach		1021	2.4	0.444	13.9	LOS A	16.0	114.4	0.59	0.54	34.7
All Vehicles		2567	2.0	0.463	19.4	LOS B	17.0	121.5	0.64	0.59	32.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	40.1	LOS E	0.1	0.1	0.82	0.82
P2	East Full Crossing	53	14.0	LOS B	0.1	0.1	0.48	0.48
All Pedestrians		105	27.1	LOS C			0.65	0.65

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Botany Rd x Lord St Option 1 - AM Peak

Scenario: Option 1
Period: AM Peak
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Rd											
2	T1	1028	3.8	0.407	4.8	LOS A	11.5	83.3	0.35	0.31	43.2
3	R2	173	0.6	0.627	22.1	LOS B	6.9	48.6	0.94	0.85	35.4
Approach		1201	3.3	0.627	7.3	LOS A	11.5	83.3	0.43	0.39	41.3
East: Lord St											
4	L2	58	0.0	0.463	51.6	LOS D	5.8	41.3	0.97	0.83	24.3
6	R2	175	2.4	0.463	55.9	LOS D	6.3	44.8	0.97	0.80	26.0
Approach		233	1.8	0.463	54.8	LOS D	6.3	44.8	0.97	0.81	25.6
North: Botany Rd											
7	L2	835	0.4	0.629	11.6	LOS A	22.9	161.4	0.49	0.72	43.6
8	T1	803	5.4	0.629	13.7	LOS A	26.3	192.7	0.65	0.61	34.2
Approach		1638	2.8	0.629	12.6	LOS A	26.3	192.7	0.57	0.67	39.9
All Vehicles		3072	2.9	0.629	13.7	LOS A	26.3	192.7	0.55	0.57	38.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	12.2	LOS B	0.1	0.1	0.45	0.45
All Pedestrians		105	33.2	LOS D			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Botany Rd x Lord St Option 1 - PM Peak

Scenario: Option 1
Period: PM Peak
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Rd											
2	T1	1006	2.7	0.547	21.6	LOS B	20.8	149.3	0.73	0.65	29.1
3	R2	46	0.0	0.212	28.6	LOS C	1.5	10.5	0.85	0.72	31.7
Approach		1053	2.6	0.547	21.9	LOS B	20.8	149.3	0.74	0.65	29.2
East: Lord St											
4	L2	107	0.0	0.557	38.8	LOS C	18.4	129.0	0.83	0.85	28.8
6	R2	722	0.0	0.557	36.2	LOS C	18.6	130.1	0.83	0.83	30.9
Approach		829	0.0	0.557	36.5	LOS C	18.6	130.1	0.83	0.83	30.7
North: Botany Rd											
7	L2	128	0.0	0.706	36.2	LOS C	26.3	187.2	0.89	0.81	32.6
8	T1	957	2.5	0.706	32.0	LOS C	26.3	188.4	0.90	0.81	24.1
Approach		1085	2.2	0.706	32.5	LOS C	26.3	188.4	0.90	0.81	25.4
All Vehicles		2967	1.7	0.706	29.9	LOS C	26.3	188.4	0.82	0.76	28.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
The results of iterative calculations indicate a somewhat unstable solution. See the Diagnostics section in the Detailed Output report.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	30.9	LOS D	0.1	0.1	0.72	0.72
P2	East Full Crossing	53	28.1	LOS C	0.1	0.1	0.68	0.68
All Pedestrians		105	29.5	LOS C			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Botany Rd x Lord St Option 2 - AM Peak

Scenario: Option 2
Period: AM Peak
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Rd											
2	T1	1028	3.8	0.425	7.4	LOS A	13.7	99.1	0.43	0.39	40.1
3	R2	127	0.8	0.526	19.1	LOS B	3.3	23.1	0.76	0.76	36.3
Approach		1156	3.5	0.526	8.7	LOS A	13.7	99.1	0.47	0.43	39.4
East: Lord St											
4	L2	94	0.0	0.512	52.8	LOS D	9.4	66.1	0.94	0.84	24.4
6	R2	272	1.6	0.512	52.8	LOS D	9.6	68.1	0.95	0.82	27.2
Approach		365	1.2	0.512	52.8	LOS D	9.6	68.1	0.95	0.83	26.5
North: Botany Rd											
7	L2	661	0.5	0.602	14.6	LOS B	23.1	163.1	0.56	0.72	41.0
8	T1	803	5.4	0.602	14.6	LOS B	24.5	179.7	0.65	0.63	33.3
Approach		1464	3.2	0.602	14.6	LOS B	24.5	179.7	0.61	0.67	37.6
All Vehicles		2985	3.0	0.602	17.0	LOS B	24.5	179.7	0.60	0.60	35.6

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	51.5	LOS E	0.2	0.2	0.93	0.93
P2	East Full Crossing	53	13.6	LOS B	0.1	0.1	0.48	0.48
All Pedestrians		105	32.5	LOS D			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Botany Rd x Lord St Option 2 - PM Peak

Scenario: Option 2
Period: PM Peak
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Rd											
2	T1	1006	2.7	0.522	14.0	LOS A	20.1	143.9	0.60	0.53	34.1
3	R2	86	0.0	0.403	32.1	LOS C	3.7	25.7	0.74	0.77	31.1
Approach		1093	2.5	0.522	15.4	LOS B	20.1	143.9	0.61	0.55	33.7
East: Lord St											
4	L2	72	0.0	0.590	45.4	LOS D	16.2	113.6	0.91	0.86	26.1
6	R2	588	0.0	0.590	44.1	LOS D	16.4	114.8	0.91	0.84	28.3
Approach		660	0.0	0.590	44.2	LOS D	16.4	114.8	0.91	0.84	28.1
North: Botany Rd											
7	L2	241	0.0	0.519	17.6	LOS B	18.5	131.4	0.62	0.66	42.1
8	T1	957	2.5	0.519	14.1	LOS A	20.0	142.8	0.62	0.60	33.8
Approach		1198	2.0	0.519	14.8	LOS B	20.0	142.8	0.62	0.61	36.1
All Vehicles		2951	1.7	0.590	21.6	LOS B	20.1	143.9	0.68	0.64	32.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	40.1	LOS E	0.1	0.1	0.82	0.82
P2	East Full Crossing	53	14.0	LOS B	0.1	0.1	0.48	0.48
All Pedestrians		105	27.1	LOS C			0.65	0.65

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Botany Rd x Lord St Option 3 - AM Peak

Scenario: Option 3
Period: AM Peak
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Rd											
2	T1	1028	3.8	0.404	5.8	LOS A	12.0	87.0	0.38	0.35	41.9
3	R2	120	0.9	0.359	17.1	LOS B	2.9	20.8	0.70	0.75	37.4
Approach		1148	3.5	0.404	7.0	LOS A	12.0	87.0	0.42	0.39	41.1
East: Lord St											
4	L2	92	0.0	0.602	56.6	LOS E	9.6	67.6	0.98	0.85	23.4
6	R2	264	1.6	0.602	56.9	LOS E	9.8	69.3	0.98	0.82	26.1
Approach		356	1.2	0.602	56.8	LOS E	9.8	69.3	0.98	0.83	25.5
North: Botany Rd											
7	L2	632	0.5	0.610	16.6	LOS B	24.4	172.5	0.61	0.74	39.7
8	T1	803	5.4	0.610	15.9	LOS B	25.0	183.4	0.68	0.65	32.3
Approach		1435	3.2	0.610	16.2	LOS B	25.0	183.4	0.65	0.69	36.4
All Vehicles		2939	3.1	0.610	17.5	LOS B	25.0	183.4	0.60	0.59	35.2

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	14.5	LOS B	0.1	0.1	0.49	0.49
All Pedestrians		105	34.4	LOS D			0.72	0.72

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: Botany Rd x Lord St Option 3 - PM Peak

Scenario: Option 3
Period: PM Peak
Signals - Fixed Time Isolated Cycle Time = 120 seconds (User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Botany Rd											
2	T1	1006	2.7	0.520	14.0	LOS A	20.0	143.3	0.59	0.53	34.1
3	R2	85	0.0	0.394	32.0	LOS C	3.6	25.2	0.73	0.77	31.2
Approach		1092	2.5	0.520	15.4	LOS B	20.0	143.3	0.61	0.55	33.7
East: Lord St											
4	L2	66	0.0	0.565	44.9	LOS D	15.4	107.8	0.90	0.85	26.1
6	R2	566	0.0	0.565	43.7	LOS D	15.6	109.0	0.90	0.84	28.3
Approach		633	0.0	0.565	43.8	LOS D	15.6	109.0	0.90	0.84	28.1
North: Botany Rd											
7	L2	235	0.0	0.517	17.6	LOS B	18.4	130.7	0.61	0.66	42.1
8	T1	957	2.5	0.517	14.1	LOS A	19.8	141.8	0.62	0.60	33.8
Approach		1192	2.0	0.517	14.8	LOS B	19.8	141.8	0.62	0.61	36.0
All Vehicles		2916	1.8	0.565	21.3	LOS B	20.0	143.3	0.67	0.64	32.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	53	40.1	LOS E	0.1	0.1	0.82	0.82
P2	East Full Crossing	53	14.0	LOS B	0.1	0.1	0.48	0.48
All Pedestrians		105	27.1	LOS C			0.65	0.65

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.