Planning Proposal

Increase FSR and Building Height for Commercial Office Development

8 Solent Circuit, Baulkham Hills

PREPARED FOR EDEN BRAE HOMES INVESTMENTS PTY LTD

17-002195 | 21 December 2017

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DOCUMENT CONTROL

ISSUE	DATE	ISSUE DETAILS	AUTHOR	CHECKED	APPROVED
A	15/12/17	DRAFT	EH	PL	PL
B	21/12/17	FINAL	EH	PL	

Contents

Tables

Figures

Appendices

Appendix A	Architectural Scheme prepared by WMK Architecture
Appendix B	Traffic Assessment prepared by TDG in association with Gennaoui Consulting
Appendix C	Norwest Association Limited Letter

1 Introduction

1.1 Overview

This Planning Proposal is prepared on behalf of the proponent, Eden Brae Homes Investments Pty Ltd (Eden Brae) by Calibre Consulting (NSW) Pty Ltd, and supports planning amendments to *The Hills Local Environmental Plan 2012* (LEP) in relation to the subject site, being Lot 4026 in DP 873565, also known as 8 Solent Circuit, Baulkham Hills (the site). The proposal seeks to amend the floor space ratio and building height specific to the site to permit increased employment densities in order to facilitate a high quality and sustainable commercial office development in Norwest Business Park. An Architectural Scheme accompanies this Planning Proposal in Appendix A, which demonstrates the desired development for the site comprising of two similarly scaled buildings containing office space, basement and elevated car parking, showroom and ground level café/lobby.

The purpose of the Planning Proposal is to support Eden Brae's intention to relocate and expand their office and showroom from Brookhollow Avenue to the subject site and enable additional employment space to be situated in the Business Park, within walking distance to Norwest Station. Norwest Station comprises part of the Sydney Metro infrastructure project, which will connect Sydney's North-Western suburbs with the wider metropolitan rail network. The proposed amendments to *The Hills LEP 2012* will assist in achieving strategic objectives envisioned for the area to encourage additional jobs in a specialised employment centre that is easily accessible via public transport.

The development of Lot 4026 in DP 873565, being 8 Solent Circuit, Baulkham Hills will require the following site-specific amendments to *The Hills LEP 2012*:

- Increase Floor Space Ratio under Clause 4.4 Floor Space Ratio and amend the 'Floor Space Ratio Map':
    - From 1:1 to 2.2:1
- Increase Building Height under Clause 4.3 Height of Buildings and amend the 'Height of Buildings Map':
    - From RL 116m to RL 126m

The architectural scheme includes the creation of two office buildings containing six (6) levels of office space, three (3) levels of elevated car parking, a ground level for café/lobby, loading and waste at the rear, and three (3) levels of basement car parking and one (1) showroom level. The development will accommodate Eden Brae's new head office/showroom as well as other office tenants.

The Planning Proposal is consistent with the strategic objectives for the area as demonstrated in various strategic plans, which identify Norwest as a "strategic centre" earmarked for future growth. The revised draft Central City District Plan have aspirations for Norwest to be transformed into a *"transit-oriented, more vibrant and diversified centre with high employment densities"*, while the Hills Corridor Strategy identifies a future FSR of 2:1 for the subject site, which this proposal is generally in accordance.

The completed building in 2020 will meet Council's requirements for car parking and will satisfy Eden Brae and other prospective occupants of the office space that require car parking at the current rate of 1:25.

Given the subject site's strategic location, a key matter that underpins this Planning Proposal is the Council's car parking requirements within Norwest Business Park. Eden Brae intends to increase the FSR on the site through a separate future Planning Proposal in 3-5 years' time post opening of the Metro in order to convert the elevated levels of car parking into additional office space. It is envisaged that the car parking entitlements would be reduced in the future after the Metro has been in operation after a number of years whereby there will be a decreased reliance on private vehicles.

As a result of the above, one of the features of the building design, notwithstanding a new Planning Proposal that will be required, is that the building has been 'future proofed' to allow the elevated car parking to be converted to office space which will have the dual effect of increasing office space and reducing the car parking to what is expected to be a long term cultural change towards lower car parking rates in the future. It is noted that this would be a new and revised Planning Proposal, which is only mentioned to demonstrate the longer term potential of the building design to accommodate future changes as a result of the Metro.

The Hills Shire Council are requested to process this planning amendment to Gateway review for a 2.2:1 FSR and a building height of RL 126m.

1.2 Structure of the Report

This Planning Proposal is structured as follows:

- Section 2: Description of the site and its context
- Section 3: Background including preliminary meeting with Council and Norwest Association Panel Meeting
- Section 4: Description of the Planning Proposal including key features and benefits of the development
- Section 5: An outline of the strategic planning objectives for the site
- Section 6: A summary of the local planning framework
- Section 7: Explanation and justification for the Planning Proposal (Section 55 of the EP&A Act)

This Planning Proposal has been prepared in accordance with Section 55 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the relevant guidelines issued by the Department of Planning and Environment being *A Guide to Preparing Planning Proposals* and *A Guide to Preparing Local Environmental Plans*.

This Planning Proposal is submitted to The Hills Shire Council for consideration and if supported, the Proposal will be submitted to the Department of Planning and Environment for Gateway determination. All strategic planning policies and statutory planning instruments have been taken into consideration and addressed within this Planning Proposal including the following:

- A Plan for Growing Sydney
- Draft Greater Sydney Region Plan
- Draft Revised Central City District Plan
- Draft Future Transport Strategy 2056
- North West Rail Link Corridor Strategy – Norwest Station Structure Plan
- The Hills Corridor Strategy
- The Employment Lands Direction

The Planning Proposal is supported by documentation including:

- Architectural Scheme prepared by WMK Architecture (Appendix A)
- Traffic Assessment prepared by TDG in association with Gennaoui Consulting (Appendix B)
- Norwest Association Limited Letter (Appendix C)

2 Site Detail and Context

2.1 Site Detail

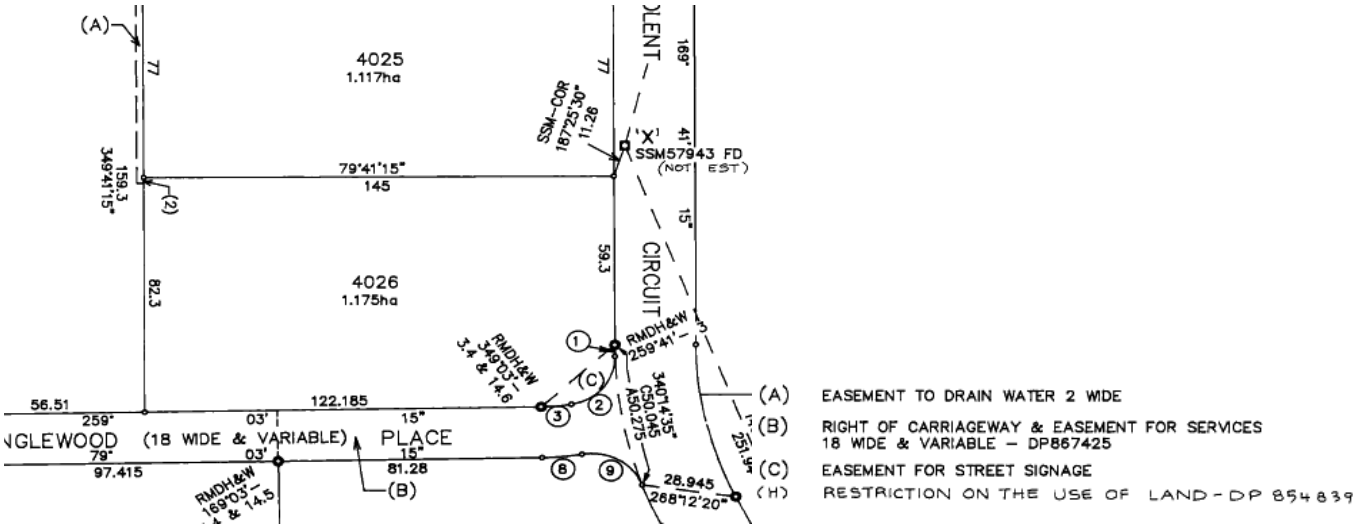
The subject site is Lot 4026 in DP 873565, being 8 Solent Circuit, Baulkham Hills, which is 1.175 hectares and has frontages to Inglewood Place and Solent Circuit. The site has a moderate slope, from the west to the east. It currently contains a two storey office/warehouse building and associated car parking as well as some vegetation along the boundary.

An existing substation is located on the north-eastern corner of the site. According to the Deposited Plan for 873565, the site contains an easement for street signage on the south-east corner.

Figure 2.1 Aerial view of subject site

(Source: Nearmap 2017)

Figure 2.2 Deposited Plan 873565



As shown in the street views in the following figures, the existing warehouse is shielded by vegetation on the verges. Entry to the site is only via Solent Circuit, with vehicles needing to exit from the south-western corner of the site into Inglewood Place. A paved footpath located near the south-eastern corner of the site provides pedestrian access into the site.

Figure 2.3 Street View from the corner of Solent Circuit and Inglewood Place

(Source: Google Maps 2017)

Figure 2.4 Street View of North-Eastern Corner of Site along Solent Circuit

(Source: Google Maps 2017)

Figure 2.5 Street View from Inglewood Place

(Source: Google Maps 2017)

Figure 2.6 Street View Showing Exit into Inglewood Place

(Source: Google Maps 2017)

2.2 Site Context

The site is located some 30km north-west of Sydney CBD, within the eastern precinct of Norwest Business Park, which is a significant specialised commercial/office hub in the North West. The site is strategically placed within a 400m walkable radius of Norwest Station.

Figure 2.7 Proximity to Norwest Station

(Source: Nearmap 2017)

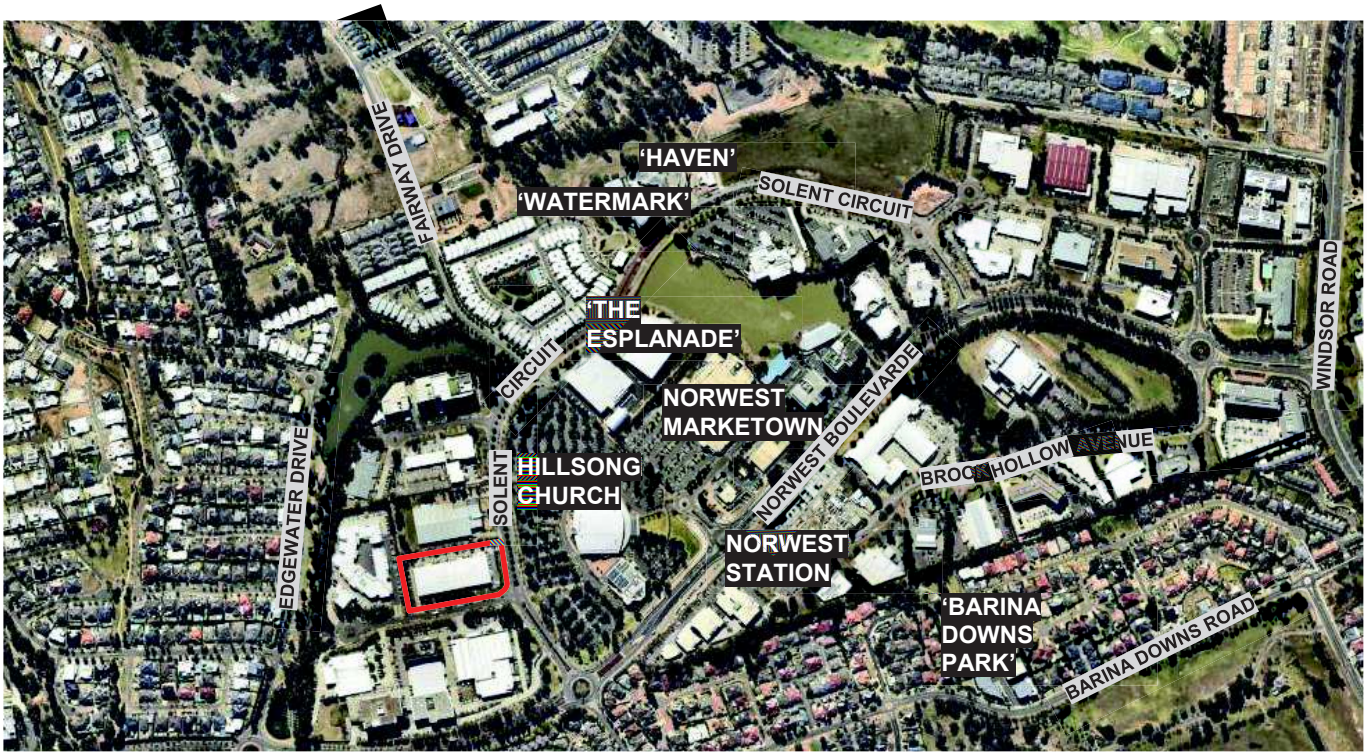
The site is adjacent to the Baulkham Hills Hillsong Church campus. Norwest Marketown is located behind the church, which includes a supermarket, small scale retail, and other essential services. Other commercial and warehouse type buildings surround the subject site. The site is also located in close proximity to generally low density to medium density residential areas situated in Bella Vista and Kellyville as shown in Figure 2.8. These residences have generally occurred over the last 15 years. In recent times, higher density development have been approved within the locality.

Recent developments around this area of Norwest Business Park include:

- Two high density residential developments opposite Norwest Lake and Marketown known as *'Haven'* and *'Watermark'* apartments
- An apartment development consisting of 138 units in nine 3-5 storey residential flat buildings known as known as '*Barina Downs Park'*
- Two mixed use buildings consisting of 267 residential apartments and commercial floor space known as '*The Esplanade'* at 11-13 Solent Circuit (the site of the former Sydney Ice Arena)

It is evident that there has been little or not at all any recent commercial development in this part of Norwest Business Park and this Planning Proposal seeks to amend the planning controls to encourage more employment opportunities.

Figure 2.8 Aerial view of surrounds



(Source: Nearmap 2017)

2.2.1 Norwest Business Park

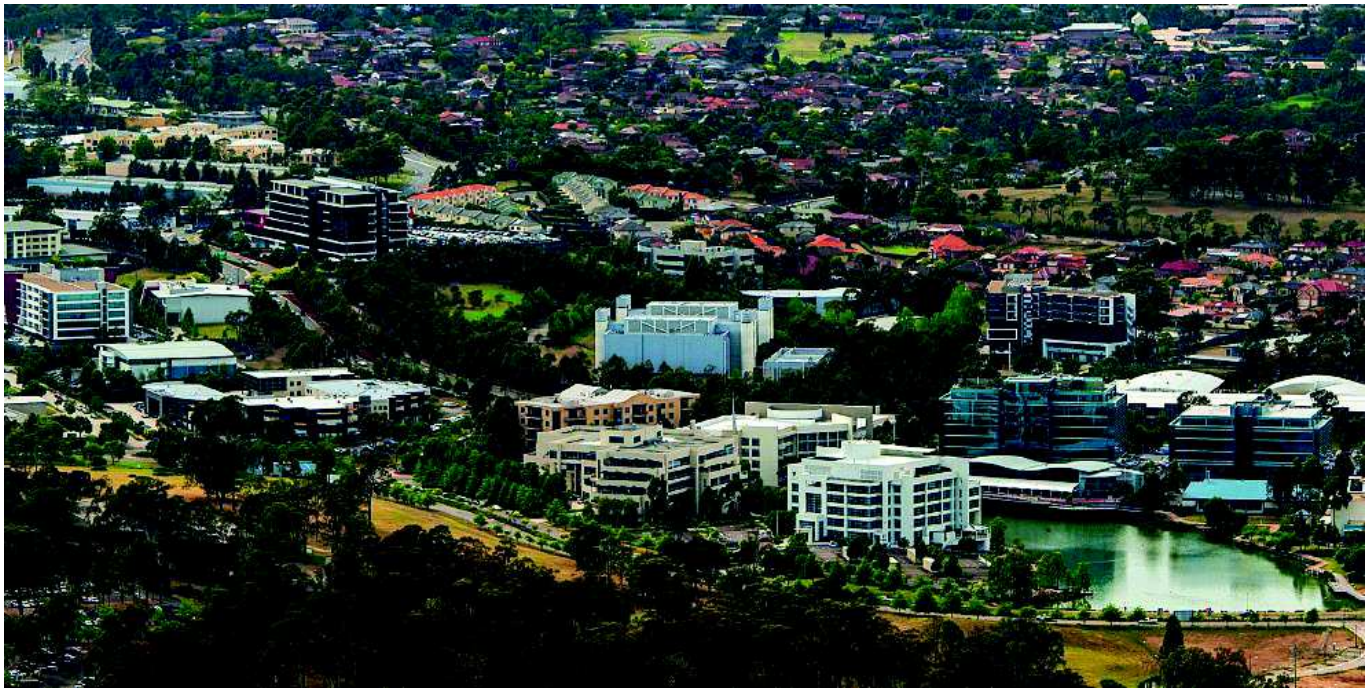
Norwest Business Park was established in 1987 and is identified within 'A Plan for Growing Sydney' (2014) as a strategic centre within the Global Economic Corridor.

Norwest Business Park is characterised by commercial and light industrial uses including office spaces and bulky goods retailing. The business park is split into two main precincts to the west and to the east.

Key features of the business park include Norwest Marketown (eastern part of the Business Park) and Circa Retail Shopping Centre (western part of the Business Park), which provide the major supermarkets such as Coles and Woolworths, along with other specialty retailers and services. The Hills Shire Council chambers is located at the eastern end of the business park adjoining Windsor Road. Hillsong Church is another hub of activity, attracting a large number of people to the area, is situated adjacent to Norwest Marketown and fronts Norwest Boulevarde. Two major private hospitals are located within the business park including Norwest Private Hospital at Norbrick Drive and the Hospital for Specialist Surgery (HSS) which fronts Norwest Lake.

Norwest Business Park is one of the main employment sectors within North-West Sydney, home to a range of prominent companies such as Woolworths Limited, which is headquartered on the corner of Norwest Boulevarde and Lexington Drive (western part of the Business Park). The business park is continuing to grow substantially and evolve in nature, especially with the onset of the Northwest Metro link. Two stations including Norwest Station and Bella Vista Station will both benefit those who work and reside within the area. Norwest Station is the closest station and will be an underground station situated at the corner of Norwest Boulevard and Brookhollow Avenue some 400m from the subject property.

Figure 2.9 Norwest Business Park



(Source: The Hills Shire Council 2015)

2.2.2 Rail and Bus Network

North-West Sydney is a very car dependent area and has historically lacked suitable public transport networks. Workers within Norwest Business Park are especially dependent on using private vehicles to travel to work. The nearest train station in relation to the site include Seven Hills Station which is a 15 minute drive south-west of the site.

The site will be serviced by the Sydney Metro Northwest, being the first stage of the Sydney Metro infrastructure project slated to open in 2019. This will service local residents and workers with a metro system connecting Norwest into the broader metropolitan rail network.

Norwest Station will include 4 spaces for buses, 9 kiss and ride spaces, 9 taxi spaces, as well as parking and storage for 35 bicycles. In comparison, Bella Vista Station, will be supported by 800 commuter car parking spaces, 6 spaces for buses, 16 kiss and ride spaces, 4 taxi spaces, as well as parking and storage for 35 bicycles.

Figure 2.10 Sydney Rail Network

(Source: NSW Government 2015)

There is a large bus network servicing the North-West. In particular, a bus rapid transit line known as the North-West T-way provides much of the bus services including routes to major centres. In recent years, more frequent bus services have been provided along Norwest Boulevarde for those working within the business park.

The site itself is serviced by seven bus routes, with the closet bus stops located at Norwest Boulevarde before Solent Circuit and Norwest Boulevarde after Reston Grange. The following routes service the site:

- 618X provides peak hour services to and from the Sydney CBD via the M2 Busway

- 628 provides peak hour services to and from Chatswood via the M2 Busway
- 715 provides peak hour services to and from Seven Hill and Castle Hill
- 745 runs in 1 hour intervals on weekdays with few services on Saturday to and from St Marys and Castle Hill
- T62 runs regularly in peak hours and in 1 hour intervals during off-peak periods and weekends to and from Castle Hill and Parramatta via the North-West T- way
- T64 runs regularly in peak hours and in 1 hour intervals during off-peak periods and weekends to and from Rouse Hill and Parramatta
- T70 runs regularly in peak hours and in 1 hour intervals during off-peak periods and weekends to and from Blacktown and Castle Hill via the North-West T-Way

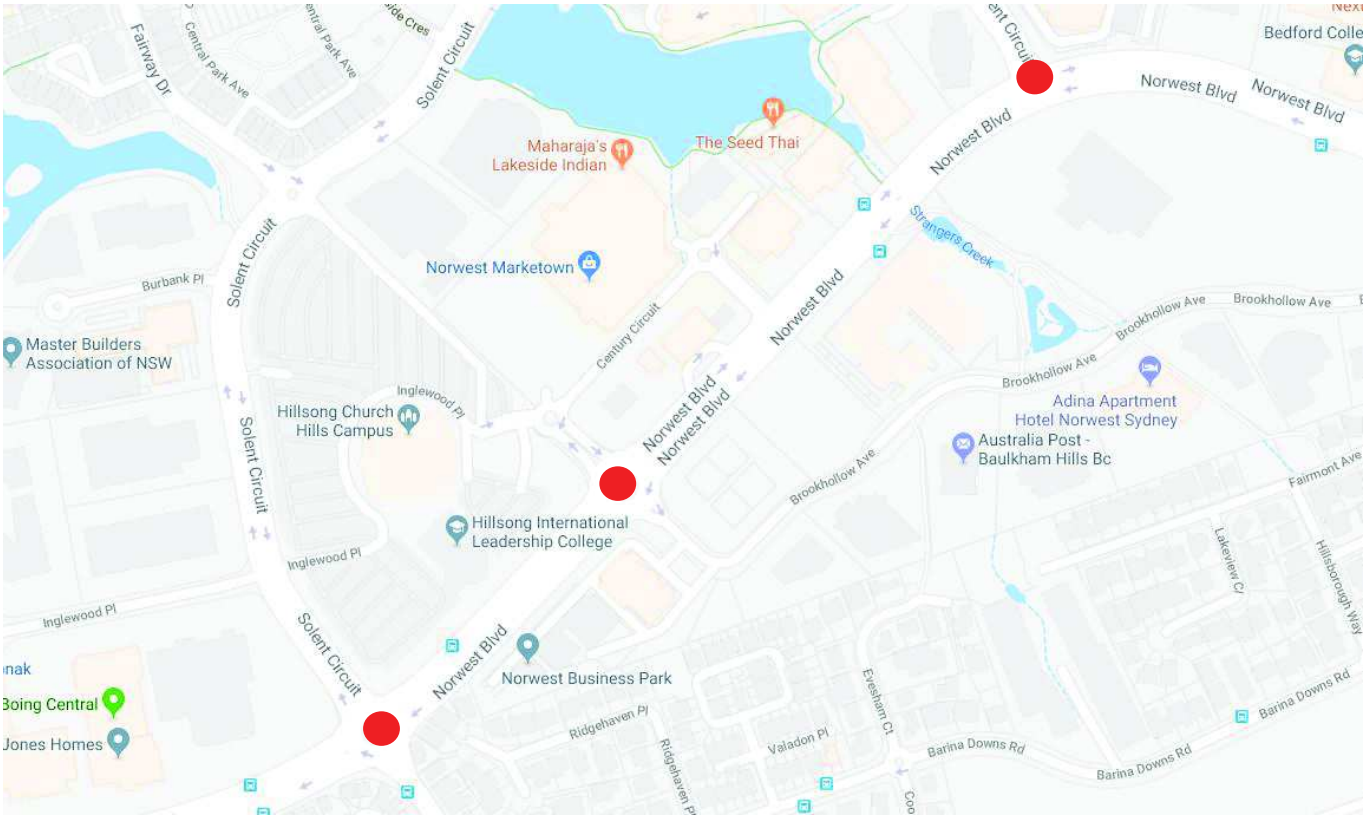
2.2.3 Road Network

The site is bounded by Inglewood Place to the south and Solent Circuit to the east. Inglewood Place has a two lane undivided carriageway, with on-street parking on both sides. Solent Circuit, which has a two lane divided carriageway, with on-street parking on both sides, provides internal access within Norwest Precinct and connects into Norwest Boulevarde, a key road that traverses the precinct's commercial/business core, carrying traffic to key destinations in the east and west. The Traffic Report attached in Appendix B outlined that it is a "*four lane divided carriageway between Windsor Road and Old Windsor Road, with two-lane circulating roundabouts controlling most intersections along Norwest Boulevard. The roundabout at the intersection of Norwest Boulevard and Lexington Drive and Elizabeth Macarthur Drive is signal controlled during peak periods*".

The report also notes that traffic signals are proposed at the following intersections:

- Norwest Boulevarde and Solent Circuit east
- Century Circuit and Brookhollow Avenue
- Solent Circuit and Reston Grange

Figure 2.11 Map of proposed traffic signals



(Source: The Hills Shire Council 2015)

Windsor Road and Old Windsor Road are also major regional roads which carry traffic into Norwest Business Park as well as connect into the M7 and M2 Motorway.

Within the vicinity of the site lies the M2 Hills Motorway and Westlink M7, which are key nodes of the Sydney Orbital Network, which are a ring of motorways that provide access around the Sydney metropolitan area. In addition, the NorthConnex will be a future 9km tunnel linking the M2 Motorway at West Pennant Hills to the M1 Pacific Motorway at Wahroonga to reduce traffic congestion along Pennant Hills Road.

2.2.4 Pedestrian Network

The site has access to a relatively permeable pedestrian network, within walkable distance to Norwest Station. There are paved footpaths on both sides of Solent Circuit, Inglewood Place as well as Norwest Boulevarde. A pathway provides access to and from the nearby residential areas in Bella Vista, linking the end of Inglewood Place with Edgewater Drive.

A significant issue in relation to movement within the business park are pedestrians crossing Norwest Boulevarde, especially during peak hour traffic. There are no traffic signals in place (save for the traffic signal recently installed at the intersections of Norwest Boulevarde, Elizabeth Macarthur Drive and Lexington Drive), with the main traffic management tool being roundabouts. This is a key issue for pedestrians who wish to cross to either side of Norwest Boulevarde – and in fact a concern for accessing the subject site.

However, once the Metro opens in 2019, future occupants of the office development proposed on the site would be able to use the pedestrian tunnel linking Norwest Station and Norwest Marketown Shopping Centre, which comprises part of the construction of Norwest Station.

3 Background

Eden Brae is seeking to expand with a new office and showroom and provide for new office accommodation that is lacking in Norwest Business Park. Eden Brae has been in Norwest for more than 17 years, and have been building quality, contemporary houses across Sydney that have become dream homes for thousands of individuals.

Eden Brae has an office and home showroom in Brookhollow Avenue within the Business Park and is seeking to expand locally.

3.1 Preliminary Meeting with The Hills Shire Council

Eden Brae, WMK Architecture and Calibre Consulting have had a preliminary meeting with The Hills Shire Council on 3 November 2017 regarding the Planning Proposal at 8 Solent Circuit, Baulkham Hills.

Council have highlighted that a significant issue within Norwest Business Park relate to traffic conditions. Council currently do not have traffic modelling which would assist in understanding current traffic generation and future modal shift. They noted that traffic signals are planned to be provided at the intersection of Solent Circuit, Norwest Boulevard and Reston Grange. They discussed that future development nearby may need to contribute to the improvement of this intersection, and that it would be beneficial for the future development, being more accessible to future tenants and employees.

Council have requested a traffic and car parking assessment, including information about cumulative impacts of development in the Norwest locality to support the Planning Proposal. A Traffic Assessment prepared by TDG in association with Gennaoui Consulting accompanies this Planning Proposal in Appendix B and addresses Council's requirements.

The outcome of the meeting have shown that Council are supportive of increased employment/commercial densities within Norwest, which is at the crux of this Planning Proposal.

3.2 Norwest Association Panel Meeting

A Norwest Association Panel Meeting in relation to the Planning Proposal was held on 22 November 2017. A preliminary architectural scheme was shown to the panel members for discussion.

The meeting highlighted the need to address the DCP requirement for a 20m setback zone from the Solent Circuit. The panel in particular noted that they would like to see the special treatment to the Solent Circuit frontage with some public treatment to the showroom and the entrance from Solent Circuit.

The panel also noted that the architectural plans show treatment to the buildings from a good perspective.

Their comments were incorporated into the architectural scheme submitted with this Planning Proposal.

Attached in Appendix C is a letter from Norwest Association, which raises no objection to this Planning Proposal and notes the potential for job generation and benefits to be derived from the development.

4 Planning Proposal

4.1 Overview

The objective of this Planning Proposal is to amend *The Hills Local Environmental Plan 2012* to increase the floor space ratio and building height to facilitate a high quality and sustainable commercial office development for the subject site being Lot 4026 in DP 873565, known as 8 Solent Circuit, Baulkham Hills.

This Planning Proposal seeks to:

- Amend the floor space ratio from the existing 1:1 FSR to 2.2:1 FSR and;
- Amend the maximum building height from RL 116m to RL 126m.

This Planning Proposal is supported by an architectural scheme depicting the desired vision for the site in accordance with the 2.2:1 FSR being sought.

4.2 Architectural Scheme

An architectural scheme has been prepared by WMK Architecture for the proposed development of 8 Solent Circuit, Baulkham Hills. These plans are attached in Appendix A of this Planning Proposal.

The scheme demonstrates the following key features:

- **Overview of Scheme:**

  The proposed scheme includes the staged development of two office buildings. Both buildings will include three (3) levels of basement car parking, ground floor lobby/café, three (3) levels of above ground car parking, and six (6) floors of office space.

  The building being constructed in Stage 1 will include additional space for office purposes on the ground floor and a showroom in the basement while the building being constructed in Stage 2 will include a loading and waste facility on the ground floor.

- **Gross Floor Area:**

  The proposed scheme supporting this Planning Proposal seeks to deliver a total gross floor area of 25,555m^2 for a 2.2:1 FSR.

  The total schedule for a 2.2:1 FSR is shown in Table 4.1 on the following page. The section shaded in grey are not included in the gross floor area for the 2.2:1 FSR, being the area for the elevated car park.

Table 4.1 GFA (m^2) Schedule

	Stage 1	Stage 2	Total
Level 9	2,035m^2	1,745m^2	3,780m^2
Level 8	2,035m^2	1,745m^2	3,780m^2
Level 7	2,035m^2	1,745m^2	3,780m^2
Level 6	2,035m^2	1,745m^2	3,780m^2
Level 5	2,035m^2	1,745m^2	3,780m^2
Level 4	2,035m^2	1,745m^2	3,780m^2
Level 3	-	-	-
Level 2	-	-	-
Level 1	-	-	-
Ground - Lobby - Café - EBH - Office	 145m^2 145m^2 490m^2 725m^2	 185m^2 185m^2 - -	 330m^2 330m^2 490m^2 725m^2
Level B1 - Showroom	 1,000m^2	 -	 1,000m^2
Site Area Permissible FSR			11,750m^2 1:1
Total GFA (m^2) for Stage 1 and 2 Combined FSR of **2.2:1**	14,715m^2	10,840m^2	**25,555m^2**

- **Car Parking Schedule:**

  A total of 999 car parking spaces are provided for the 2.2:1 FSR scheme, which is in accordance with Council's car parking requirements outlined within the DCP.

  The proposed car parking schedule is shown in Table 4.2 on the following page.

Table 4.2 Car Parking Schedule

	Stage 1	Stage 2	Total
Level 3	49	37	86
Level 2	49	37	86
Level 1	40	33	73
Ground	30	24	54
Level B1	70	110	180
Level B2	150	110	260
Level B3	150	110	260
Total Parking for 2.2:1 FSR	**538**	**461**	**999**
Car Parking Required - Office (1/25m^2) - Lobby (0.75/100m^2) - Café (12/100m^2) - Showroom (0.75/100m^2)	 517 2 18 12	 419 2 22 -	 936 4 40 12
Total Required Parking	549	443	992

- **Height:**

  The proposed buildings each have a height of RL 125.2m facing Inglewood Place. The buildings will be higher than the neighbouring developments, however adverse impacts will be avoided due to the screening devices and landscaping proposed. There will be minimal impacts in respect to overshadowing due to the orientation of the buildings. It seeks to be a landmark building within Norwest Business Park that is easily identifiable. The proposal will not impact the view corridor to and from Bella Vista Farm as demonstrated in Section 6.2.1.

- **Massing and Orientation:**

  The buildings are of a similar scale, with the length of the building in Stage 1 facing Solent Circuit, and the length of the building in Stage 2 facing Inglewood Circuit. The proposed orientation of the buildings will result in good solar access for the amenity of future occupants as shown in Figure 4.1.

  The buildings are appropriately positioned to ensure consistent setback with the streetscape, and facilitate convenient and safe movement within the site. The buildings are suitably separated by an outdoor courtyard to accommodate future tenants and visitors, and support both cafés/lobbies with room for outdoor seating.

- **Design and Streetscape:**

  The building's design ensures an aesthetically pleasing and attractive streetscape, while also maintaining the business park character. The building will be designed to ensure a high NABERS Green Rating, contributing to a sustainable outcome.

The architectural scheme accompanying this Planning Proposal demonstrates good design and clearly distinguishes the ground floor, elevated parking and upper office levels through the use of appropriate architectural devices to establish a landmark building within Norwest Business Park. Special treatment is given to both Inglewood Place and Solent Circuit frontages, with a pedestrian colonnade treatment as a feature on Solent Circuit. Landscaping embellishments are provided throughout the site to ensure that the development is aesthetically pleasing and provides a good outcome for the surrounding streetscape, with additional landscaping treatment screening the showroom on Solent Circuit.

The elevated portion of the car parking will be appropriately screened from view as shown in the perspective, with a dark finish on the external walls to ensure that it does not impact on the amenity of the business park surroundings. Appropriate footpath design is also shown in the architectural plans, to enable convenient and safe pedestrian access and movement throughout the site.

- **Access:**

  Both existing access points from the north-east corner, via Solent Circuit and from the south-west corner and via Inglewood Place will provide shared entry/exits. There will be ramps to access basement car parking and upper level car parking.

Figure 4.1 Site Analysis

Figure 4.2 Proposed Scheme – Section A

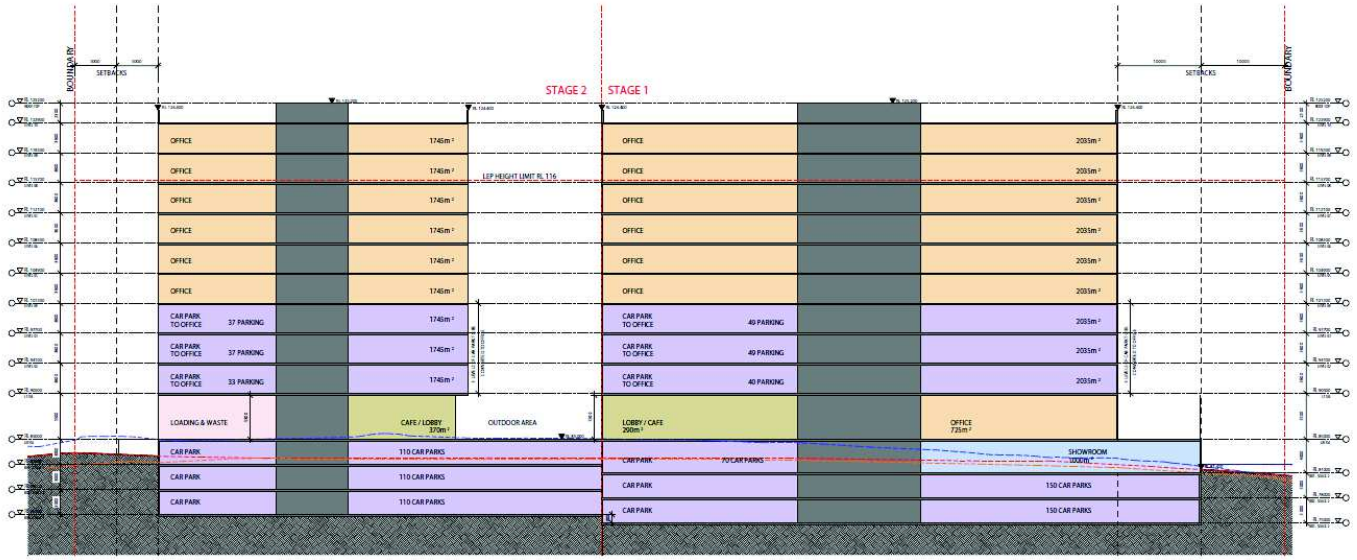


Figure 4.3 Ground Level of Scheme

Figure 4.4 Basement of Scheme

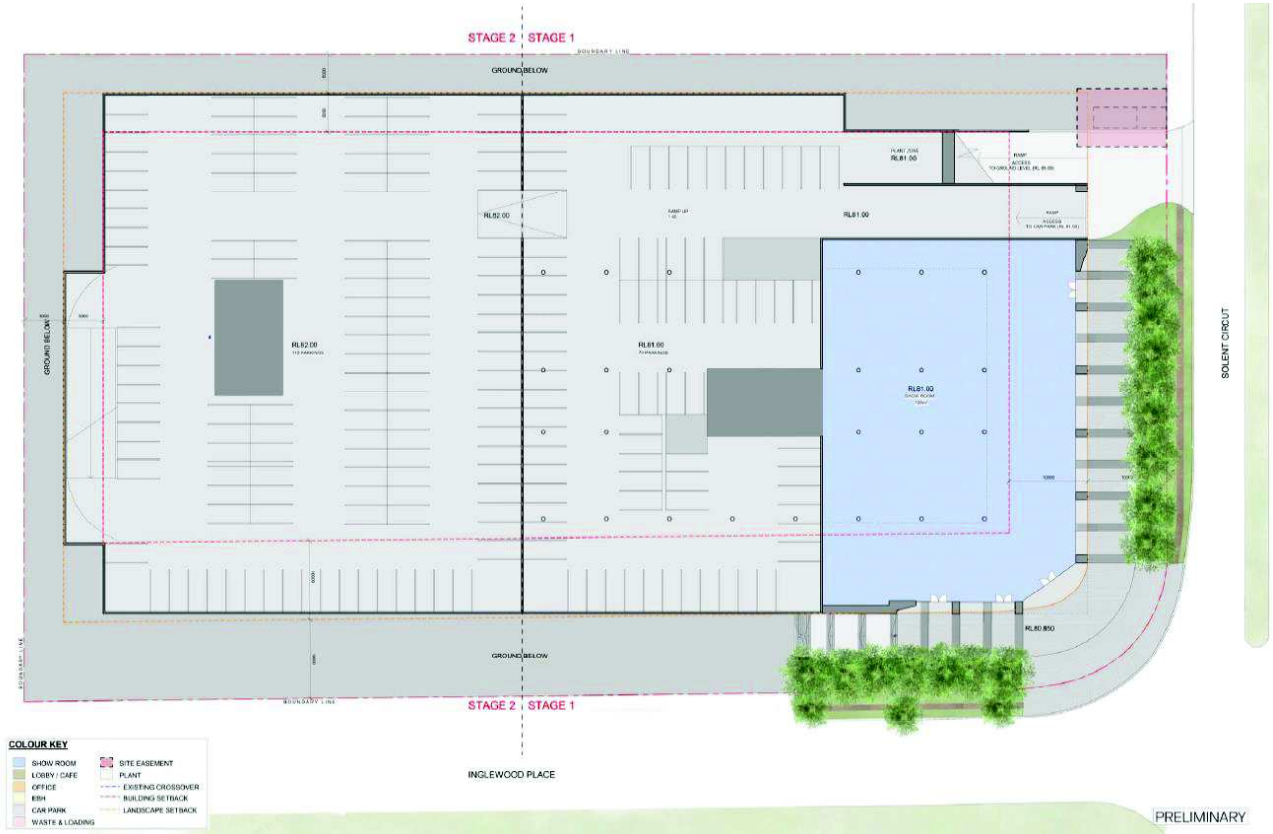


Figure 4.5 Typical Above Ground Parking Floor (Level 2 – 3)

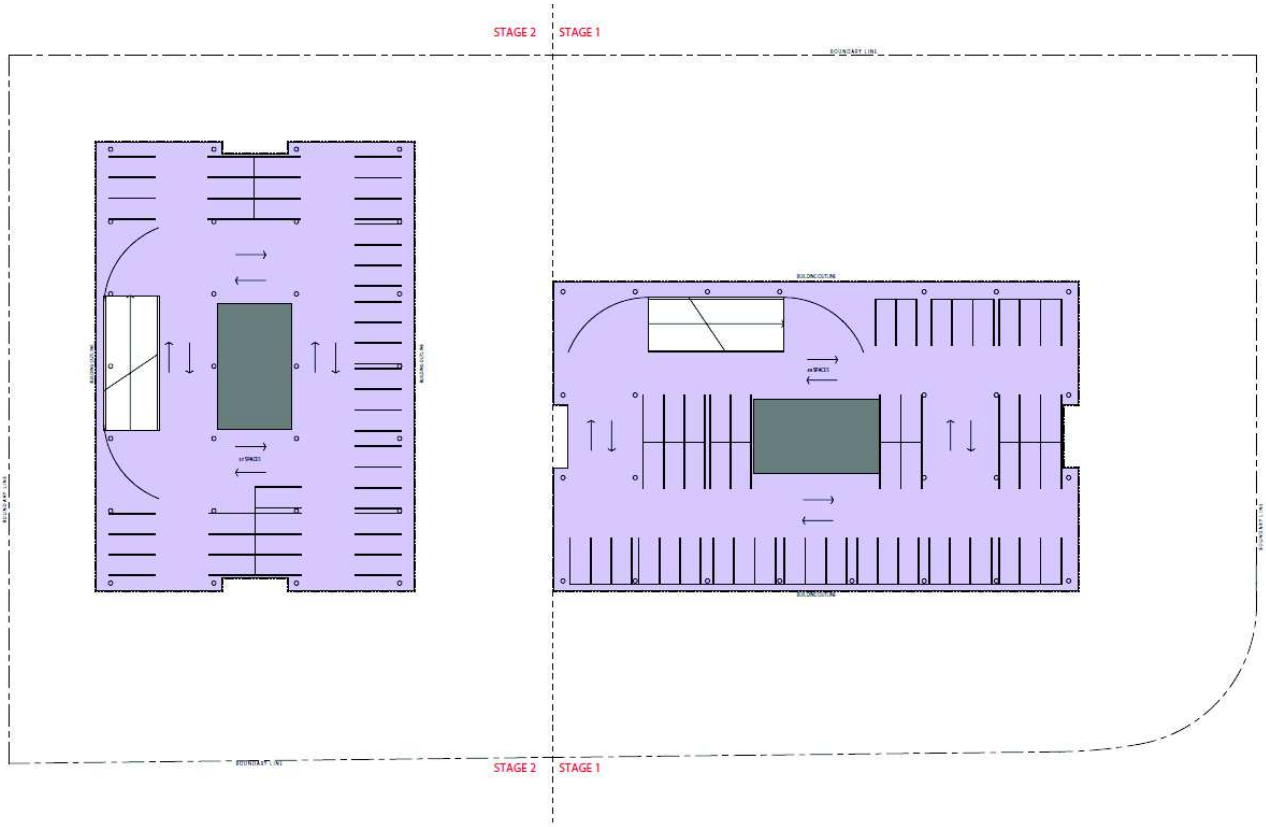


Figure 4.6 Typical Office Floor (Level 4-9)

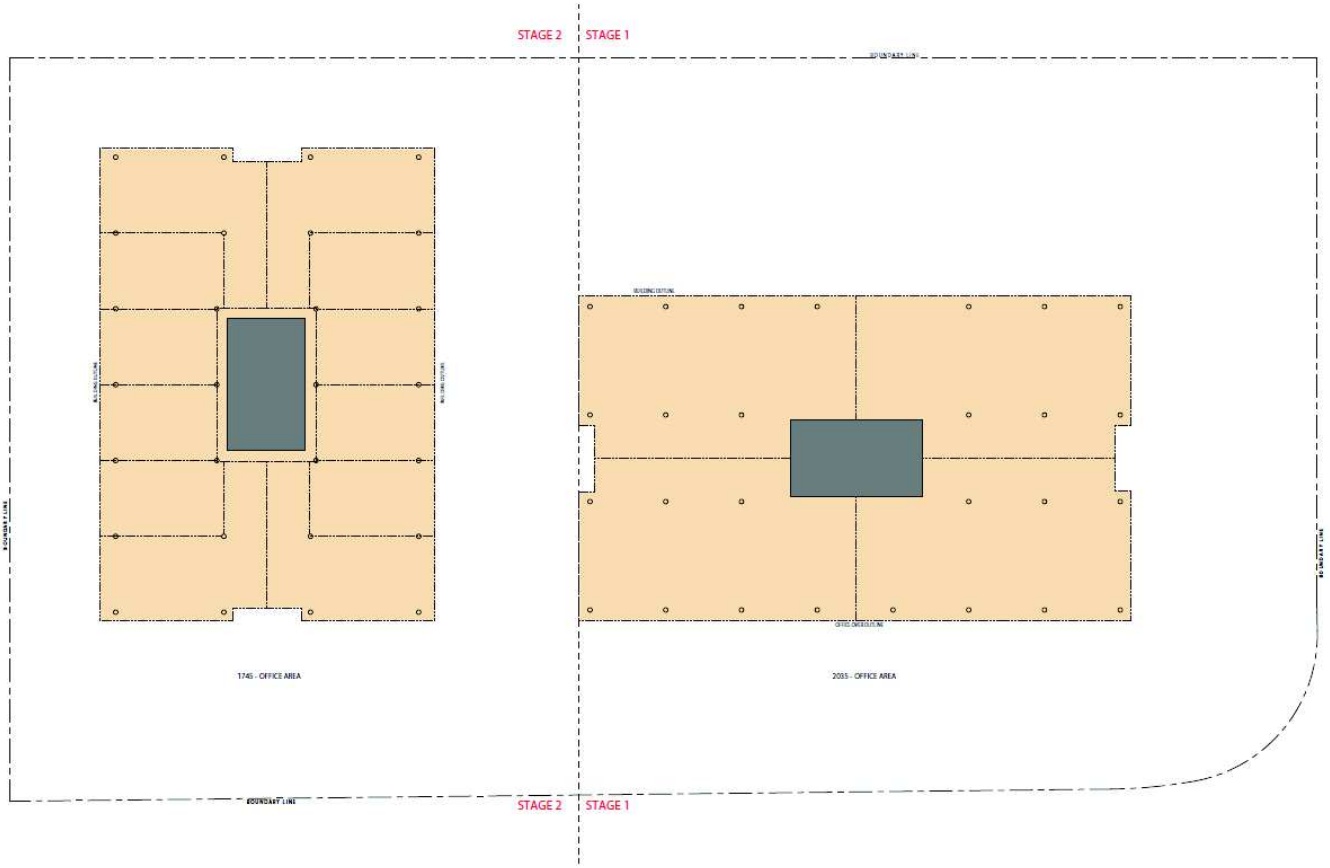


Figure 4.7 Perspective View of Proposed Development from the corner of Solent Circuit and Inglewood Place

4.3 Future Planning Proposal

A future 3:1 FSR for the subject site will be pursued through a separate Planning Proposal once the market and occupants have accepted a reduced car parking entitlement after the Metro has been in operation for a few years.

A scheme is sought to be delivered at a later stage by converting the three (3) levels of elevated car parking into additional office space, which will result in a total gross floor area of 36,895m^2 and a reduced car parking rate of 1:50. It is emphasised that this scheme is not sought under this Planning Proposal, but will be delivered through a future Planning Proposal in 3-5 years' time post opening of the Metro.

4.4 Summary Benefits of the Proposal

This Planning Proposal is initiated by the proponent, being Eden Brae Homes Investments Pty Ltd in order to facilitate a sustainable and high quality commercial development consisting of two office buildings for the subject site.

The proposed architectural scheme has been designed to positively contribute to both the productivity and character of Norwest Business Park, ensuring good quality design and provision of additional office space, which meets the key strategic objectives for the area.

The main benefits of this proposal are:

- The proposal provides a significant opportunity to accommodate additional employment space for an established and evolving business park in the North-West and a key strategic centre in the Central City.
- The proposal would be the first new building in Norwest Business Park to take advantage of the Sydney Metro Northwest, should the Planning Proposal be approved.
- The proposal is in close proximity to Norwest train station which will greatly enhance accessibility for future employees. The site is also serviced by suitable bus services including to and from North Sydney, Sydney CBD, Blacktown, St Marys, Rouse Hill, Castle Hill and Parramatta, which is set to become Sydney's second CBD.
- The proposal is consistent with the strategic vision of the Greater Sydney metropolitan plan and Central City District, providing additional employment opportunities to meet demand from population growth and supports the notion of a 30 minute city, being highly connected to public transport.
- The proposal is consistent with the goal of providing jobs closer to homes, particularly servicing the growing need to provide jobs for the population in Sydney's North-West release area.
- The proposal maintains the business park character through its appropriate built form and unique design, with large floor plates and attractive landscaping.
- The proposal will support the viability of Norwest as a specialised strategic centre, encouraging increased employment opportunities and business investment in the business park as outlined under the relevant state and local government strategic plans.
- The proposal seeks to facilitate a high green star rating, ensuring a sustainable development outcome for the business park and future occupants.

5 Strategic Planning Context

This Planning Proposal seeks to increase the floor space ratio and building height controls under *The Hills Local Environmental Plan 2012*. This proposal is supported by a concept architectural scheme which reflects the desired vision for the development in Norwest Business Park. The Planning Proposal supports the identified status of Norwest as a 'strategic/specialised centre', as demonstrated within the NSW Government's 'A Plan for Growing Sydney' and the 'Draft Future Transport Strategy 2056', Greater Sydney Commission's 'Draft Greater Sydney Region Plan' and 'Revised Draft Central City District Plan', the 'North West Rail Link Corridor Strategy' regarding the development of the Norwest Station Precinct, and Council's 'The Hills Corridor Strategy' and 'The Employment Lands Direction'.

5.1 A Plan for Growing Sydney

'A Plan for Growing Sydney' (2014) is the NSW Government's key strategic plan for Greater Sydney which sets out a vision for continued growth of the city through four clear goals which include the following:

- *A competitive economy with world-class services and transport;*
- *A city of housing choice with homes that meet our needs and lifestyles;*
- *A great place to live with communities that are strong, healthy and well connected; and*
- *A sustainable and resilient city that protects the natural environment and has a balanced approach to the use of land and resources.*

The plans aims to shape Sydney as a strong global city and a great place to live. In particular, the plan emphasises the importance of appropriately accommodating the needs of a rapidly growing population through the need to provide additional housing, jobs, infrastructure and open space to ensure that Sydney is a liveable, connected and productive city.

The plan promotes three planning principles, of which two are applicable to the Planning Proposal. The second principle relates to guiding stronger economic development in strategic centres and transport gateways, locating a range of jobs across the strategic centres to contribute to Sydney's economic productivity. The third principle concerns connecting centres with a networked transport system that allows easy accessibility to jobs, health and education facilities, as well as sporting, cultural and entertainment premises.

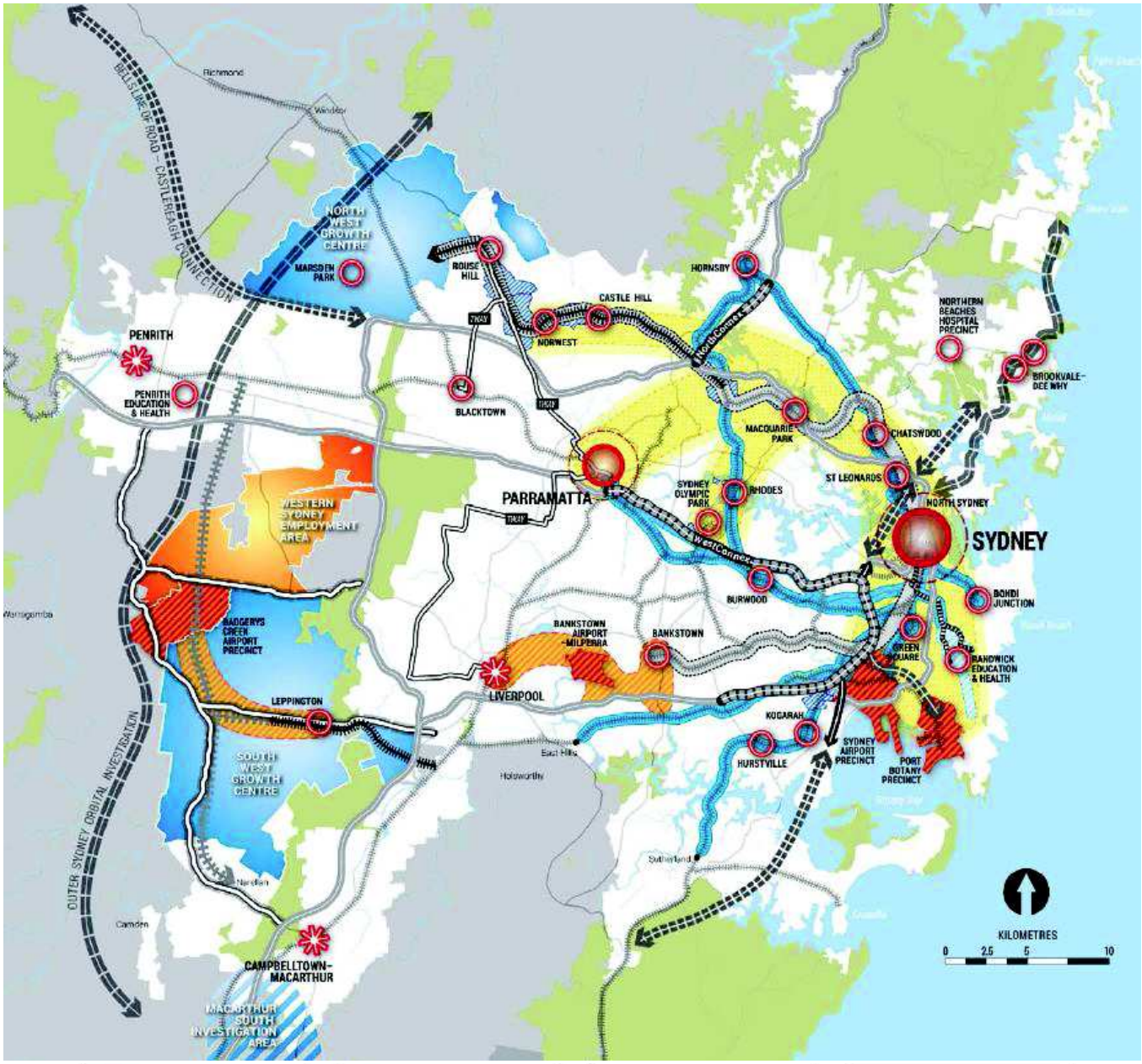
A Plan for Growing Sydney emphasises the importance of Western Sydney to Greater Sydney's long-term prosperity. It identifies the need to expand the economic role of Western Sydney's key centres, taking advantage of opportunities arising from infrastructure investment such as the Sydney Metro Northwest.

The Planning Proposal relates to the future development of a commercial development comprising of two office buildings within 400m to Norwest Station. Norwest is identified as one of Sydney's strategic centres, which are places of intense, mixed economic and social activity that are built around the transport network. Norwest has a strong agglomeration or cluster of businesses which is important for efficiency and productivity, supporting faster economic growth. It is identified as Sydney's 10 major office markets, performing very strongly alongside Parramatta and Macquarie Park. Direction 1.7 highlights the need to grow strategic centres by concentrating office development that are easily accessible. This would benefit businesses and provide opportunities for workers to access specialist jobs. Stronger investment into strategic centres is an action identified within this direction to provide a number of jobs close to where people live. The Planning Proposal would strengthen the role of Norwest Business Park as a high performing economic hub within Greater Sydney.

The Global Economic Corridor as shown in Figure 5.1, is a corridor of concentrated employment and economic activity, which spans from Port Botany and Sydney Airport, through Sydney CBD, across Macquarie Park and notably through Norwest, Parramatta and Sydney Olympic Park. In addition, the plan notes strongly the importance of growing high-skilled jobs in the Global Economic Corridor by expanding employment opportunities and mixed-use activities.

The plan anticipates that by 2030, there will be demand for *"around 190,000 new stand-alone office jobs"* within Greater Sydney. An estimated 75% of these jobs would most likely seek to locate their offices in one of Sydney's major office markets, one of which being Norwest.

Figure 5.1 A Plan for Growing Sydney



(Source: NSW Government)

Action 1.6.1 of *A Plan for Growing Sydney* emphasises the importance of protecting crucial retail, business and office space in suburban office markets where a commercial core exists and where residential pressure is being experienced. The Planning Proposal will maintain and protect the commercial and office integrity of the business park. It will contribute to business agglomeration, supported through its close proximity to the station. An action identified in the plan include the Department working in partnership with councils to update planning controls to increase density, including changing floor space ratio allowances and building height controls to facilitate the expansion of commercial markets. The action highlights the need to remove barriers to growth and promote more efficient land use outcomes especially in Parramatta, Macquarie Park and Norwest.

Action 1.7.1 outlines the need to invest in strategic centres across Sydney to grow jobs and housing as well as create vibrant hubs of activity, which include delivering transport improvements, including public transport, traffic management and car parking to improve the business environments.

Action 1.7.3 details the need to work with the Greater Sydney Commission to develop job targets for all strategic centres in consultation with councils, monitor the delivery of jobs relative to the job targets, as well as identify and remove barriers to jobs delivery at a local level in strategic centres.

5.1.1 West Central Subregion

The plan shows Sydney split into six different subregions and the subject site is identified within the West Central subregion which includes the localities of Auburn, Bankstown, Blacktown, Holroyd, Parramatta and The Hills. The West Central subregion is identified as a significant region to focus on infrastructure investment and intensive growth over the next 20 years. The subregion would be supported by a network of centres, which provide opportunities for employment closer to home for residents.

Below are specific priorities and activities for Norwest included in the plan:

- *Work with Council to implement the Norwest and Bella Vista Structure Plans in the North West Rail Link Corridor Strategy to provide additional capacity around the future Norwest and Bella Vista train stations for offices, retail, services and housing.*
- *Support health-related land uses and infrastructure around Norwest Private Hospital.*
- *Work with Council to improve walking and cycling connections to the future Norwest and Bella Vista train stations.*

5.2 Draft Greater Sydney Region Plan

The Greater Sydney Commission released in October 2017 the Draft Greater Sydney Region Plan (2017), which is a key strategic document which outlines a vision over the next 40 years for Greater Sydney (up to 2056) and establishes a 20 year plan to manage growth and change in the context of economic, social and environmental matters. This plan was also concurrently developed with the recently released draft metropolitan transport plan, being the *Draft Future Transport Strategy 2056*.

The plan envisions Greater Sydney to become a metropolis of three cities, including the following:

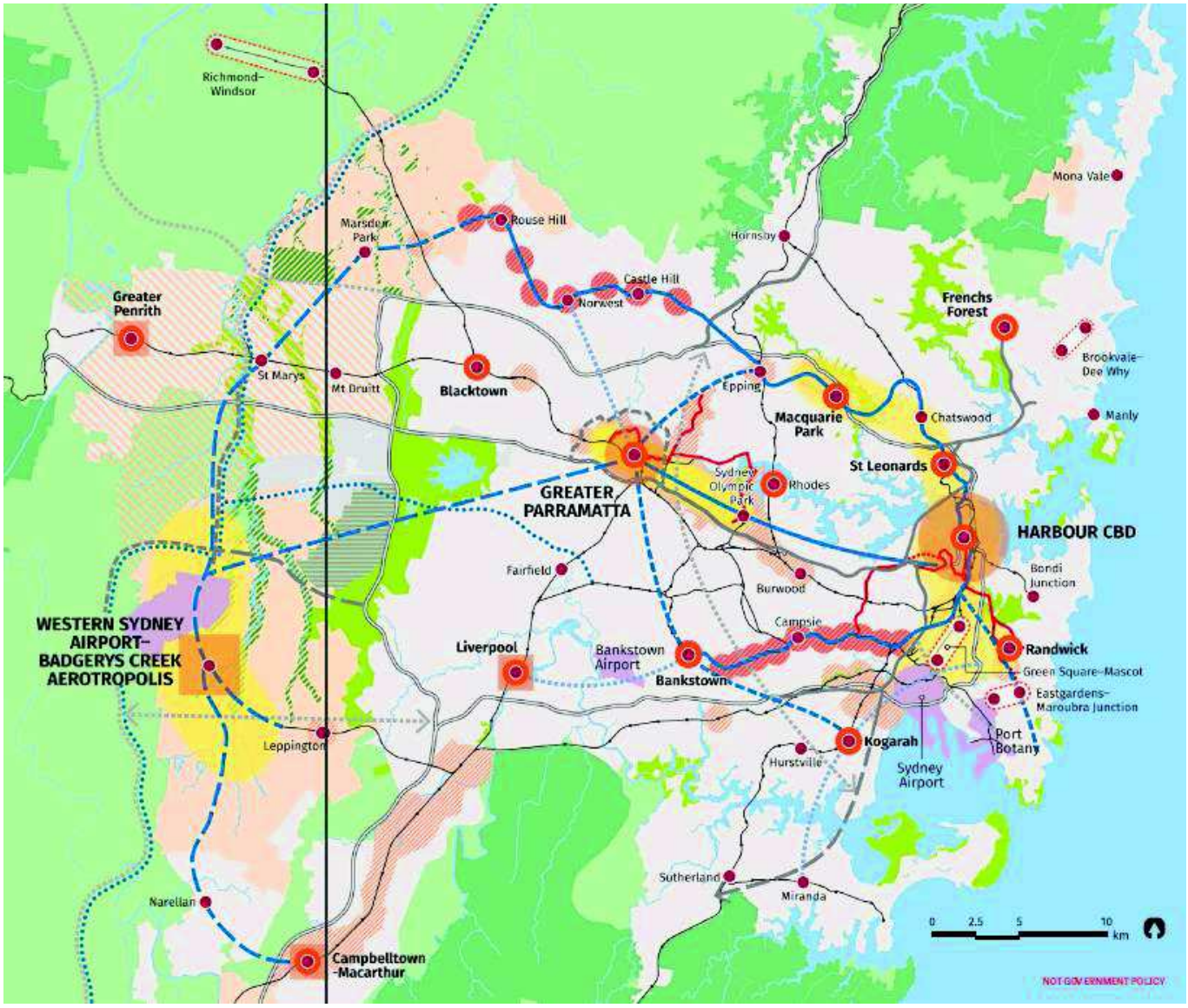
- **The Eastern Harbour City:** Will build on its strong financial, professional, health and education sectors, continuing to grow as Australia's global gateway. It will expand its innovation precinct, as well as include large and small scale urban renewal.
- **The Central River City:** Centred on the Greater Parramatta and Olympic Peninsula (GPOP). The transport links will continue developing the health, education, administration, finance and business sectors to drive the economy. The city consists of both high quality urban renewal and new neighbourhoods.
- **The Western Parkland City:** Centred on the Western Sydney Airport and Badgerys Creek Aerotropolis which will be a catalyst for the growth of a strong trade, logistics, advanced manufacturing, health, education and science economy.

The region plan seeks to ensure that the residents of Greater Sydney live within 30 minutes of their jobs, education, health facilities and other services. This vision is supported by 10 overarching directions with their associated metrics and objectives, based on the principles of infrastructure and collaboration, liveability, productivity and sustainability. These directions include:

- **A city supported by infrastructure:** Provide adequate infrastructure to support population growth to create strong communities.
- **A collaborative city:** Manage the competing needs of a city through the collaboration between the three tiers of government, industry and local communities.
- **A city for people:** Build social and cultural connections and networks by capitalising on local identity, heritage, and cultural values with easier access to services to foster a more resilient and connected society.
- **Housing the city:** Greater housing choice and a minimum of 36,250 additional homes every year is required in addition to creating liveable neighbourhoods close to employment opportunities, public transport, walking and cycling options for communities.
- **A city of great places:** The creation of great places that recognise local characteristics and qualities people value. The delivery of safe, inclusive and walkable mixed use areas that exhibit urban design excellence, connected to social infrastructure and open spaces will enhance wellbeing, a sense of community identity as well as foster healthy lifestyles.
- **A well connected city:** Allow people to have 30-minute public transport access to one of the three cities and to services in their nearest strategic centre seven days a week. This will be achieved by integrating land use, transport and infrastructure planning. Productivity will also be improved by co-locating jobs and services, improving transport efficiency and creating more efficient freight networks.
- **Jobs and skills for the city:** Enhance Greater Sydney's productivity, export sectors and global competiveness to increase the region's economic activity by requiring greater choice for where development can occur to enable the employment growth of 817,000 jobs. Locations of businesses, investment and economic agglomerations will be guided by strategic planning.
- **A city in its landscape:** Management of the effects of urban development to protect, restore and enhance natural and scenic landscapes, waterways, coastline, natural areas, tree canopy and open spaces through strategic planning. This will ensure improvements to liveability, creation of healthy places and mitigate the effects of climate change.
- **An efficient city:** Innovative management of water, energy, resources and waste in strategic land use, transport and infrastructure planning to reduce costs, carbon emissions and environmental impacts.
- **A resilient city:** Building capacity in social and ecological systems to adapt and respond to both known and unforeseen impacts, including changes to technology and climate through the use of new city shaping technologies, improving the quality of life and productivity.

The Greater Sydney Structure Plan 2056 is shown in Figure 5.2 and shows the principal spatial elements for managing growth and change across Greater Sydney.

Figure 5.2 Greater Sydney Region Structure Plan 2056



(Source: Greater Sydney Commission)

The plan outlines that changing Greater Sydney's structure from one city on the eastern edge to a metropolis of three cities will maximise economic growth and population growth. The plan notes that Sydney has a strong eastern bias in terms of the location of the main economic attractors and job types, which results in less choice of local jobs for those who live in Western Sydney.

The success of the metropolis of three cities will require a well-connected Greater Sydney with new jobs, shops and services in easily accessible centres via efficient transport connections and convenient active transport routes, creating a 30-minute city. The plan notes that it is this is what will make the region a more attractive destination for investment, businesses and skilled workers.

The region plan recognises that a number of committed and potential transport infrastructure projects will improve accessibility between the well-established economic agglomerations near the Eastern Economic Corridor (from Macquarie Park to Sydney Airport) and significantly increase the size of the labour market which can access the corridor by public transport, which will boost productivity. This includes the Sydney Metro Northwest, which will enhance accessibility to, and between approximately 1 million jobs that will exist between Rouse Hill and Sydney Airport by 2036.

In addition, the plan notes that consideration must be given to connecting the potential north-south train corridor through to the Sydney Metro Northwest at Cudgegong, which would create opportunities for economic activity and provide residents of the Western Sydney Parkland City with access to tertiary education and knowledge intensive jobs along the Sydney Metro Northwest corridor.

Greater Parramatta is emphasised as the core of the Central River City, and incorporates the Parramatta CBD and the Westmead health and education precinct. Potential mass transit connections to Macquarie Park, Norwest, the Harbour CBD and Sydney Olympic Park would significantly boost economic opportunities.

The subject site is situated within Norwest, which is located within the Central River City and similar to *A Plan For Growing Sydney*, it is identified as a strategic centre as shown in Figure 5.2. Strategic centres are described as places where opportunities can be created to attract investment, business activity and jobs. These centres are intended to rebalance opportunities for the community, providing access to jobs and services close to home, reinforcing the success of the metropolis of three cities. Strategic centres have the following expectations:

- *High level of private sector investment*
- *Flexibility, so that the private sector can choose where and when to invest*
- *Co-location of a wide mix of land uses, including residential*
- *High levels of amenity and walkability*
- *Areas identified for commercial uses, and where appropriate, commercial cores*

Greater Sydney has nine centres which make up the majority of the region's stand-alone office markets. Norwest comprises of one of these major commercial office precincts and is also identified for the purposes of transit oriented development.

Strategy 22.1 of the region plan identifies the need to provide access to jobs, goods and services in centres by:

- ***Attracting significant investment and business activity in strategic centres to provide jobs growth***
- ***Diversifying the range of activities in all centres***
- ***Improving public transport services to all strategic centres***
- ***Creating the conditions for residential development within strategic centres and within walking distance, but not at the expense of the attraction and growth of jobs, retailing and services; where appropriate, strategic centres should define commercial cores informed by an assessment of their need.***

In addition, the plan highlights the need to accommodate for additional retail and office floor space across Greater Sydney to cater for a rapidly growing population over the next 20 years. The market must be able to deliver this floor space in an efficient and timely manner in order for Greater Sydney to remain competitive. The plan highlights that business parks should be developed as urban places which can transition into higher amenity and vibrant places while maintaining their role as an employment precinct.

The Planning Proposal is consistent with the objectives for Greater Sydney and is supportive of the notion of a metropolis of 30-minute cities. The proposal seeks to encourage the economic growth of Sydney's Central River City, attracting investment, business activity and jobs.

5.3 Revised Draft Central City District Plan

The Revised Draft Central City District Plan (2017) was concurrently released with the Draft Greater Sydney Region Plan, by the Greater Sydney Commission and replaces the draft West Central District Plan that was released in November 2016.

The Central City District, is part of the Central River City, one of the three 30-minute cities advocated for within the draft Greater Sydney Region Plan. The Central City District is described as one of the most dynamic and rapidly growing regions in Australia, and *"plays a pivotal role in Greater Sydney's future as an economic and employment powerhouse, a core hub for transport and services, and the home of vibrant and diverse centres and communities"*.

To deliver a more productive Central City, the plan notes the need adopt Planning Priorities outlined within the plan. Of these the following are applicable to the Planning Proposal:

- ***Delivering integrated land use and transport planning and a 30-minute city:***

  Encouraging the growth of strategic centres will contribute to delivering a 30-minute city as it reduces the need for people to travel far to access these jobs and services

- ***Growing investment, business opportunities and jobs in strategic centres:***

  This priority will underpin the economy of the Central City District. Norwest, which is identified as a strategic centre, will have the opportunity to accommodate some of the additional commercial floor space that is required within the district.

Norwest Business Park is identified as an established commercial centre, and the plan notes that the Metro will *"provide the opportunity to transform the traditional 1990s-style business park model into a transit-oriented, more vibrant and diversified centre with higher employment densities and a mix of residential uses and supporting services*". In addition to the connections offered along the Sydney Metro Northwest Corridor, Norwest is identified within the structure plan as being highly connected to Blacktown, Rouse Hill, Epping and Parramatta via rapid bus transit. An estimated 32,400 jobs in 2016 was identified within Norwest and the plan ascertains a baseline target of 49,000 jobs for 2036 and a higher target of 53,000 jobs by 2036. As shown in

The following actions are outlined to strengthen Norwest:

- ***Retain and grow commercial capacity to achieve the centre's job targets***
- ***Encourage complementary retail services around Norwest Lake and the station precinct***
- ***Work with NSW Government to identify a potential future corridor for mass transit links to Greater Parramatta***

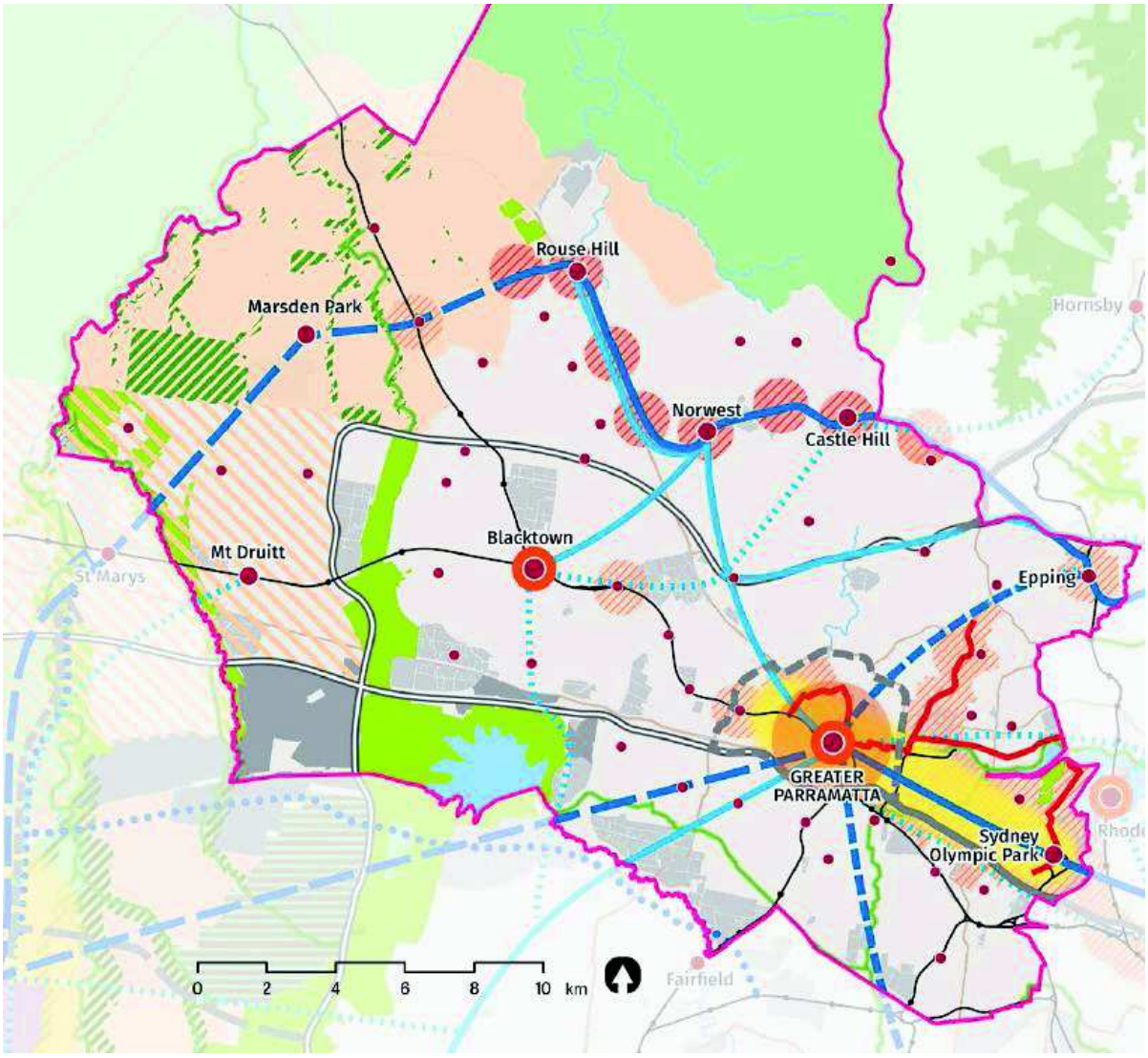
The groups identified to be responsible for implementing these actions include The Hills Shire Council as well as other planning authorities and state agencies.

The Planning Proposal is consistent with the objectives for the productivity of Norwest and the Central City District.

The Planning Proposal also responds to the need to recognise a reduced car parking entitlement in the future after the opening of a mass transit network in 2019. The following is noted within the district plan:

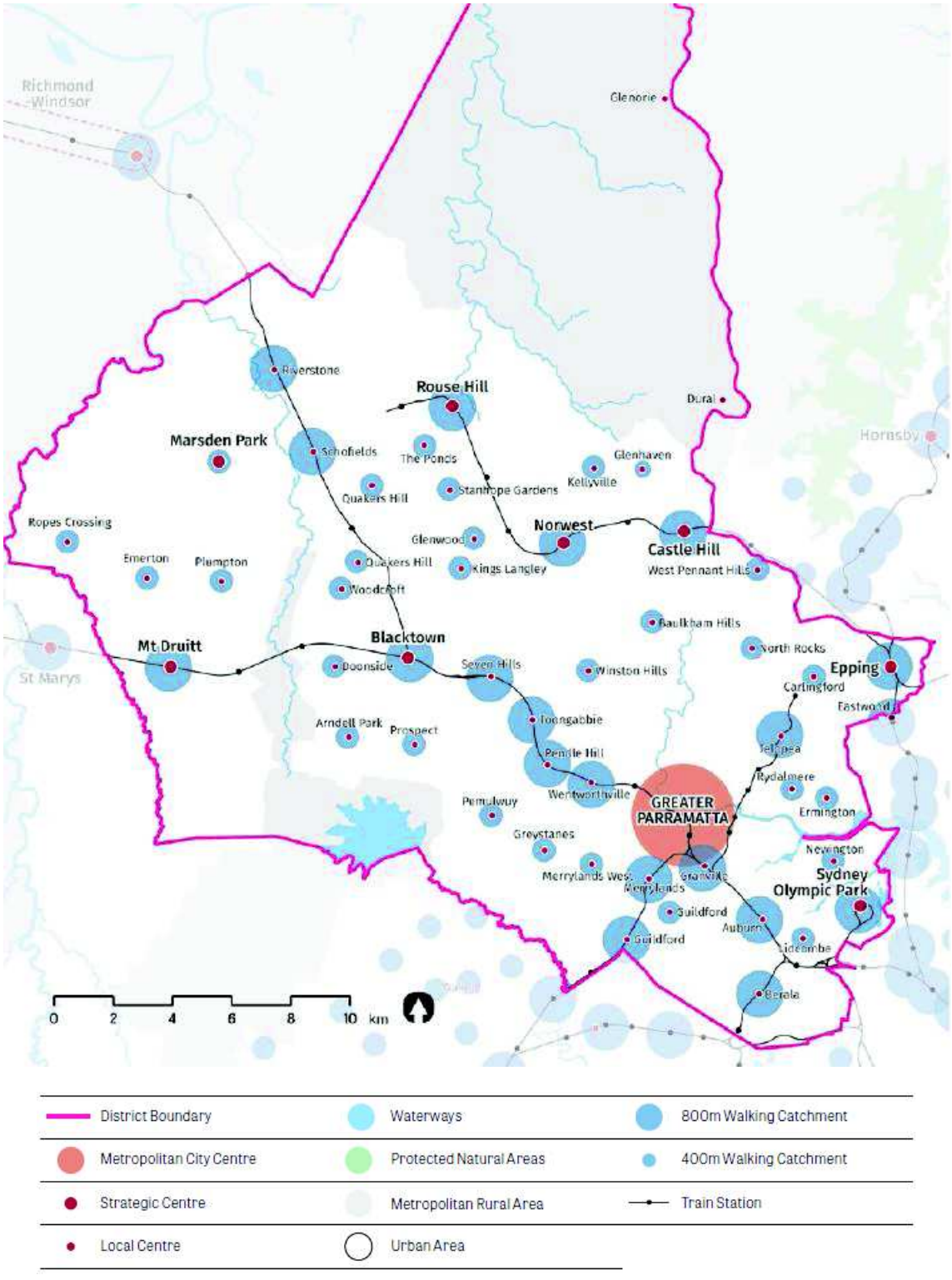
- *Investigate opportunities for precinct-based provision of adaptable car parking and infrastructure in lieu of private provision of car parking*
- *Ensure parking availability takes into account the level of access by public transport*
- *Consider the capacity for places to change and evolve, and accommodate diverse activities over time.*

Figure 5.3 Central City District Structure Plan 2036- Urban Area



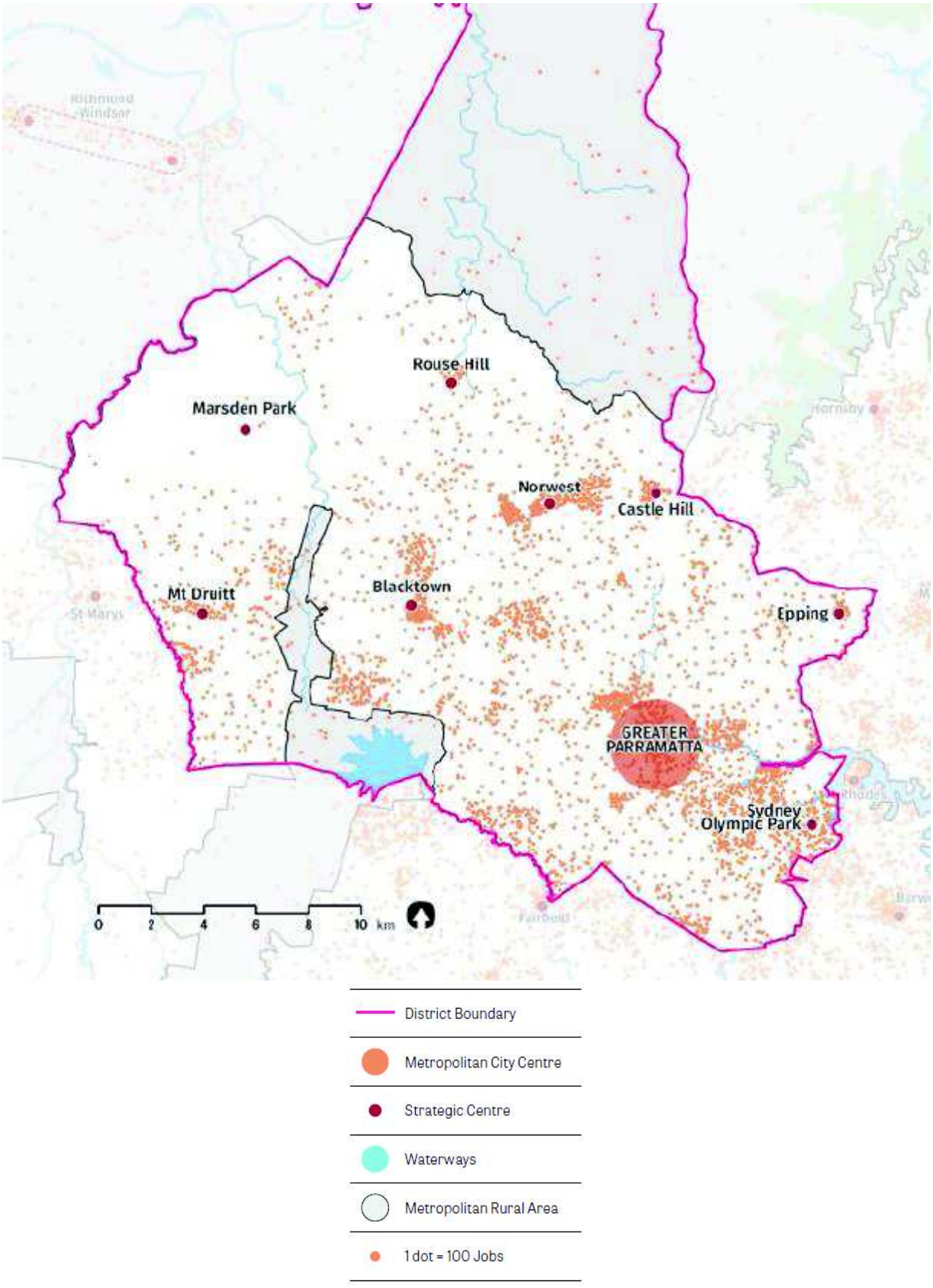
(Source: Greater Sydney Commission 2017)

Figure 5.4 Central City District – Centres



(Source: Greater Sydney Commission 2017)

Figure 5.5 Central City District Job Density



(Source: Greater Sydney Commission 2017)

5.4 Draft Future Transport Strategy 2056

The draft Future Transport Strategy 2056 (2017) was recently released by the NSW Government as an update of the Long Term Transport Master Plan issued in 2012, responding to the changes felt today and building on the achievements of the Master Plan. The strategy is a 40 year vision for mobility within the state, and provide strategic directions, customer outcomes as well as infrastructure and services plans for Greater Sydney and Regional NSW to deliver these directions.

Six state wide outcomes are outlined within the draft Future Transport vision, and outcomes that are applicable to the Planning Proposal include:

- **Successful places:** Promoting a transport network that better connects centres, allowing people to enjoy 'living local' with fast connections to centres that dive economic growth and social cohesion. This vision is required to be supported by sound development and planning decisions to ensure the vitality of places and activating emerging cities. The plan notes that the state government will collaborate with local councils and communities on integrated transport and land use planning as well as potentially develop precinct plans for all strategically important centres and places.

- **Growing the economy:** An efficient transport system that powers a strong, modern economy, linking people, places, businesses and markets. NSW is set to become Australia's first trillion dollar state economy, with economic productivity growing alongside a transport network that moves people more efficiently to job centres, and provides firms with access to the appropriate workforce, skills and customers. Technology is emphasised as the driver for new industries, and will enhance productivity.

- **Accessible services:** The plan aims to ensure that the future transport system will be more personalised, integrated and fully accessible for people have difficulties accessing transport services today to use transport when and how they want to in the future. It seeks to provide a seamless choice of services that empower every customer. Greater accessibility would allow better connections to places and opportunities for employment, education and enjoyment, and in particularly in areas with few transport options today.

- **Sustainability:** The future transport system is encouraged to contribute to a strong economy, whilst enabling environmental and community wellbeing. It must be an affordable network that is responsive to change and sustains strong investment. This will allow continued investment in infrastructure and service improvements, while sharing the costs across users, taxpayers and other beneficiaries. Continued support of more environmentally sustainable travel behaviour by shifting people from private vehicles to more sustainable transport modes such as walking and cycling via well planned centres and cities, with accessible public transport systems, will enable the lowering of congestion and emissions, as well as improve air quality. It will support better health and wellbeing as well as sustain the vibrancy and liveability of cities. Key to this is the delivery of the 30 minutes cities. This will also ensure the realisation of the government's vision for a low-carbon economy and the ambition for zero net emissions by 2056.

Norwest is envisioned as being highly connected to all three cities via mass transit corridors including a mixture of train, rapid bus and light rail networks.

The Planning Proposal will contribute to meeting the state wide outcomes by facilitating a high quality and sustainable commercial development that will provide additional employment with easy accessibility from Norwest Station.

5.5 North West Rail Link Corridor Strategy – Norwest Station Structure Plan

The Department of Planning and Environment and Transport for NSW North West Rail Link Corridor Strategy (2013) is a comprehensive strategic plan to guide the future character and development around the stations. The vision of each station precinct is determined through studies investigating the challenges present and identify opportunities to support growth in and around the centres. To achieve the overall vision, a series of actions are outlined for each study area.

The Norwest Station Structure Plan identifies Norwest as a significant employment centre of the region with the potential to strengthen its role as a Specialised Precinct to become a metropolitan-scale business park with an intensification of uses, especially within 1km of the station for Sydney. The vision for Norwest is to transform into a *"vibrant and active Centre of business for the region, comprising offices, retailing, community facilities, recreation, cultural, education and housing to serve the 650,000 people of the North West by 2036"*.

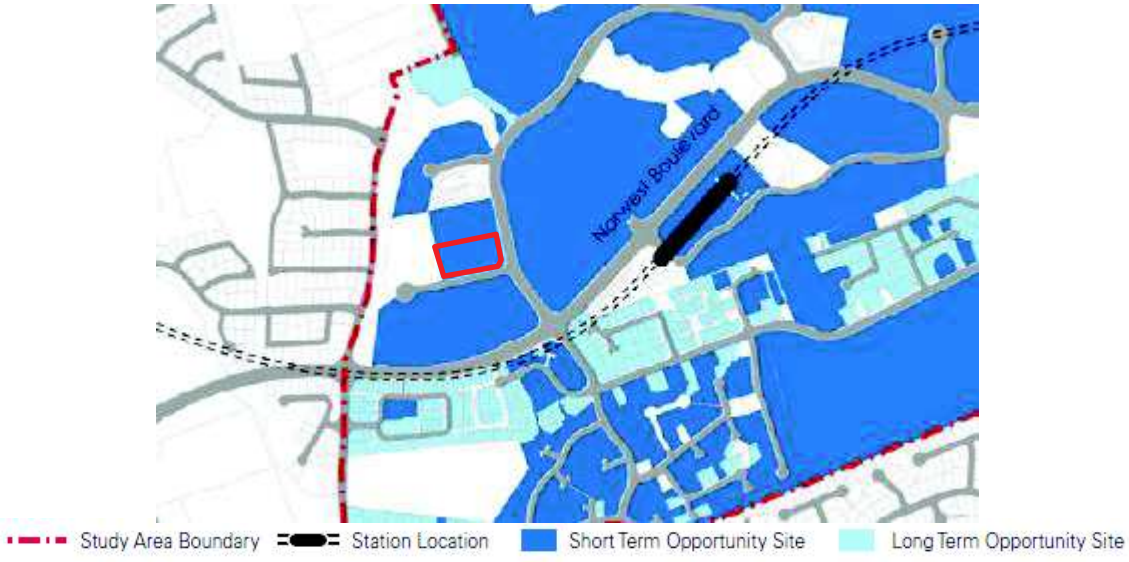
The plan outlines that the Sydney Metro Northwest will *"increase the catchment and desirability of Norwest Business Park beyond the immediate context of the North West of Sydney"*, and will also ensure that Norwest becomes a transport hub with the station and supporting bus system which will link residents and workers to the employment and retail opportunities available within the precinct.

A key vision for the Norwest Precinct is to *"see the orderly expansion and intensification of the Business Park, in line with this increase in demand, by delivering commercial floor space with a focus on efficient, large floor plate, campus-style office space"*.

The structure plan for Norwest is underpinned by the principles of Transit Oriented Development (TOD) where mixed use communities are within walking distance of a transit node and provide a range of residential, employment, open space as well as services and facilities.

Large commercial use landholdings within the business park are identified along Norwest Boulevarde and Solent Circuit, which *"present themselves as opportunities for redevelopment due to the age and condition of the existing building stock"*. The subject site is identified as a short term opportunity site as shown in Figure 5.6, being unconstrained, presenting an immediate opportunity for renewal to stimulate growth within the corridor.

Figure 5.6 Opportunity Sites within Norwest Station Precinct



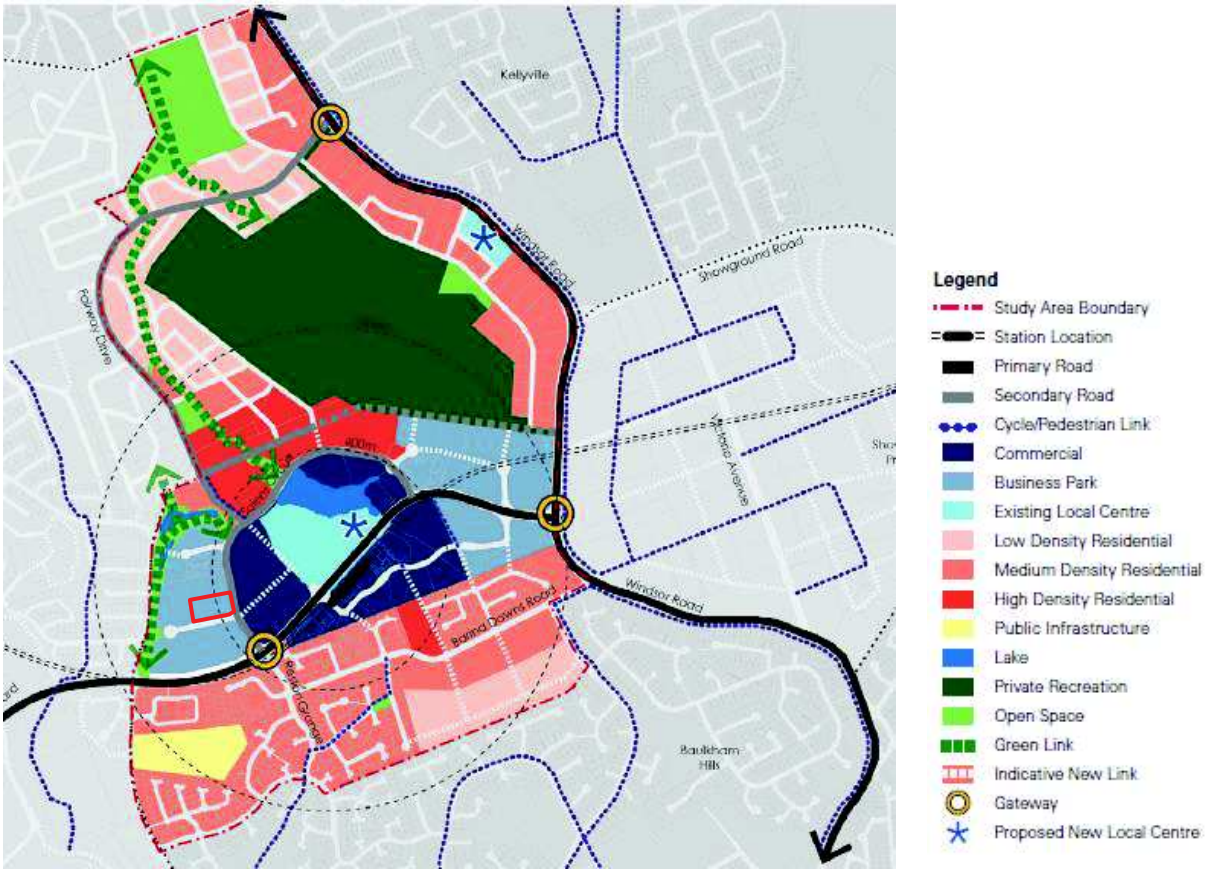
(Source: NSW Government 2013)

The Planning Proposal is consistent with the Norwest Station Structure Plan as shown in Figure 5.7.

The structure plan seeks to encourage a *"true commercial core"* within Norwest, set around the shores of Norwest Lake to meet the job targets for 2031, strengthening the area as a Specialised Precinct. The subject site sits within the west of the centre, where land has been set aside for Business Park land with more flexible controls for the facilitation of larger floor plates for commercial uses.

The business park's future character is projected to accommodate *"commercial offices on sites that are carefully designed to integrate into the character of the area"* in order to *"provide for the employment needs of a growing community and to encourage the emergence of a prominent employment area with direct access to the new rail link and station"*.

Figure 5.7 Norwest Station Structure Plan



(Source: NSW Government 2013)

It is anticipated that Norwest will deliver an additional 13,200 jobs by 2036 which will be supported by a projected rate of 14,000m^2 of commercial floor space per annum and a retail floor space of 1,200m^2 per annum, which will both replace bulky goods retailing over time.

In terms of access, Norwest Boulevarde will remain as the primary thoroughfare of Norwest, with significant upgrades anticipated within the future. A key issue highlighted within the within the structure plan include connectivity within the precinct including pedestrian access across Norwest Boulevard to and from the core of Norwest and the station. A number of transport, movement and accessibility initiatives will be delivered to ensure safe and efficient movement to, from and within Norwest.

5.6 The Hills Corridor Strategy

The Hills Corridor Strategy (2015), is a strategic plan which sets out Council's framework to promote the orderly future development in the Sydney Metro Northwest rail corridor to ensure appropriate delivery of housing and jobs that is compatible with the character of The Hills Shire. The objective of the strategy is to adequately respond to land use development over the next 20 years for each of the stations within or adjacent to The Hills LGA.

Six guiding principles are outlined within the strategy to ensure highly liveable and diverse urban areas within The Hills Shire including the following:

- ***Accountable and sustainable approach:*** *Outcomes are guided by clear evidence that respond to the opportunities and constraints presented by the existing natural and built environment.*
- ***Balance high and lower density housing:*** *Higher density housing is located in areas that has the greatest potential for change, in easy walking distance to retail centres and the future stations, thereby enabling nearby low density character to be retained.*
- ***Housing to match Shire needs:*** *A diversity of housing options are to be provided to respond to future demand, with a particular focus on the delivery of viable and attractive apartment living for families.*
- ***Facilities to match Shire lifestyle:*** *Residents of new development are able to access open space, recreation and community facilities in line with the lifestyle enjoyed by existing Hills residents.*
- ***Jobs to match Shire needs:*** *A range of employment opportunities are made available that reflect the qualifications and skills of Shire residents and facilitate more jobs close to home.*
- ***Grow our strategic centres:*** *Reinforce the hierarchy of centres recognising the significance of Castle Hill and Rouse Hill as major centres and Norwest as a specialised centre.*

The Planning Proposal importantly supports a range of employment opportunities in a professional office environment to be made available to ensure more jobs are situated closer to home and accessible to public transport. The proposal also reinforces the hierarchy of centres, recognising Norwest as a specialised employment centre within The Hills Shire.

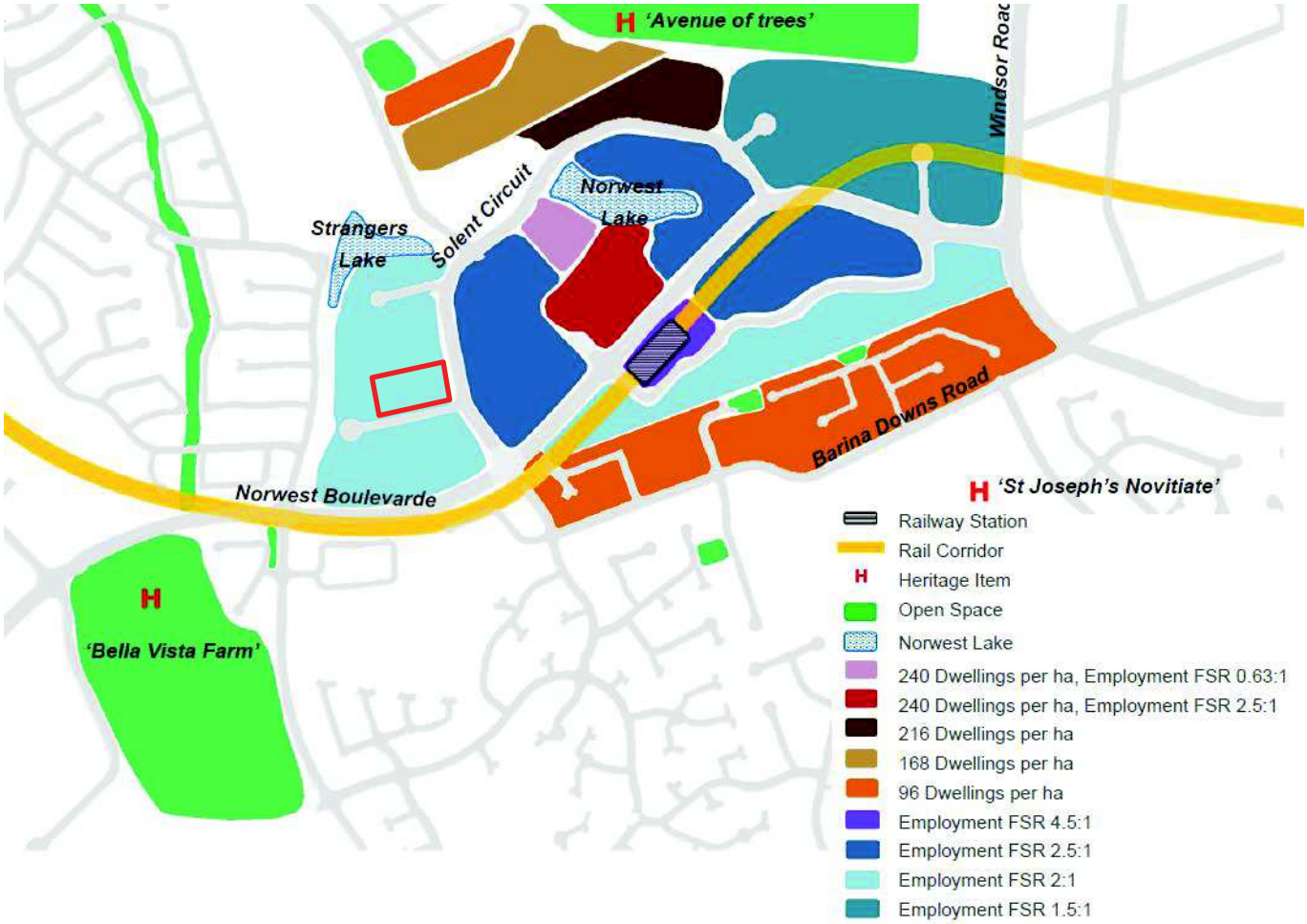
Norwest Station Precinct is envisioned to become a major specialised employment, retail and entertainment centre and the largest employment hub for the North West region. The precinct will comprise of a commercial core around the station, retail/mixed use destination, business park uses to the east and west, as well as increased housing densities surrounding the employment areas, especially around Norwest Lake. The open business feel of the Business Park is proposed to be retained, through the orderly expansion and intensification of the area and delivering a built form accommodating employment activities. Higher density commercial is required to be located close to the station. In addition the strategy notes that *"whilst distinctive buildings will be encouraged, there will need to be a transition of heights across the Precinct to facilitate a varied and interesting skyline which also has regard to key view corridors through this precinct"*.

The corridor strategy notes that key to supporting the operation of the new Metro service, is the importance for the community to change their travel behaviour. Improving planning for housing and employment growth within The Hills Shire plays a significant role in behavioural change. The strategy outlines that the proportion of employed residents within 800m of the railway station that will catch public transport to work will increase from an existing 15% to as high as 45% as each precinct fully develops. In addition, a substantial amount of new jobs will be provided within a number of the station precincts. The strategy highlights that *"in order to encourage employment outcomes in close proximity to the stations, consideration could be given to car parking concessions for commercial uses close to future stations"* such as in key strategic areas such as Norwest. This is consistent with the intent to deliver a reduced car parking entitlement after the opening of the Sydney Metro Northwest via a separate Planning Proposal in the future.

Constraints identified within the strategy that are applicable to the Planning Proposal include the significant amount of traffic congestion within the area, which restricts pedestrian accessibility within the precinct. The roadways, including the major roads passing though the precinct act as pedestrian barriers and create a hostile environment. In addition, the subject site is shown as within the view corridor from Bella Vista Farm. These views to and from the farm are considered extremely significant to the cultural prominence of the farm and surrounding areas. Therefore, future development is required to determine whether views and vistas to and from the farm will be impacted.

Opportunities highlighted within the corridor strategy include plans to enhance accessibility within Norwest, including providing for increased housing and employment within walking distance of the future train station. There will also be prospects to increase the permeability of the road network and reduce congestion as well as further improve the pedestrian and cycle access to the station and town centre. The strategy notes the *"opportunity to leverage investment in businesses and jobs"* that are suited to The Hills Shire's skilled, professional workforce as the rail will contribute to the business park's attractiveness.

Figure 5.8 Norwest Precinct Vision



(Source: The Hills Shire Council 2015)

As shown in Figure 5.8, the subject site is identified under The Hills Corridor Strategy with a minimum employment FSR of 2:1. An approximate 14,450 additional jobs are envisioned within the whole Norwest Precinct which includes 3,177 additional jobs to be accommodated in the areas shaded in light blue (including the subject site).

The Planning Proposal is supportive of the vision for a higher FSR within the subject site, which will allow a commercial development, providing additional employment opportunities within 400m of Norwest Station. The proposal will not affect the views to and from Bella Vista Farm, as outlined in Section 6.2.1.

5.7 The Employment Lands Direction

The Employment Lands Direction was adopted by The Hills Shire Council in 2009, and provides the strategic context for the planning and management of employment lands within the Shire. It should be noted that this Direction was released in 2009, and therefore the strategy did not take into account the Sydney Metro Northwest infrastructure project that would further shape the growth of employment lands within The Hills Shire.

Six key directions are outlined within the Direction:

- *Accommodate the growth of a modern local economy to meet community needs*

  Ensuring land is available for employment and delivering this land in a timely manner through clear identification and protection of employment lands through the LEP and land use decision making. Facilitating the uptake of zoned employment land and ensuring that employment land meets the needs of local businesses are also key strategies identified.

- *Enhance the attractiveness of the Shire for new business and visitors*

  Utilise a strategic approach to encourage relocation of businesses including building on the strategic location and image of the Shire as well as identified industry strengths. Another factor that may influence the location of businesses include the timely delivery of transport infrastructure to support employment lands. In addition to becoming one of the fastest growing business parks in Australia, the strengths of Norwest as an employment destination include office rents and land costing lower than the average of Sydney, attracting staff closer to home and a world class commercial and retail environment.

- *Promote growth in local business and employment opportunities*

  Promoting the development of a modern, local economy will contribute to many economic, environmental and social benefits. This can be facilitated by supporting existing business to increase their capacity to grow, enhance business competency as well as providing opportunities for residents to work close to home.

- *Enhance the use and viability of existing employment lands*

  This direction seeks to revitalise employment lands by redeveloping older commercial or industrial sites for higher density employment uses in order to increase investment and jobs closer to home. Strategies outlined include providing guidance and assistance to business owners to revitalise existing employment precincts, developing a comprehensive planning strategy for the redevelopment of targeted employment precincts as well as improve collaboration between business owners.

- *Plan for new employment lands*

  The Direction identifies the need to plan for new employment lands within The Hills Shire, especially within Box Hill Industrial Precinct as Norwest Business Park is anticipated to be at capacity by 2016.

- *Encourage quality employment lands*

  Employment lands that are environmentally sustainable, accessible by public transport, have minimal visual and operation impacts on their surrounds as well as protect heritage values are highly encouraged. Strategies include integrating environmental sustainability and employment generation by drafting development controls regarding sustainable design in commercial and industrial buildings as well as improving accessibility and connectivity with employment lands by liaising with the industry to encourage increased use of public transport infrastructure and lobbing State Government to invest in public transport. In addition, minimising conflict between employment lands and their surrounds by managing the interface between employment and residential uses, as well as minimising the impact of noise is another strategy included in the direction. Considering the impact of proposed employment lands development on the significance, visual curtilage and setting of heritage items is another strategy outlined.

Norwest Business Park is identified as a specialised business park/bulky good retail under the Employment Lands Direction and is highlighted as an area with one of the greatest potential for employment growth. It notes that limited land available within the business park could be addressed by redevelopment at a higher density.

The Planning Proposal is consistent with the directions demonstrated within the strategic document.

6 Local Planning Framework

This section of the Planning Proposal provides an overview of the local planning framework applicable to the subject site.

6.1 The Hills Local Environmental Plan 2012

The Hills Local Environmental Plan 2012 (LEP) is the relevant environmental planning instrument which guides the orderly development within The Hills Shire Local Government Area.

The Planning Proposal is consistent with the following aims of the LEP as stated in Clause 1.2:

(1) This Plan aims to make local environmental planning provisions for land in The Hills in accordance with the relevant standard environmental planning instrument under section 33A of the Act.
(2) The particular aims of this Plan are as follows:
- *(a) to guide the orderly and sustainable development of The Hills, balancing its economic, environmental and social needs,*
- *(b) to provide strategic direction and urban and rural land use management for the benefit of the community,*
- *(c) to provide for the development of communities that are liveable, vibrant and safe and that have services and facilities that meet their needs,*
- *(d) to provide for balanced urban growth through efficient and safe transport infrastructure, a range of housing options, and a built environment that is compatible with the cultural and natural heritage of The Hills,*
- *(e) to preserve and protect the natural environment of The Hills and to identify environmentally significant land for the benefit of future generations,*
- *(f) to contribute to the development of a modern local economy through the identification and management of land to promote employment opportunities and tourism.*

The proposal contributes to the making of local environmental planning provisions, specifically relating floor space ratio and building height controls for land situated within The Hills Shire in accordance with the standard environmental planning instrument. The proposal aims to promote the orderly and sustainable development the site, especially ensuring the economic, environmental and social needs prevalent in The Hills are met.

The Planning Proposal will support the development of a high quality and sustainable commercial development within Norwest Business Park which is consistent with the character and strategic direction outlined for the area. It will ensure a balanced urban growth, facilitated by efficient and safe transport infrastructure. The proposal will significantly contribute to the development of a modern local economy through the pursuing additional floor space and building height to accommodate additional employment opportunities.

6.1.1 Zoning

The site is currently zoned B7 Business Park under *The Hills LEP 2012*, as shown in Figure 6.1. The site is similarly surrounded by B7 Business Park zoned land which comprise of office/warehouse related developments. In addition, the portion of B2 zoned land to the east consists of Norwest Marketown, a portion of the Hillsong Church site and two commercial/office buildings.

The land use table for B7 Business Park is provided below.

B7 Business Park

1 Objectives of zone

- To provide a range of office and light industrial uses.
- To encourage employment opportunities.
- To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.
- To make provision for high technology industries that use and develop advanced technologies, products and processes.

2 Permitted without consent

Nil

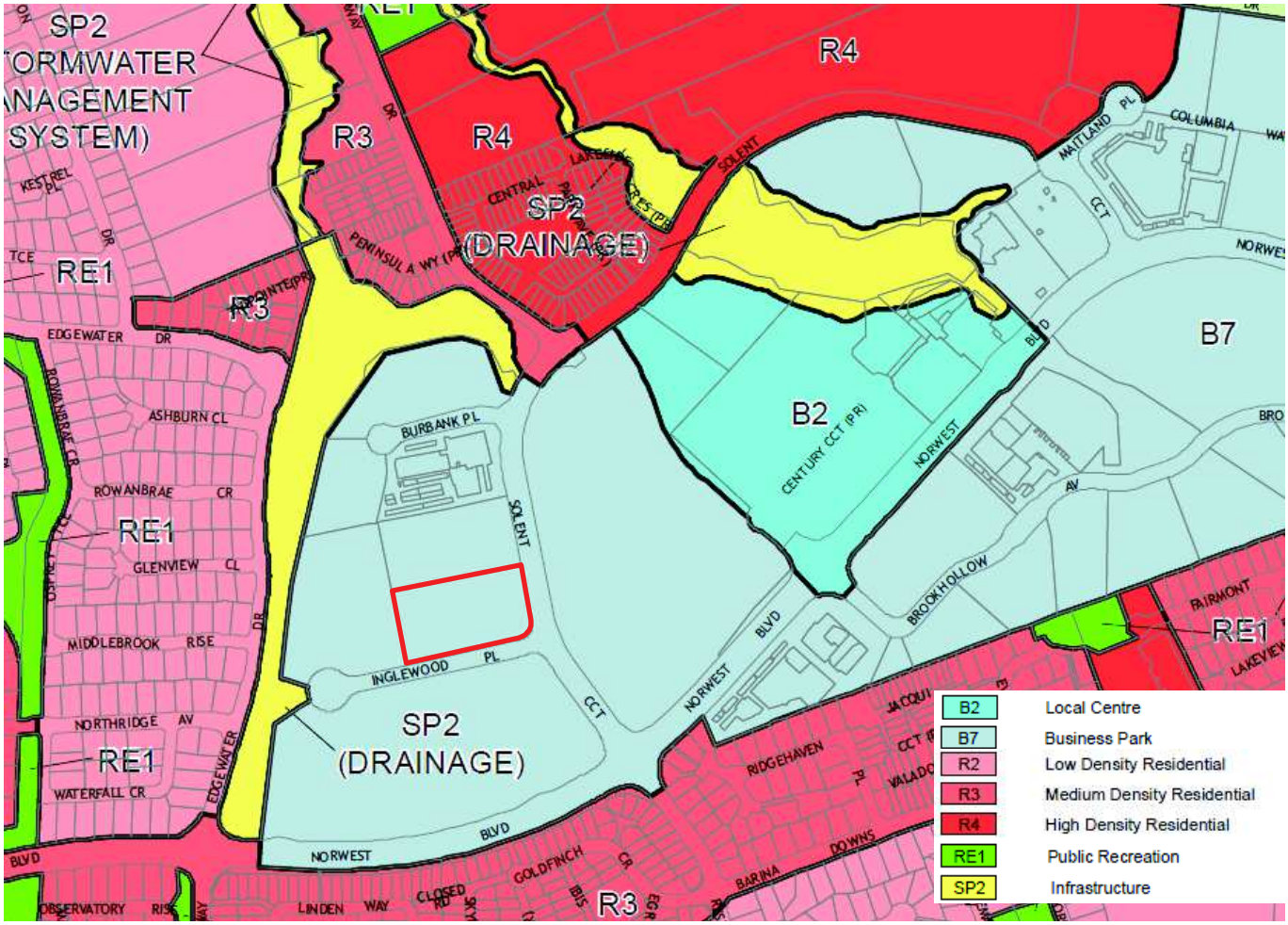
3 Permitted with consent

Building identification signs; Business identification signs; **Business premises**; Centre-based child care facilities; **Food and drink premises**; Garden centres; Hardware and building supplies; Heliports; Hotel or motel accommodation; Landscaping material supplies; Light industries; Neighbourhood shops; **Office premises**; Passenger transport facilities; Plant nurseries; Respite day care centres; Roads; Self-storage units; Serviced apartments; Timber yards; Vehicle sales or hire premises; Warehouse or distribution centres; Any other development not specified in item 2 or 4

4 Prohibited

Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Boat building and repair facilities; Boat launching ramps; Boat sheds; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Depots; Eco-tourist facilities; Electricity generating works; Entertainment facilities; Environmental facilities; Exhibition homes; Exhibition villages; Farm buildings; Forestry; Freight transport facilities; Heavy industrial storage establishments; Highway service centres; Home-based child care; Home businesses; Home occupations; Home occupations (sex services); Industrial training facilities; Industries; Jetties; Marinas; Mooring pens; Moorings; Open cut mining; Port facilities; Recreation facilities (major); Research stations; Residential accommodation; Resource recovery facilities; Restricted premises; Rural industries; Sewerage systems; Sex services premises; Signage; Storage premises; Tourist and visitor accommodation; Transport depots; Waste disposal facilities; Water recreation structures; Water supply systems; Wharf or boating facilities

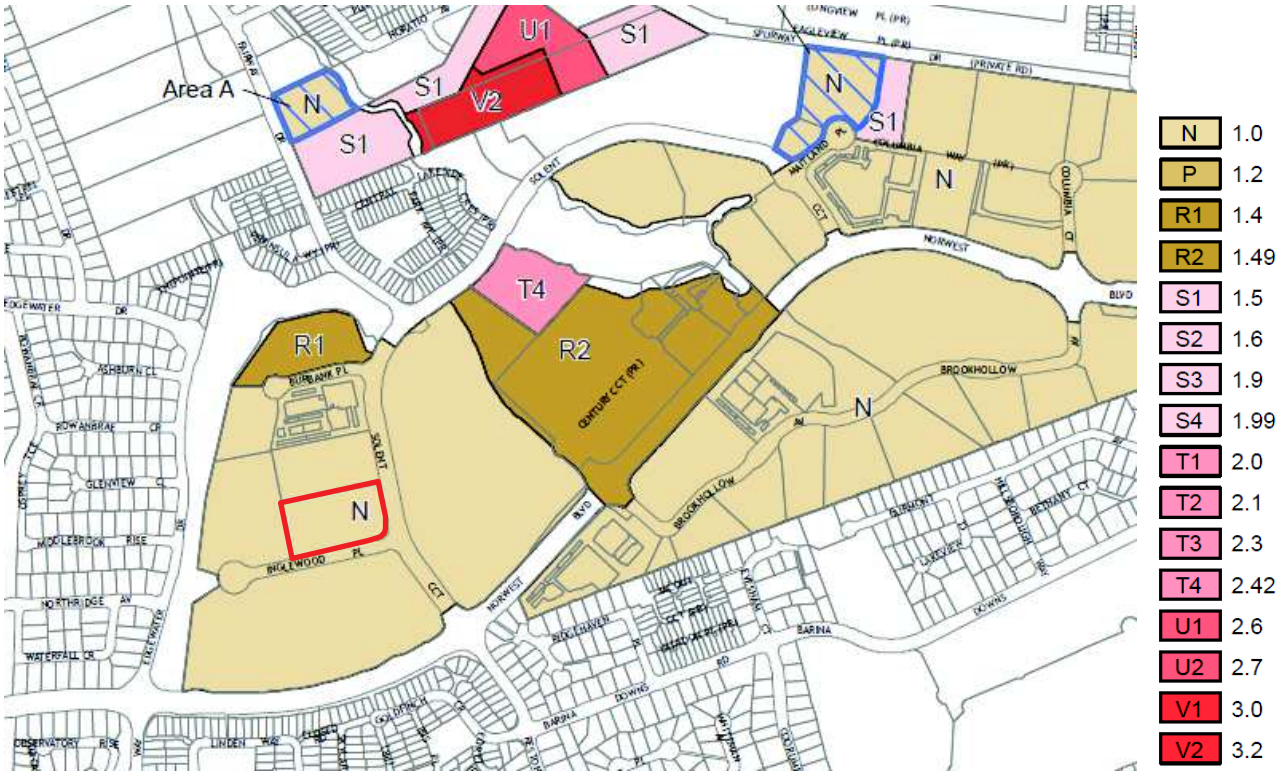
Figure 6.1 Extract of Land Use Zoning Map



6.1.2 Floor Space Ratio

The subject site is identified with a floor space ratio of 1:1, which is consistent with the majority of B7 Business Park zoning within Norwest Business Park as shown in Figure 6.2. Higher floor space ratios in the business park include 1.4:1 identified for the two commercial buildings located at Burbank Place as well as a 1.49:1 FSR at Norwest Marketown, adjacent commercial buildings and a portion of the Hillsong Church campus. A 2.3:1 FSR is identified for the 'Esplanade' (former Sydney Ice Arena site).

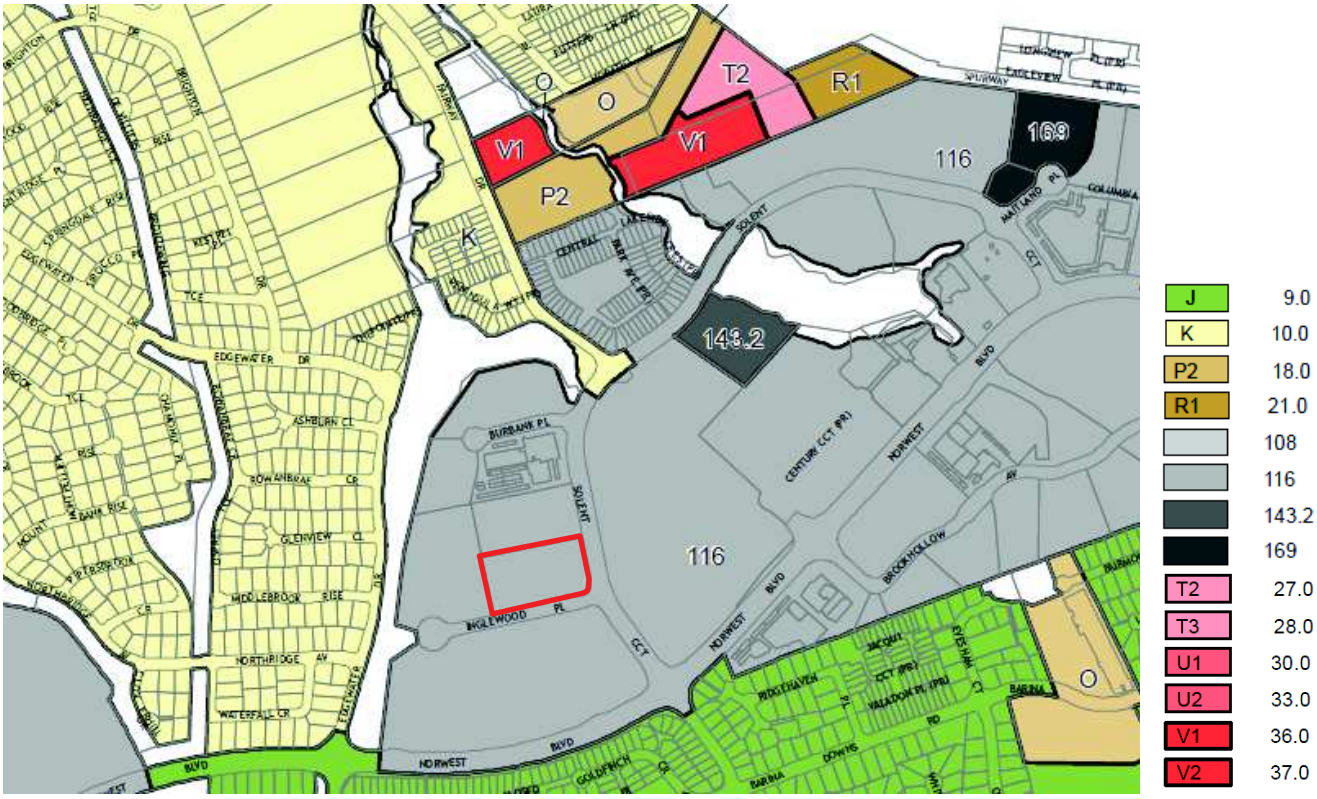
Figure 6.2 Extract of Floor Space Ratio Map



6.1.3 Building Height

The subject site is identified with a maximum building height of RL 116m as shown in Figure 6.3, which is also consistent with the majority of all B7 Business Park zoning in Norwest Business Park. The former Sydney Ice Arena site which will be subject to a mixed use development has a building height of RL143.2m, while a building height of 169m is identified at 2-7 Maitland Place, Baulkham Hills.

Figure 6.3 Extract of Building Height Map



6.2 The Hills Development Control Plan 2012

The Hills Development Control Plan 2012 provides provisions for the orderly development of land within The Hills Shire. This Planning Proposal, which seeks to increase the floor space ratio and building height controls for the site is required to address the relevant sections of the DCP.

6.2.1 Part B Section 6 – Business

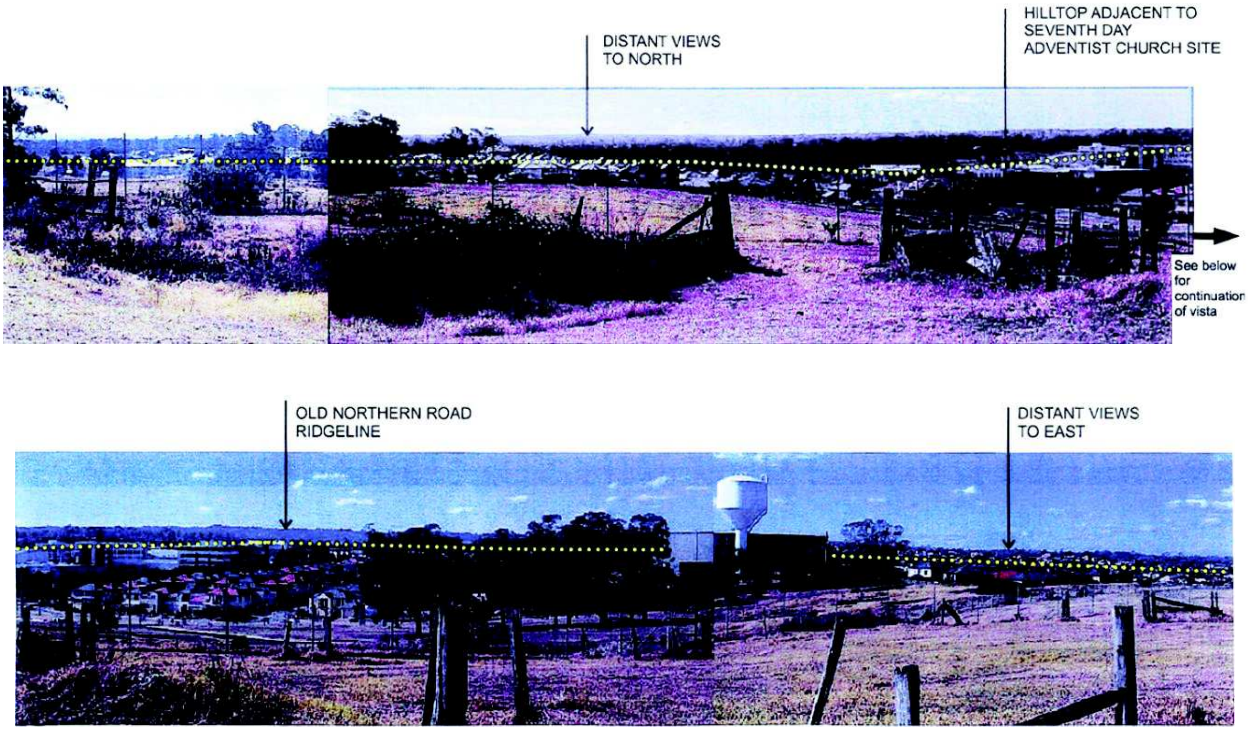
The Hills Development Control Plan 2012 – Part B Section 6 – Business provides the development controls for the orderly development of commercial and retail land within the Shire.

The Planning Proposal is consistent with the relevant provisions of the business DCP.

In particular, the DCP outlines provisions regarding views to and from Bella Vista Farm Park for land within Norwest Business Park. The Planning Proposal does not impact on views and vistas available from the park to the north and northwest as shown in Figure 6.4.

The height of the buildings under this proposal will not intersect the plane as shown in Figure 6.4 and therefore views to Bella Vista Farm Park will be retained.

Figure 6.4 Vistas from Bella Vista Farm to North and Northwest



(Source: The Hills Shire Council 2012)

Figure 6.5 identifies the views of Bella Vista Farm Park and the prominent ridgeline to the south, which are to remain visible when viewed from the specific locations along Old Windsor Road, the Pearce Family Cemetery and the Bunya Pines located adjacent to the Castle Hill Seventh Day Adventist Church. As shown in the figure, the subject site sits just outside the view corridor as indicated by the red line. The subject site is located just outside the view corridor as shown by the red line. Therefore, the proposal will not impact on this view corridor.

Figure 6.5 Heritage View Corridor

(Source: Six Maps 2017)

6.2.2 Part C Section 1 – Parking

The Hills Development Control Plan 2012 – Part C Section 1 – Parking provides development controls for the provision of parking within the Shire, which seek to set out Council's planning and engineering standards for parking, ensure sufficient parking that is convenient for all users, improve traffic management and safety as well as ensure the efficient flow of traffic, minimising pedestrian and vehicle conflict.

The Planning Proposal is consistent with the relevant provisions of the parking DCP as demonstrated in the architectural scheme.

7 Parts of a Planning Proposal

This Planning Proposal has been prepared in accordance with Sections 55 (1) and (2) of the *Environmental Planning and Assessment Act 1979* and the Department of Planning and Environment's guidelines including 'A guide to preparing planning proposals' and 'A guide to preparing Local Environmental Plans'.

The proposal is outlined in the following components:

- **Part 1** – A statement of the objectives and intended outcomes of the proposed instrument
- **Part 2** – An explanation of the provisions that are to be included in the proposed instrument
- **Part 3** – The justification of those objectives, outcomes and the process for their implementation
- **Part 4** – Maps, where relevant, to identify the intent of the planning proposal and the area to which it applies
- **Part 5** – Details of the community consultation that is to be undertaken on the planning proposal
- **Part 6** – Project Timeline

7.1 Part 1 – Objectives or Intended Outcomes

This Planning Proposal has the following objectives:

- To enable the development of Lot 4026 in DP 873565, being 8 Solent Circuit, Baulkham Hills to create a sustainable and high quality commercial development within Norwest Business Park
- To ensure additional employment space is provided within a strategic centre and specialised precinct of Sydney, meeting job targets
- To encourage a modal shift in travel behaviour for the workforce, being within walking distance to the station
- To support the notion of protecting key employment interests in a climate where residential pressure is being experienced

These objectives are to be achieved by amending *The Hills Local Environmental Plan 2012* with revised development standards and associated LEP maps to:

- Amend the floor space ratio from 1:1 to 2.2:1
- Amend the maximum building height from RL 116m to RL 126m

The intended outcome for the proposed amendments to the floor space ratio and building height controls will provide a total of 25,555m^2 gross floor area, including an additional 22,680m^2 of office floor space for Norwest Business Park, to accommodate employment opportunities that will be easily accessible via public transport. This is consistent with state and local government objectives to ensure economic growth in a significant business hub of Sydney.

7.2 Part 2 – Explanation of Provisions

This Planning Proposal seeks to amend *The Hills Local Environmental Plan 2012* to ensure that the key objectives and intended outcomes outlined previously are achieved. Table 7.1 below summaries the how the proposed increase in floor space ratio and building height controls for the subject site will be achieved. Figures 7.1, 7.2, 7.3 and 7.4 on the following pages support this table.

Table 7.1 Proposed amendments to The Hills LEP 2012

Development standard to be amended	Existing development standard applying to the site	Proposed amendment to The Hills LEP 2012 Maps
Floor Space Ratio	1:1	Amendment to the Floor Space Ratio Map – Sheet FSR_016 to **2.2:1**
Building Height	RL 116m	Amendment of the Height of Buildings Map – Sheet HOB_016 to **RL 126m**

Figure 7.1 Existing Floor Space Ratio Map

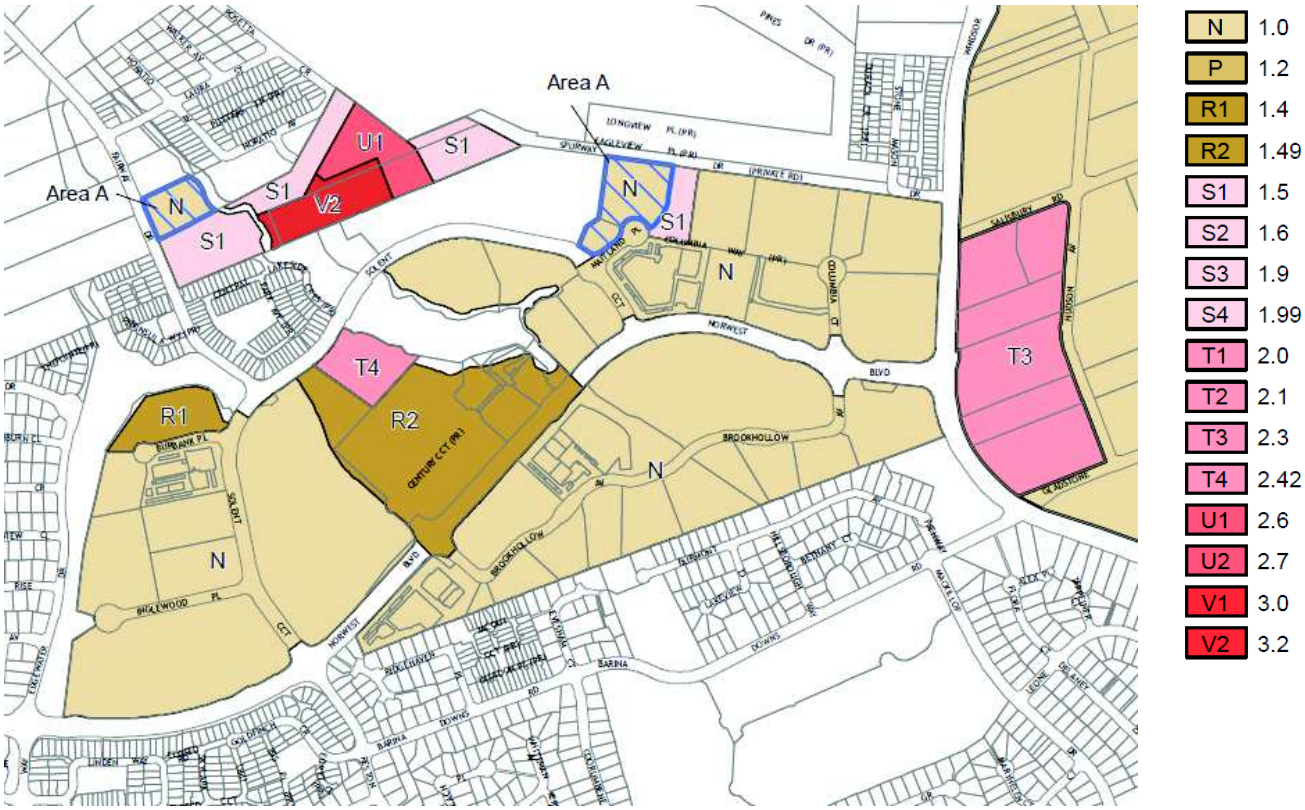


Figure 7.2 Proposed Floor Space Ratio Map

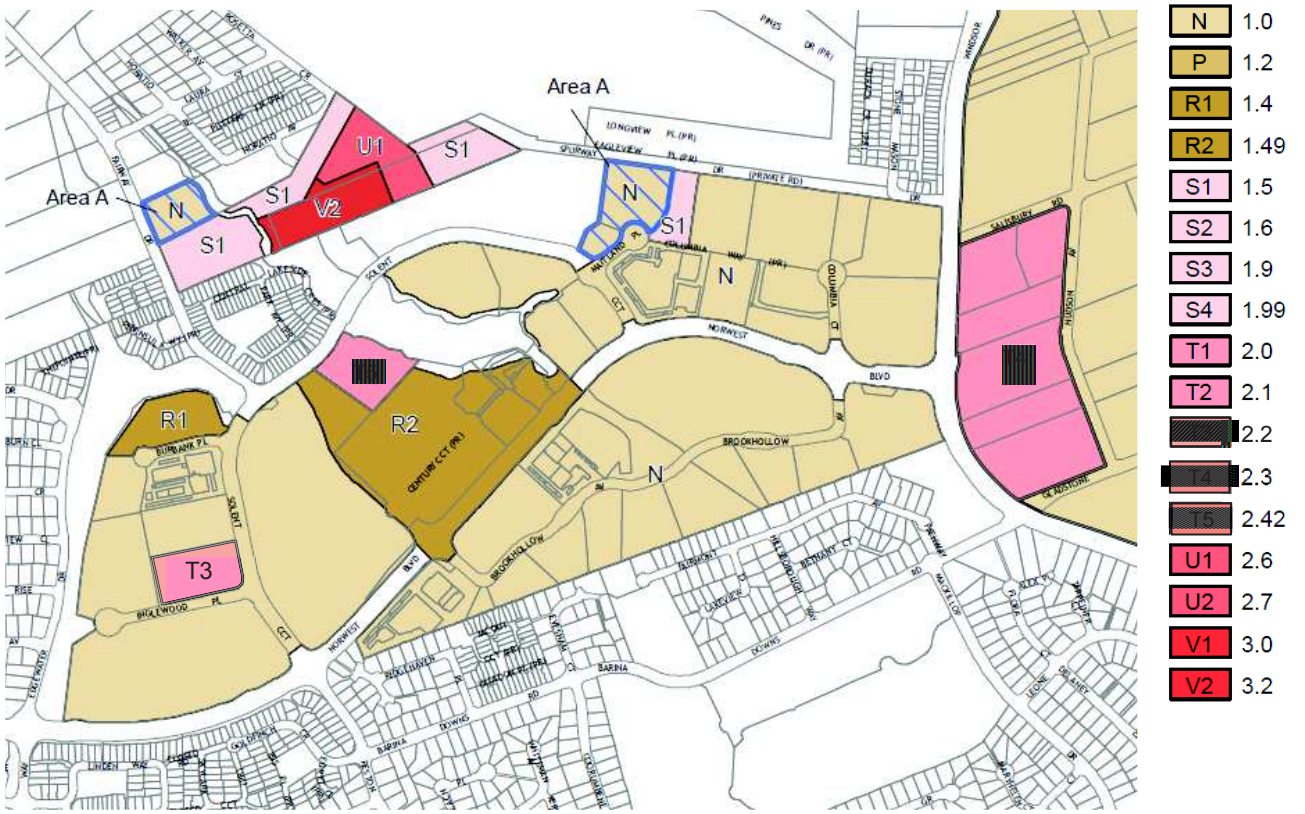
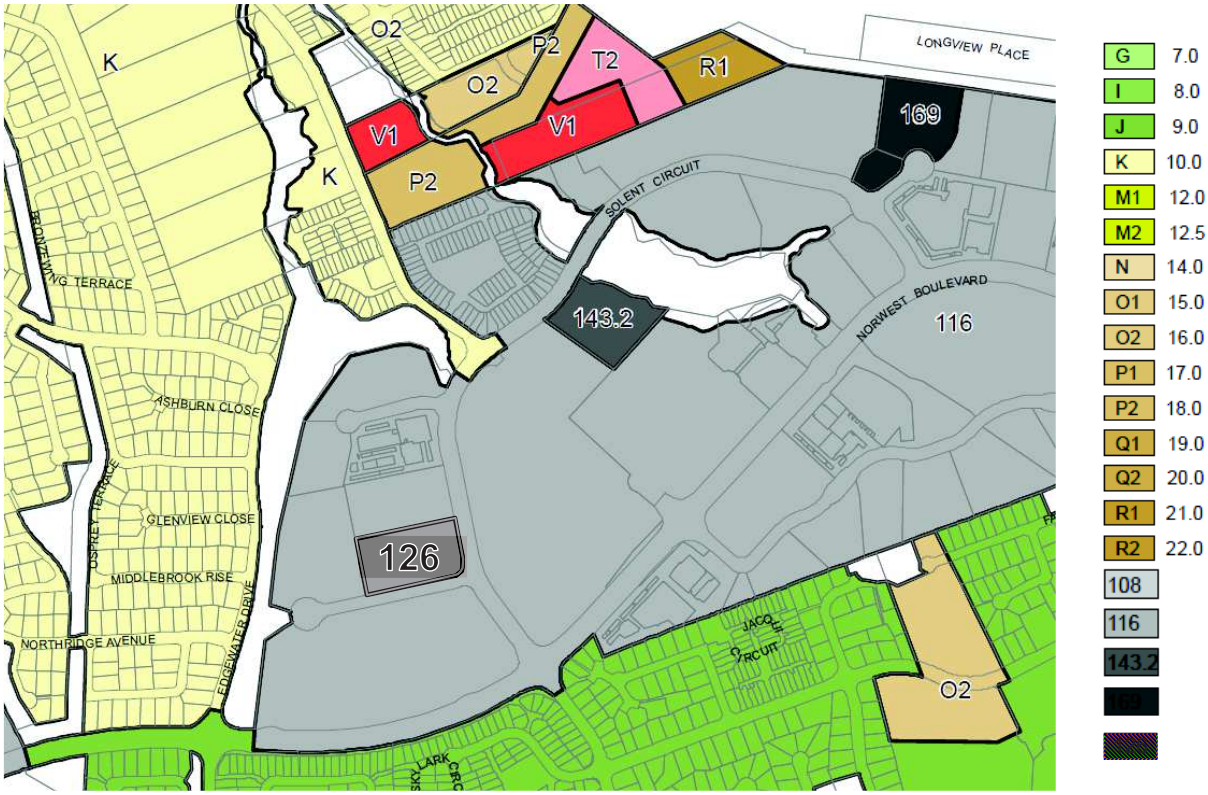


Figure 7.3 Existing Building Height Map

Figure 7.4 Proposed Building Height Map



7.3 Part 3 – Justification for the Planning Proposal

This section provides the justification for the proposed amendments to *The Hills Local Environmental Plan 2012* in accordance with Section 2.3 of 'A guide to preparing planning proposals'.

7.3.1 Questions to Consider When Demonstrating the Justification

Section A – Need for the Planning Proposal

Q1. Is the planning proposal a result of any strategic study or report?

The Planning Proposal is not the result of any strategic study or report, however is consistent with the applicable strategic plans outlined within this report. This Planning Proposal has been instigated to support a proposed architectural scheme attached in Appendix A for the commercial development of the subject site, being Lot 4026 in DP 873565, 8 Solent Circuit, Baulkham Hills.

Q2. Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

This Planning Proposal, which seeks to amend *The Hills LEP 2012* by increasing floor space ratio and building height controls is believed to be the most appropriate means, in terms of effectiveness and efficiency, of achieving the objectives and intended outcomes for the development of the site. The site is envisioned to accommodate additional commercial floor space to ensure that greater employment opportunities are realised within a strategic/specialised centre of Sydney.

The amendments to the floor space ratio and building height controls would enable increased densities within the site in order to cater for a growing workforce within Norwest Business Park. The Planning Proposal will also ensure that employment opportunities are easily accessible, given Norwest Station's location within 400m walking distance of the site.

The Planning Proposal is the best approach towards realising the desired outcome for the site, which is a suitable response towards the strategic objectives for Norwest, The Hills Shire and Greater Sydney.

Section B – Relationship to the Strategic Planning Framework

Q3. Is the planning proposal consistent with the objectives and actions of the applicable regional, sub-regional or district plan or strategy (including any exhibited draft plans or strategies)?

The Planning Proposal has been reviewed against the following applicable strategic plans:

- A Plan for Growing Sydney

  The Planning Proposal is considerably consistent with the strategic goals and objectives of NSW Government's vision for the city in *A Plan for Growing Sydney*.

  The proposal will ensure that employment opportunities will be created to accommodate a growing population. It will contribute and encourage the continued economic development Norwest, as a strategic centre situated within the Global Economic Corridor. The commercial development will accommodate office/professional related jobs, supporting Norwest as a high performing office market in Sydney and will ensure the economic productivity of not just Norwest Business Park, but Sydney as a whole. The investment of the Sydney Metro Northwest will enhance the connectivity to and from Norwest, allowing easy accessibility to employment opportunities generated by the proposal, as well as facilitate business agglomeration, as the site is within 400m to Norwest Station. This is consistent with Direction 1.7 of the strategic plan.

  The Planning Proposal will also accommodate some of the demand for around 190,000 new stand-along office jobs within Greater Sydney required by 2030. The proposal does not seek to include any residential development, rather an office facility to grow in the business park which meets Action 1.6.1 of *A Plan for Growing Sydney* by protecting crucial office and business space in what is a suburban office market where a commercial core exists and residential pressure is being experienced.

  The Planning Proposal is also supportive of the key notion of providing a number of jobs close to where people live, where residents of The Hills Shire will be able to gain access to a major office market.

The plan identifies the need for the Department working in partnership with Councils to update planning controls to increase density, including changing floor space ratio allowances and building height controls to facilitate the expansion of commercial markets. The approach sought under this Proposal is consistent with this objective and encourages more efficient land use outcomes within Norwest.

- Draft Greater Sydney Region Plan

  The Planning Proposal is consistent with the Greater Sydney Commission's Draft Greater Sydney Region Plan and the concept of a 30-minute city, with Norwest supporting the development of the Central River City.

  The Planning Proposal seeks to deliver on the overarching directions for Greater Sydney, including creating jobs and skills for the city. The proposal will enhance Greater Sydney's productivity and global competitiveness to increase the city's economic activity. The renewal of the site to create a major office development in Norwest would enable some of the 817,000 additional jobs that are required within Greater Sydney to be located in a high level business environment in an ever evolving economic hub in the Central River City.

  The Planning Proposal in particular would enable residents of the Central River City to live within 30 minutes of future job opportunities generated by the development of a high quality and sustainable commercial/office development within 400m of Norwest Station. It will contribute to the success of Norwest as a strategic centre, as a high performing economic hub within Greater Sydney, where it will attract significant investment, business activity and jobs. In addition, the proposal seeks to deliver additional office floor space required across Greater Sydney in an efficient and timely manner as emphasised within the plan, in order to ensure that Greater Sydney remains competitive.

- Revised Draft Central City District Plan

  The Central City District is described as one of the most dynamic and rapidly growing regions in Australia. The Planning Proposal seeks to expand the pivotal role that Central City has in Greater Sydney's future and prosperity as an economic and employment powerhouse. The proposal, which seeks to facilitate a commercial development to expand employment opportunities within 400m of Norwest Station, meets the following planning priorities as outlined within the district plan:

  - *Delivering integrated land use and transport planning and a 30 minute-city*
  - *Growing investment, business opportunities and jobs in strategic centres*

  The proposal meets the objectives for Norwest to transform from the *"traditional 1990s-style business park model into a transit-oriented, more vibrant and diversified centre with* ***higher employment densities****"*. As identified within the district plan, Norwest is estimated to deliver a minimum of 49,000 jobs by 2036. The district plans also have aspirations to deliver a higher target of 53,000 jobs at Norwest by 2036. The Planning Proposal importantly will strengthen Norwest by retaining and growing commercial capacity to achieve these job targets.

- Draft Future Transport Strategy 2056

  The Planning Proposal is consistent with the draft Future Transport Strategy vision and outcomes. It will promote the vision for successful places where people can enjoy living local as employment opportunities are easily accessible via public transport. The proposal will encourage the notion of a strong, modern economy, supported by a strong, efficient transport system, linking people, places, business and markets.

  The draft Future Transport Strategy envisions Norwest as being highly connected to all three cities via mass transit corridors, including a mixture of train, rapid bus and light rail networks, which will allow future employment opportunities to be within reach of 30 minutes.

  Sustainable outcomes as outlined within the transport strategy, will also be realised from the Planning Proposal. By allowing additional jobs to be located close to Norwest Station as well as the bus network that service the area, it will encourage more sustainable travel behaviour and enable better health and wellbeing by enabling people to shift to public transport modes, rather than private vehicles, which will lower congestion and emissions on roads, improving air quality.

- North West Rail Link Corridor Strategy – Norwest Station Structure Plan

  The Planning Proposal is consistent with the North West Rail Link Corridor Strategy – Norwest Station Structure Plan as it will strengthen Norwest's role as a Specialised Precinct and seeks to meet the vision for Norwest to transform into a *"vibrant and active Centre of business for the region"*. The Planning Proposal sets out to deliver a key objective for the Norwest Precinct, being the ***"orderly expansion and intensification of the Business Park…by delivering commercial floor space with a focus on efficient, large floor plate, campus-style office space"***.

  The proposal also supports the notion of transit oriented development for Norwest Precinct, as it provides employment within walking distance to Norwest Station, nearby residential areas, retail spaces and open space as well as other services and facilities.

  The subject site itself is identified as a short term opportunity site for redevelopment within the Norwest Structure Plan, as it is unconstrained, presenting an immediate opportunity for renewal to stimulate growth within the Precinct. The proposal is highly consistent with the structure plan, as shown in Figure 5.7, as it will enable the establishment of commercial offices that will integrate into the character of the business park. The Planning Proposal will provide for the employment needs of the local area and will encourage the growth of a prominent economic hub in Sydney.

  The structure plan has indicated a projected rate of 14,000m^2 of commercial floor space per annum. This Planning Proposal seeks to deliver a total of 25,555m^2 of commercial floor space which would exceed the target per annum. The floor space proposed is justified as very few development for commercial uses within this part of Norwest Business Park have been proposed since the structure plan was released in 2013. The strategic location of the site is also a significant factor to consider, which enables more employment opportunities close to the station to be realised, and therefore ensures the best outcome for the precinct.

Q4. Is the planning proposal consistent with a council's local strategy or other local strategic plan?

- The Hills Corridor Strategy

  The Planning Proposal is significantly consistent with Council's The Hills Corridor Strategy adopted in 2015, and especially meets the following guiding principles as outlined previously in Section 5.6:

  - *Jobs to match Shire needs*
  - *Grow our strategic centres*

  Norwest is emphasised as a specialised strategic centre for employment within The Hills Shire, and the Planning Proposal supports this idea by catering for additional job growth within the Business Park. The proposal seeks to accommodate office space to reflect the qualifications and skills of Shire residents and ensure that jobs are located close to home.

  The commercial development as shown in the architectural scheme supporting the Planning Proposal ensures that the open business feel of the business park is retained, through the orderly intensification and expansion of the site which will not impact on the character of the area. The proposal ensures that higher density commercial is located close to the station, which will enable change in travel behaviour to and from work. The height proposed for the buildings will be appropriate for the area and contribute to a varied and interesting skyline which will not impact on view corridors to and from Bella Vista Farm.

  The subject site is identified under the corridor strategy with a minimum employment FSR of 2:1. The Planning Proposal is in accordance with the Norwest Precinct Plan, seeking a 2.2:1 FSR to facilitate the desired commercial development on the site.

- The Employment Lands Direction

  The Planning Proposal considerably meets the directions outlined within the Employment Lands Direction adopted by Council including the following:

  - *Accommodate the growth of a modern local economy to meet community needs*
  - *Enhance attractiveness of the Shire for new business and visitors*
  - *Promote growth in local business and employment opportunities*
  - *Enhance the use and viability of existing employment lands*
  - *Encourage quality employment lands*

  The direction outlines the need to address limited land available in Norwest Business Park by redeveloping existing sites at a higher density. This Planning Proposal has addressed this concern by seeking an increased FSR and building height on the site in order to facilitate employment growth within the business park.

  It should be noted that the Direction was released in 2009, which did not take into account the Sydney Metro Northwest infrastructure project that would further shape employment lands within The Hills Shire.

Q5. Is the planning proposal consistent with applicable State Environmental Planning Policies?

The Planning Proposal is consistent with the following applicable State Environmental Planning Policies (SEPPs):

- SEPP No. 55 – Remediation of Land
- SEPP (Exempt and Complying Development Codes) 2008
- SEPP (Infrastructure) 2007

A table demonstrating consistency with the applicable SEPPs is shown in Table 7.2.

Table 7.2 Consistency with State Environmental Planning Policies

State Environmental Planning Policy	Requirement	Planning Proposal
SEPP No. 55 – Remediation of Land	This policy aims to provide for a Statewide planning approach to the remediation of contaminated land for the purposes of reducing the risk of harm to human health or any other aspect of the environment.	The Planning Proposal does not seek to change the use of the land and aims to be consistent with the provisions of SEPP 55. Prior to future development, appropriate investigations will be undertaken to ensure that any contamination of the property is identified and remediated.
SEPP (Exempt and Complying Development Codes) 2008	This policy aims to provide streamlined assessment processes for development applications that complies with exempt and complying development codes that have State-wide application.	Future development of the site will consider the provisions of this SEPP whenever applicable.

SEPP (Infrastructure) 2007	This policy aims to facilitate the effective delivery of infrastructure across the State.	Future commercial development on the site will be serviced by existing infrastructure. Upgrades of infrastructure may occur in the future, which will be addressed at the development application stage following the gazettal of the Planning Proposal. The development would be considered to be traffic generating development to be referred to the RMS in accordance with Clause 104 and Schedule 3 of the SEPP as it would result in a commercial development with a GFA of 25,555m^2 and a total of 999 car parking.

Q6. Is the planning proposal consistent with applicable Ministerial Directions (s117 directions)?

The Planning Proposal is consistent with the applicable Section 117 Ministerial Directions being:

- 1.1 Business and Industrial Zones
- 2.3 Heritage Conservation
- 3.4 Integrating Land Use and Transport
- 5.9 North West Rail Link Corridor Strategy
- 6.1 Approval and Referral Requirements
- 6.3 Site Specific Provisions
- 7.1 Implementation of A Plan for Growing Sydney

Table 7.3 on the following page demonstrates consistency with the applicable s117 Ministerial Directions.

Table 7.3 Consistency with Section 117 Ministerial Directions

Direction	Objective	Comment
1.1 Business and Industrial Zones	The objectives of this direction is to encourage employment growth in suitable locations, protect employment land and support the viability of identified centres. The direction applies when a planning proposal will affect land within an existing or proposed business or industrial zone.	The Planning Proposal will meet the objectives of this direction, by encouraging jobs growth within 400m to Norwest Station, on B7 Business Park zoned land by proposing to increase the floor space and building height controls for the site, rather than reduce the potential FSR for employment uses. The proposal protects much needed employment land, in an area where there are many proposals for residential development. The Planning Proposal will support the viability of Norwest as a specialised strategic centre for employment opportunities and business investment under the relevant state and local government strategic plans.
2.3 Heritage Conservation	The objective of this direction is to conserve items, areas, objects and places of environmental significance and indigenous heritage significance.	The Planning Proposal is consistent with the terms of this direction. There are no heritage items identified on the site. In accordance with the Business DCP, the proposal will not impact on views to and from Bella Vista Farm, which is identified under *The Hills LEP 2012* as a general conservation area.
3.4 Integrating Land Use and Transport	The direction aims to ensure that urban structures, building forms, land use locations, development designs, subdivision and street layouts achieve key planning objectives. The planning proposal should be consistent with the aims, objectives and principles of *Improving Transport Choice – Guidelines for planning and development* and *The Right Place for Business and Services – Planning Policy* prepared by the Department of Urban Affairs and Planning.	The Planning Proposal is consistent with the notion of integrating land use and transport, as it encourages additional employment opportunities within 400m walking distance of a major public transport node, being the future Norwest station, which will provide access to the wider metropolitan rail network within Sydney. The site is also supported by a suitable bus network. The Planning Proposal is therefore supportive of improved access to jobs, whereby future employees will be able to benefit from increased choice of available transport. This will enable a change in travel behaviour with a reduced dependency on cars. The proposal is as such is supportive of the efficient and viable operation of public transport services.
5.9 North West Rail Link Corridor Strategy	The objectives of this direction is to promote transit-oriented development (TOD) and manage growth around the eight train stations of the North West Rail Link and ensure that development within the rail corridor is consistent with the proposals set out within the North West Rail Link Corridor Strategy and precinct structure plans. This direction applies	This Planning Proposal is in response to the growing trends and changes within The Hills Shire due to the Sydney Metro infrastructure project that is underway, with the Metro Northwest set for completion in 2019.

	where a planning proposal applies to land within the rail corridor.	The Planning Proposal contributes to facilitating transit-oriented development around Norwest Station, proposing to locate higher employment densities within a 400m walking distance to the station. The proposal is consistent with the Norwest Structure Plan including the employment growth projections and proposed future character of the Norwest Precinct as demonstrated in the strategic justification for proposal against the North West Rail Link Corridor Strategy.
6.1 Approval and Referral Requirements	This direction aims to ensure that LEP provisions encourage the efficient and appropriate assessment of development.	This Planning Proposal seeks to minimise the inclusion of provisions that require the concurrence, consultation or referral of development applications to a Minister or public authority. It is understood that council would obtain the approval of these authorities if needed. The Planning Proposal does not identify the development as designated development.
6.3 Site Specific Provisions	The objective of this direction is to discourage unnecessarily restrictive site specific planning controls. This direction applies where a planning proposal would allow a particular development to be carried out.	The Planning Proposal does not promote unnecessarily restrictive site specific planning controls, and does not propose to rezone the site, only seeking to increase the floor space ratio and building height controls, which would not restrict what can be developed on the site. The Planning Proposal has been prepared in accordance with *The Hills LEP 2012* and the Standard Instrument.
7.1 Implementation of A Plan for Growing Sydney	The objective of this direction is to give legal effect to the planning principles, directions and priorities for subregions, strategic centres and transport gateways contained within *A Plan for Growing Sydney*.	This Planning Proposal reflects the objectives and priorities of *A Plan for Growing Sydney* which has been discussed under Question 3.

Section C – Environmental, Social and Economic Impact

Q7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

There is little vegetation on site and the site is fully developed. There is no likelihood that the Planning Proposal will impact on critical habitat or threatened species, populations or ecological communities, or their habitats.

Q8. Are there any likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

There are no likely environmental effects or natural hazards as a result of the Planning Proposal. The subject site is not identified with bushfire, flooding, landslide or biodiversity constraints.

Q9. Has the planning proposal adequately addressed any social and economic effects?

The Planning Proposal, which seeks to increase the floor space ratio and building height controls for the subject site will not result in any adverse social or economic effects.

The proposal will not impact the view corridor to and from Bella Vista Farm as demonstrated in Section 6.2.1.

The Planning Proposal will allow a commercial office development to be established within a key employment centre in North-West Sydney, growing high-skilled jobs. The site's proximity to Norwest Station allows further development opportunities to be established. The proposal will support the growth of economic activity within the business park, envisaged by the state and local government. It will also provide jobs closer to home, enabling local residents to easily access employment opportunities. The proposal also ensures the provision of additional office accommodation that is currently lacking within the business park.

It is noted that Eden Brae was founded in The Hills Shire in 2001. Since inception, they have occupied office space in Norwest Business Park and primarily the team have resided within the vicinity of Norwest, with many living at Bella Vista.

One of the keys to Eden Brae's excellent employment record has been their capacity to provide office space that is complementary to their employees' needs and requirements. At times, they have sought to provide surplus office space to accommodate growth.

The history of their head office requirements and average staffing levels is shown below:

•	2001-2004	Capital Business Centre at 5 Brookhollow Avenue	200sqm	15 staff
•	2005-2010	Nexus at 5 Columbia Way	1,200sqm	70 staff
•	2010-Present	22 Brookhollow Avenue	3,000sqm	150 staff

The Planning Proposal will therefore ensure the continued growth of Eden Brae locally.

Approximately 1,300 workers are expected to occupy the development on completion. This is based on a 1:20 building occupation employee density rate that is generally seen within the business park.

It is assumed that the impact from the Metro would reduce that density rate. Whilst a 1.12:5 rate that is often achieved in the CBD is unlikely, it is assumed that a minor impact such as a rate of 1:17.5 may be possible, which would result in an increase to approximately 1,500 occupants.

Traffic and Car Parking

A Traffic Assessment that accompanies this Planning Proposal in Appendix B, assessed the proposed car parking provisions and traffic implications of the proposed commercial office development.

Trip generation rates were calculated, which found that the proposed development will generate 409 and 314 vehicle trips during the morning and evening peak periods, respectively.

The traffic impact of the proposed development is summarised below.

- *The section of Norwest Boulevarde between Windsor Road and Solent Circuit, and the section of Solent Circuit between Norwest Boulevarde and Inglewood Place would operate at Level Service 'A' during the morning and evening peak hours.*
- *The replacement of the roundabout controlling the intersection of Norwest Boulevarde with Solent Circuit and Reston Grange with traffic signals would operate at Level Service of 'C' and 'B' during the morning and evening peak periods, respectively.*
- *The roundabout at the intersection of Fairway Drive with Solent Circuit and Inglewood Place would continue at a very good Level Service 'A' for the morning and evening peak periods.*
- *The existing intersection configuration of Solent Circuit and Inglewood Place would operate at maximum capacity with the future traffic volumes of the proposed development resulting in a very poor Level of Service 'F' and corresponding extensive delays for vehicles exiting Inglewood Place. The provision of a roundabout at this intersection would considerably improve the situation.*

The traffic report concluded with the following:

- *The proposed car parking provision complies with the parking requirement of the Hills Council Development Control Plan.*
- *The proposed car parking supply for the site will be consistent with Council parking requirements. The proposed car parking layout will be designed to comply with Australian Design Standards and Council Development Control Plan requirements.*
- *Servicing for the development can be accommodated on-site.*
- *The provisions of traffic signals at the intersections of Norwest Boulevarde with Solent Circuit East and with Reston Grange and Solent Circuit would result in considerably improved conditions at that location.*
- *The intersection Solent Circuit and Inglewood Place will need to be upgraded to a roundabout to accommodate the future traffic volumes (as discussed in Section 5.2.3 of the report).*

The upgrade of the roundabout is intended to be delivered by the completion of Stage 2 of the proposed development. This will be addressed in future development applications, should the Planning Proposal be gazetted.

Section D – State and Commonwealth Interests

Q10. Is there adequate public infrastructure for the planning proposal?

The subject site will have access to adequate public infrastructure including utility services, as there is an existing development on the site. The proposal has suitable access to public transport and will benefit from the opening of the Metro in 2019, where Norwest Station is within 400m of the site.

Any additional infrastructure servicing requirements required for development that may occur from the gazettal of the Planning Proposal will be addressed in any future development applications.

Q11. What are the views of state and Commonwealth public authorities consulted in accordance with the Gateway determination?

The views of State and Commonwealth public authorities will not be known until after the initial Gateway determination as no consultation has been carried with either of the authorities. The determination will identify the relevant agencies to be consulted as part of the process.

7.4 Part 4 – Mapping

The Department's guidelines state that Planning Proposals should be supported by relevant and accurate mapping where appropriate. This mapping was shown previously in Section 7.2 Part 2 – Explanation of Provisions.

7.5 Part 5 – Community Consultation

The Department's guidelines outline that community consultation should be undertaken in respect of the Planning Proposal. 'A guide to preparing Local Environmental Plans' set out requirements for community consultation and distinguishes between 'low impact' proposals and other types of planning proposals.

This Planning Proposal would require a standard consultation length of 28 days. Department's Gateway Determination will confirm the degree of community consultation required. Following Gateway Determination, community consultation will be undertaken in accordance with Gateway conditions.

7.6 Part 6 – Project Timeline

'A guide to preparing Planning Proposals' states that the primary goal of the plan making process is to reduce the overall time taken to produce LEPs. It is understood that the timeframe for this Planning Proposal will depend on Council's reporting and decision as well as the Department's assessment at during Gateway determination.

The proponent seeks to ensure that the Planning Proposal will result in the occupancy of the commercial development in 2020.

The following table demonstrates the desired project timeline.

Table 7.4 Project Timeline

Project Timeline	
Lodgement of Planning Proposal	December 2017
Determination of Planning Proposal – Gazettal	December 2018
Lodgement of DA for Office	December 2018
Determination of DA for Office	March 2019
Forecast Northwest Metro Opening	March 2019
Commencement of Construction	June 2019
Construction Completion	July 2020
Building Occupation	September 2020

8 Conclusion

This Planning Proposal has been prepared in accordance with Section 55 of the *Environmental Planning and Assessment Act 1979* and the Department of Planning and Environment's guidelines including 'A guide to preparing Planning Proposals' and 'A guide to preparing Local Environmental Plans', seeking an amendment to *The Hills Local Environmental Plan 2012* to increase floor space ratio and building height controls for the subject site, being Lot 4026 in DP 873565, 8 Solent Circuit, Baulkham Hills. These amendments would support an architectural scheme for the development of a sustainable and high quality commercial development in Norwest Business Park.

The Architectural Scheme is included in Appendix A and proposes two office buildings at a similar scale containing six (6) levels of office space, three (3) levels of elevated car parking, a ground level for café/lobby, loading and waste at the rear, and three (3) levels of basement car parking and one (1) showroom level, resulting in an FSR of 2.2:1.

The proposed development of Lot 4026 in DP 873565, 8 Solent Circuit, Baulkham Hills provides a significant opportunity to ensure that the best outcome can be achieved to facilitate a development where additional employment opportunities can be achieved. The Planning Proposal would respond to strategic objectives and priorities for the Norwest Precinct as well as local and state government targets, providing additional employment space that is easily accessible by public transport as well as encourage additional jobs to be located closer to home.

This Planning Proposal will require the following amendments to *The Hills LEP 2012* to support the architectural scheme:

- Increase Floor Space Ratio under Clause 4.4 Floor Space Ratio and amend the 'Floor Space Ratio Map':
    - From 1:1 to 2.2:1
- Increase Building Height under Clause 4.3 Height of Buildings and amend the 'Height of Buildings Map':
    - From RL 116m to RL 126m

It is believed that the Planning Proposal would result in a positive outcome for the site both in terms of built form and meeting key strategic targets for Norwest. The proposal is consistent with Council's vision for the Business Park.

All strategic planning policies and statutory planning instruments have been taken into consideration and addressed within this Planning Proposal including A Plan for Growing Sydney, Draft Greater Sydney Region Plan, Revised Draft Central City District Plan, Draft Future Transport Strategy 2056, North West Rail Link Corridor Strategy, The Hills Corridor Strategy, The Employment Lands Direction, relevant Section 117 Directions, relevant State Environmental Planning Policies, and The Hills LEP 2012.

The Planning Proposal is submitted to Council for consideration and if supported, the Proposal will be submitted to the Department of Planning and Environment for a Gateway determination.

PLANNING PROPOSAL – 8 SOLENT CIRCUIT, BAULKHAM HILLS

Appendix A Architectural Scheme prepared by WMK Architecture

EDEN BRAE HOMES INVESTMENTS PTY LTD

PLANNING PROPOSAL – 8 SOLENT CIRCUIT, BAULKHAM HILLS

Appendix B Traffic Assessment prepared by TDG in association with Gennaoui Consulting

EDEN BRAE HOMES INVESTMENTS PTY LTD

PLANNING PROPOSAL – 8 SOLENT CIRCUIT, BAULKHAM HILLS

Appendix C Norwest Association Limited Letter

EDEN BRAE HOMES INVESTMENTS PTY LTD

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Issue	Description	Date	Issue	Description	Date

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SCALE 1:100 @ A1

Client
EDEN BRAE HOMES
INVESTMENTS PTY LTD

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
SITE

Drawing No. SK38
Issue
Scale 1 : 1000@A1
Drawing Size A1
Project No. 17075 10/18/17
Drawn By Author
CAD Reference
PROJECT:\00000 PROJECT NAME\DWG\REVIT\FILENAME.RVT

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Issue	Description	Date	Issue	Description	Date

Client
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INVESTMENTS PTY LTD

0 2 4 6 8 10m
SCALE 1:100 @ A1

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
SITE - ANALYSIS

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10/18/17
Drawn By Author
CAD Reference
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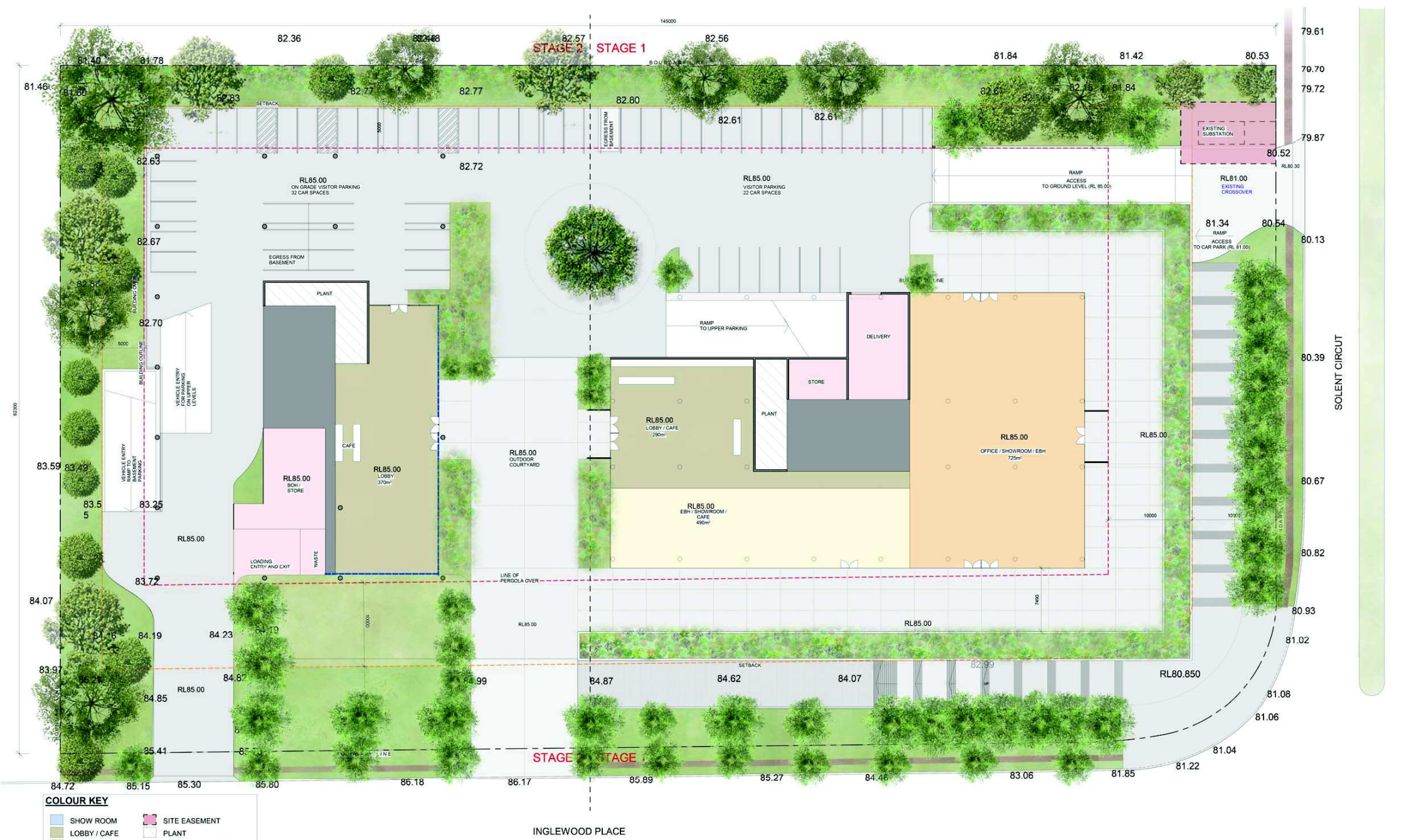

COLOUR KEY

- SHOW ROOM
- LOBBY / CAFE
- OFFICE
- EBH
- CAR PARK
- WASTE & LOADING
- SITE EASEMENT
- PLANT
- EXISTING CROSSOVER
- BUILDING SETBACK
- LANDSCAPE SETBACK

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Issue	Description	Date
A	ISSUED FOR PRE DA	20.10.2017
B	FUTURE DEVELOPMENT ISSUE	17.11.2017
C	FUTURE DEVELOPMENT ISSUE	01.12.2017
D	FUTURE DEVELOPMENT ISSUE	05.12.2017

Client: EDEN BRAE HOMES INVESTMENTS PTY LTD

Project: SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title: GROUND LEVEL- GA

SCALE 1:200 @ A1

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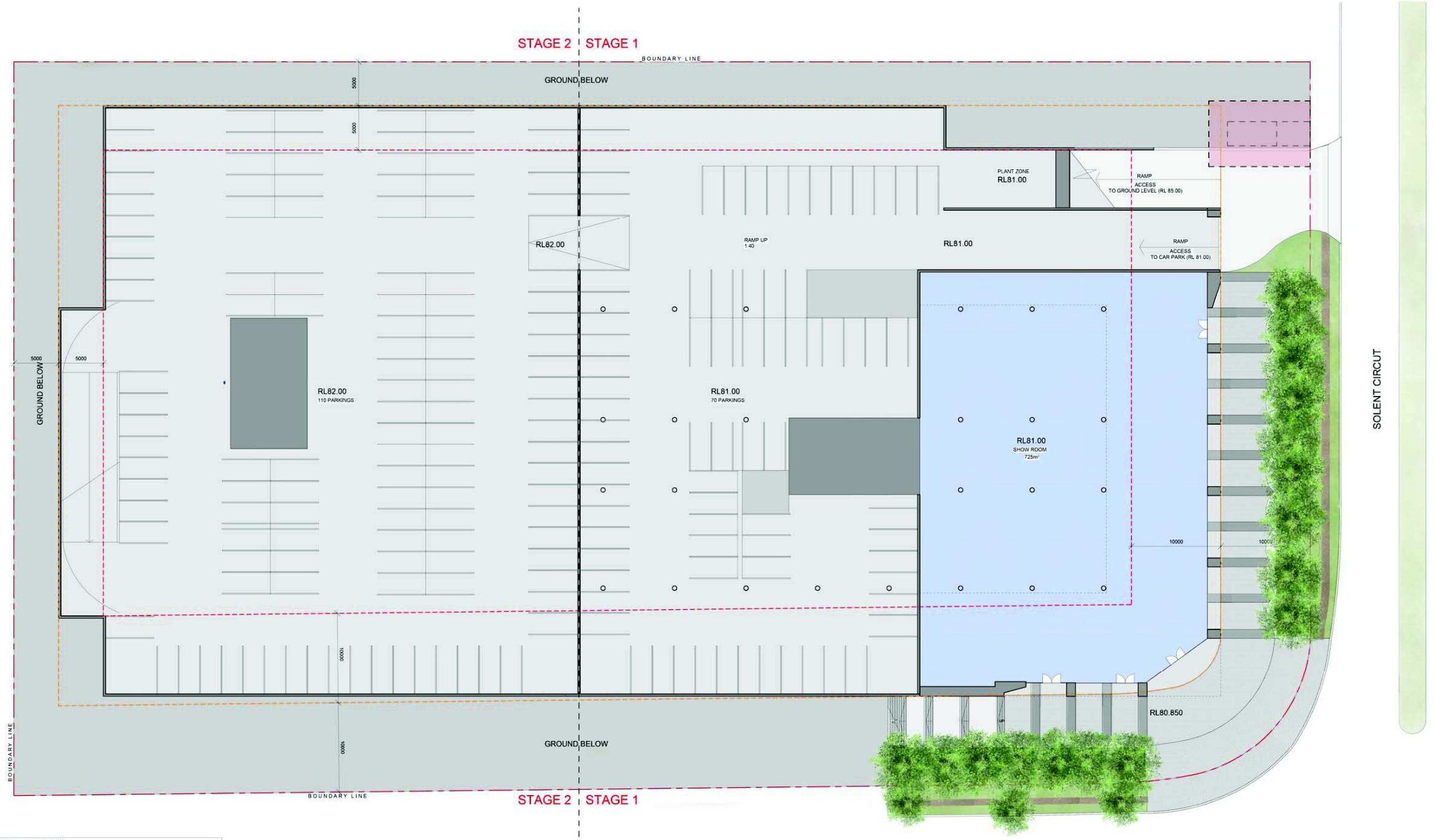

COLOUR KEY

- SHOW ROOM
- LOBBY / CAFE
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- EBH
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Issue	Description	Date
A	ISSUED FOR PRE DA	20.10.2017
B	FUTURE DEVELOPMENT ISSUE	17.11.2017
C	FUTURE DEVELOPMENT ISSUE	01.12.2017
D	FUTURE DEVELOPMENT ISSUE	05.12.2017

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SCALE 1:200 @ A1

Client: EDEN BRAE HOMES INVESTMENTS PTY LTD

Project: SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title: BASEMENT 1 - GA

Drawing No. SK04
Issue D
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10/12/17
Drawn By Author

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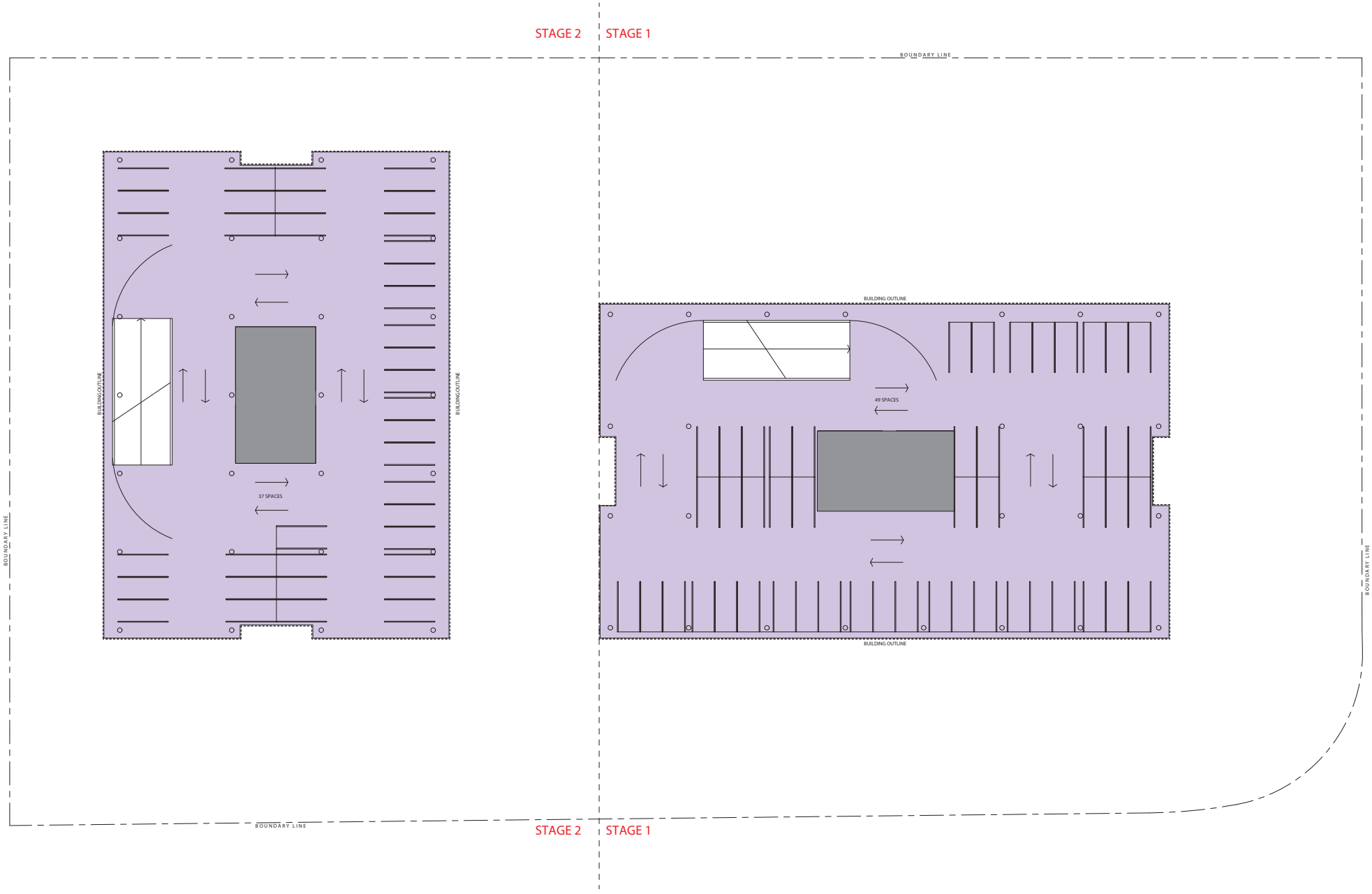

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Issue	Description	Date	Issue	Description	Date

Client
EDEN BRAE HOMES
INVESTMENTS PTY LTD

0 4 8 12 16 20m
SCALE 1:200 @ A1

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
TYPICAL ABOVE GROUND PARKING FLOOR (LEVEL 2-3)

Drawing No. SK36
Issue
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Project No. 17075 10/16/17
Drawn By Author
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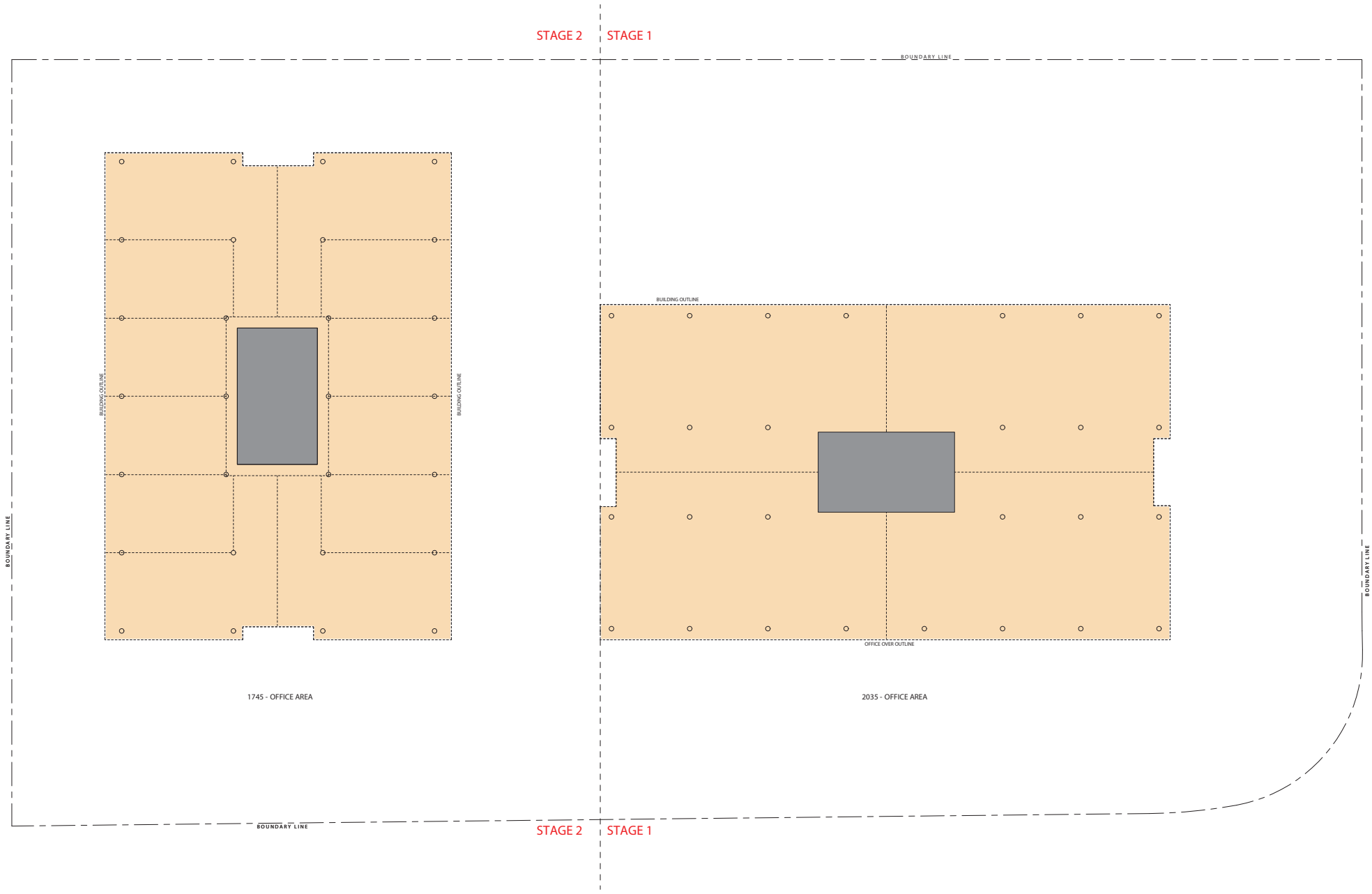

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Issue	Description	Date	Issue	Description	Date

Client
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0 4 8 12 16 20m
SCALE 1:200 @ A1

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
TYPICAL OFFICE FLOOR (LEVEL 4-9)

Drawing No. SK37
Issue
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Project No. 17075 10/16/17
Drawn By Author
CAD Reference
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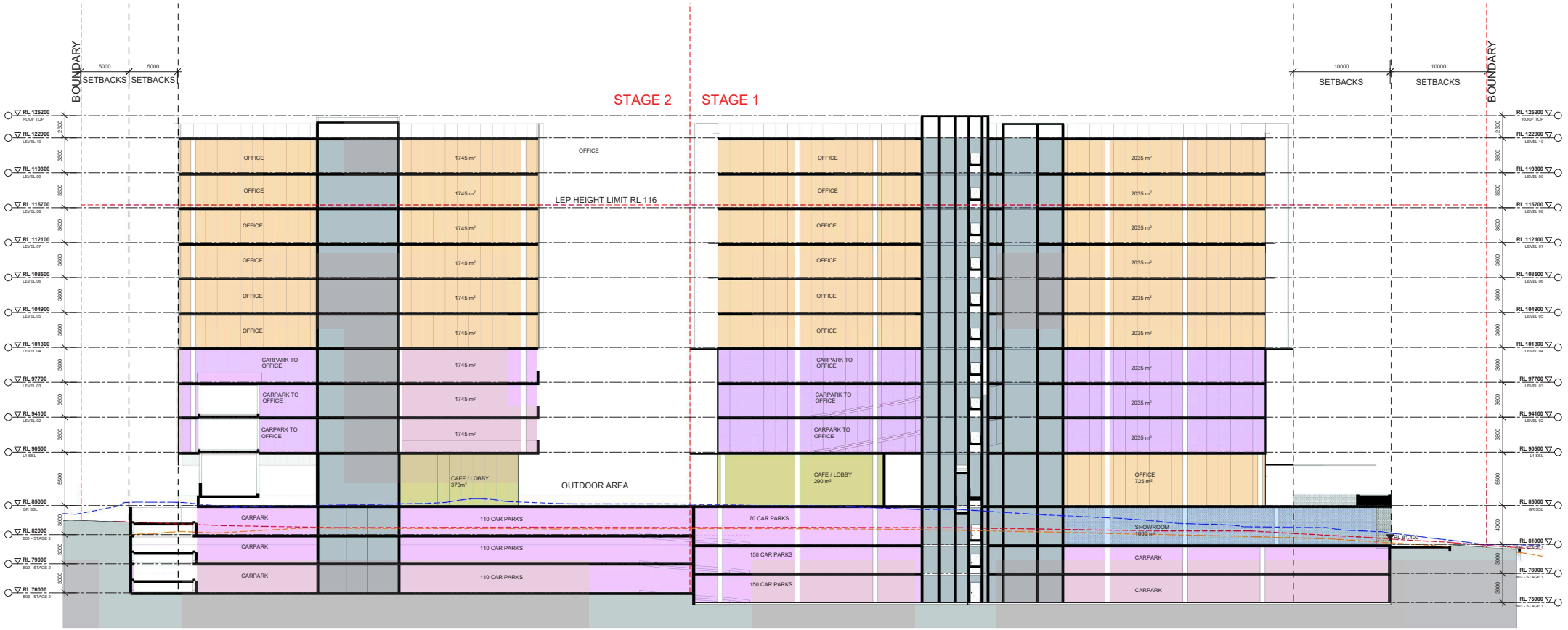

COLOUR KEY

- GROUND LINE - INGLEWOOD
- GROUND LINE - CENTRE
- GROUND LINE - NORTH
- SHOW ROOM
- LOBBY / CAFE
- OFFICE
- CAR PARK
- WASTE & LOADING

GFA (m²) SCHEDULE

	STAGE 1	STAGE 2	TOTAL
LEVEL 9	2035	1745	3780
LEVEL 8	2035	1745	3780
LEVEL 7	2035	1745	3780
LEVEL 6	2035	1745	3780
LEVEL 5	2035	1745	3780
LEVEL 4	2035	1745	3780
LEVEL 3	2035	1745	3780
LEVEL 2	2035	1745	3780
LEVEL 1	2035	1745	3780
GROUND			
- LOBBY	145	185	330
- CAFE	145	185	330
- EBH	490	-	490
- OFFICE	725	-	725
LEVEL B1			
- SHOWROOM	1000	-	1000
TOTAL GFA(m²)	14715	10840	25555
SITE AREA			11750
PERMISSIBLE FSR			1:1
STAGE 1 & 2 COMBINED FSR			2.2:1

NIL GFA AS CAR PARK

CAR PARKING SCHEDULE

	STAGE 1	STAGE 2	TOTAL
LEVEL 3	49	37	86
LEVEL 2	49	37	86
LEVEL 1	40	33	73
GROUND	30	24	54
LEVEL B1	70	110	180
LEVEL B2	150	110	260
LEVEL B3	150	110	260
TOTAL PARKING	538	461	999
CAR PARKING REQUIRED			
-OFFICE (1/25m²)	517	419	936
-LOBBY (0.75/100m²)	2	2	4
-CAFE (12/100m²)	18	22	40
-SHOWROOM (0.75/100m²)	12	-	12
TOTAL REQUIRED PARKING	549	443	992

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Issue	Description	Date	Issue	Description	Date

Client: EDEN BRAE HOMES INVESTMENTS PTY LTD

Project: SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title: SECTION A

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PRELIMINARY

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Issue	Description	Date	Issue	Description	Date
A	FUTURE DEVELOPMENT ISSUE	05.12.2017			

Client
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INVESTMENTS PTY LTD

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
VIEW 3

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Project No.	17075
	12/04/17
Drawn By	Author

CAD Reference
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Eden Brae Homes - 8 Solent Circuit Norwest Business Park

Proposed Office Development

Traffic Assessment

December 2017

TDG Ref: 14925 pp final v01.docx

Eden Brae Homes - 8 Solent Circuit Norwest Business Park

Proposed Office Development

Traffic Assessment

Quality Assurance Statement

Prepared by:

Kirk Martinez

Principal Traffic Engineer

Reviewed by:

Fred Gennaoui

Principal Consultant

Approved for Issue by:

Michael Willson

Senior Associate / NSW Branch Manager

Status: Final Report

Date: 21 December 2017

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Table of Contents

1. Introduction

1.1 Background

TDG has been engaged by Eden Brae Homes to assess the proposed parking provisions and traffic implications of the proposed commercial development at 8 Solent Circuit, Norwest. The proposal will involve two buildings as described below:

- Building one: 10,470m^2 of office use and a small café; and
- Building two: 13,425m^2 of office use, 1,000m^2 of showroom use and a small café.

Car parking for the development will be provided by a multi-level carpark with access via Solent Circuit and Inglewood Place.

This assessment has been prepared to address the traffic and parking impacts of the proposal, and on-site observations.

1.2 Site Location and Study Area

The proposed development is located at 8 Solent Circuit within the Norwest Business Park. **Figure 1** shows the location of the site in relation to the surrounding transport network. All access to and from the proposed development will be off Solent Circuit and Inglewood Place.

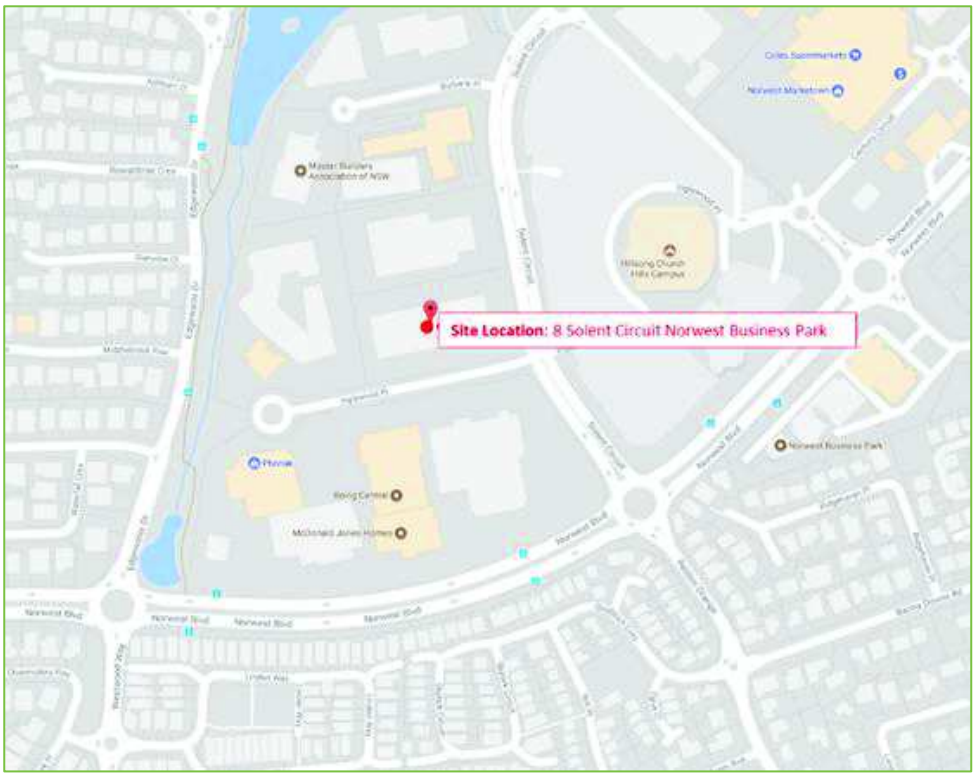

Figure 1: Site Location [1]

[1] Source: Google Maps (https://www.google.com.au/maps)

The site is currently occupied as industrial and warehouse use, with an existing driveway access on Solent Circuit and Inglewood Place, as shown in **Figure 2**. The site accesses are on local roads under Council jurisdiction.

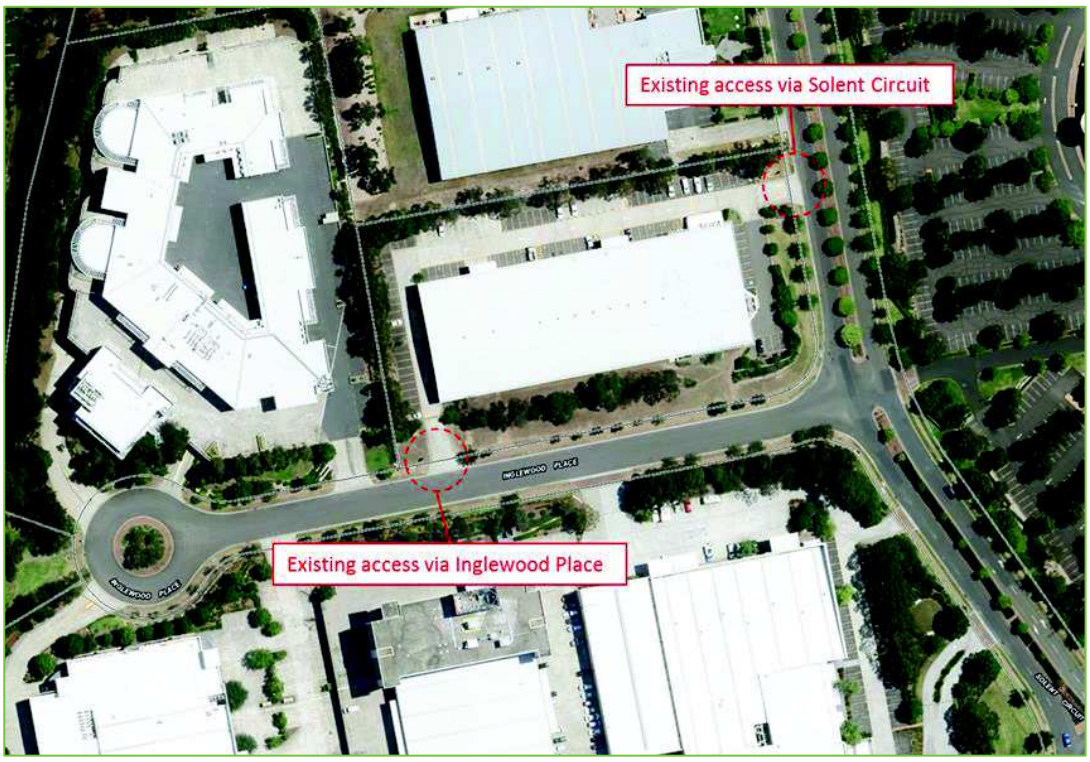

Figure 2: Existing Site Access[2]

1.3 Land Use Zoning

Figure 3 shows the land use zoning of the subject site in the context of adjacent sites and the surrounding area.

[2] Source: Six Maps (https://maps.six.nsw.gov.au)

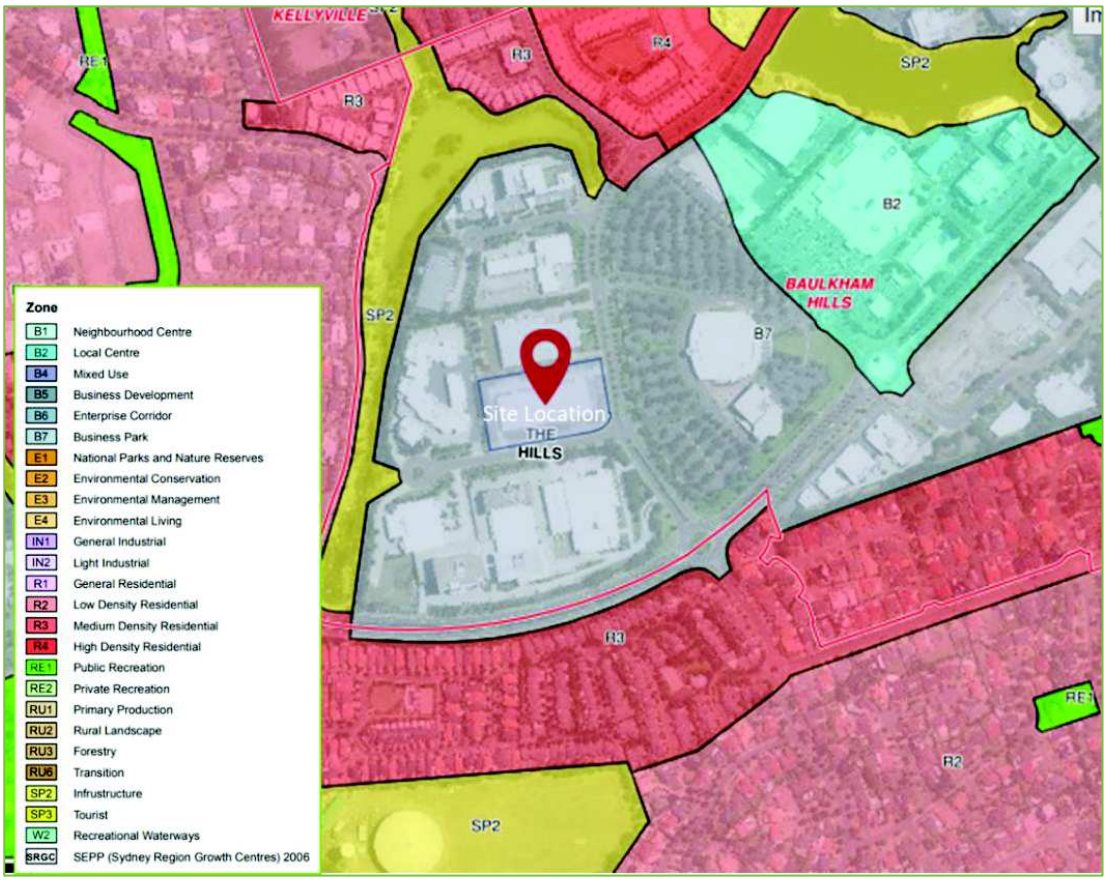

Figure 3: Site Location (Lane Use Zone)[3]

The site is located within a Business Park (B7) Zone, with the land uses in the immediate vicinity of the site being predominantly office and commercial in nature. Residential land use is well established in the wider areas to the north, west, and south of the site.

The key features of the surrounds include the following:

- Hillsong Church Hills Campus is located 220 metres east of the site;
- Norwest Market Place is located 440 metres east of the site; and
- The Norwest Metro Station is located 500 metres southeast of the site and is currently under construction.

The Local Environmental Plan (LEP) provides for office and commercial activities within the B7 zone.

[3] Source: NSW Planning and Environment Website (https://www.planningportal.nsw.gov.au/)

2. Proposed Development

The Planning Proposal involves the demolition of the existing structure and construction of two buildings, primarily for office use, on the site located at 8 Solent Circuit Norwest.

More specifically, the development proposal includes:

- Six levels of office use with a total gross floor area (GFA) of 25,555m^2;
- A showroom on ground level with a GFA of 1,000m^2;
- A small café located in the main lobby area (330m^2 GFA);
- Loading facilities and waste rooms located on ground level; and
- Six levels of car parking accommodating 999 car parking spaces, with access via Solent Circuit and Inglewood Place.

The proposed plans prepared by WMK Architects are attached in **Appendix A**.

3. Car Parking Requirements

3.1.1 Council's Requirements

The '*Hills Development Control Plan 2012 – Part C Parking'* specifies the parking requirement for various land uses within the Norwest suburb. The car parking requirements for the relevant land uses, as noted in Councils DCP, is specified below:

- **Commercial Premises** (including business premises, office premises)**:** 1 car parking space per 25m^2 GFA;
- **Restaurant or café** (café within a commercial office building): 1 car parking space per 25m^2 GFA; and
- **Showroom:** Not specified in Councils DCP; the bulky goods rate of 1 space per 40 m^2 has been used for this purpose.

Land Use	Council Minimum Car Parking Rates	Car Parking Requirements	Car Parking Provision
Commercial and Office (23,405m^2)	1 space per 25m^2 GFA	936.2	999 car parking spaces provided on site
Café with a commercial office building (330m^2)	1 space per 25m^2 GFA	13.2	
Showroom (1,000m^2)	1 space per 40m^2 GFA*	40	
Total Car Parking Requirements		**990 car parking spaces**	

Note*: The Showroom car parking rates is not specified in Councils DCP. For this assessment the bulky goods car parking rates have been applied.

Table 1: Council Car Parking Requirements

The Hills DCP requires a minimum of 990 on-site car parking spaces in relation to the proposed land use. A total of 999 car parking spaces are proposed on-site which complies with Councils car parking requirements.

3.2 Car Park and Access Layout

The car park layout and driveway access will be designed in accordance with the following standards:

- Australian Standards (AS 2890);
- Councils Development Control Plan; and
- RTA Guide to Traffic Generating Developments Section 6 Access and Parking Area Design.

4. Existing Traffic Conditions

4.1 Road Network

Access to all areas within the Norwest Business Park is provided by Norwest Boulevard, which connects Windsor Road to Old Windsor Road. The main access to the proposed development will be via Solent Circuit and Inglewood Place.

Norwest Boulevard has a four lane divided carriageway between Windsor Road and Old Windsor Road. Two-lane circulating roundabouts control most intersections along Norwest Boulevard, between Windsor Road and Old Windsor Road. The roundabout at the intersection of Norwest Boulevarde with Lexington Drive and Elizabeth MacArthur Drive is signal controlled during peak periods. Traffic signals are installed at the intersections of Norwest Boulevard with Windsor Road and Norwest Boulevard with Old Windsor Road.

Fairway Drive provides access to the Balmoral Estate to the north of the Business Park. It has a two-lane undivided carriageway including parking on both sides. It is controlled by a one lane circulating roundabout at Solent Circuit. The roundabout also provides access to the Hillsong site.

Solent Circuit has a two lane divided carriageway. It has a two-lane divided carriageway including on-street car parking on both sides.

Inglewood Place provides access to the proposed development to the south of the site. It has a two-lane undivided carriageway including on-street car parking on both sides.

Traffic signals are proposed at the intersections of Norwest Boulevard with Solent Circuit east, and at Century Circuit/Brookhollow Avenue and at the intersection with Solent Circuit/Reston Grange.

4.2 Operation of Existing Road System

4.2.1 Traffic Counts

Traffic counts for light and heavy vehicles were carried out on Thursday 16th September 2017 from 7:00am to 9:00am and 4:00pm to 6:00pm at the following intersection locations:

- Norwest Boulevard, Reston Grange and Solent Circuit;
- Solent Circuit and Inglewood Place; and
- Solent Circuit and Fairway Drive.

The morning and evening peak hour traffic results are summarised in **Figure 4** to **Figure 6**. The detailed traffic survey results are attached in **Appendix B**.

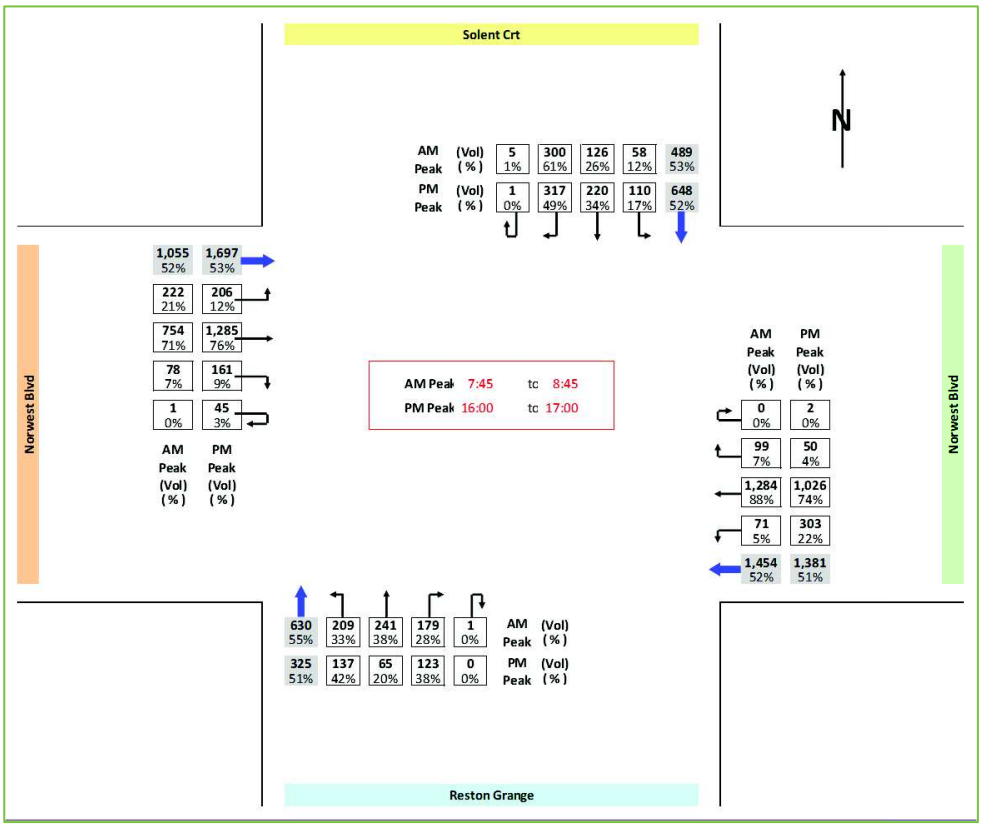

Figure 4: Peak Hour Traffic Survey Results for Solent Circuit and Norwest Boulevard Intersection

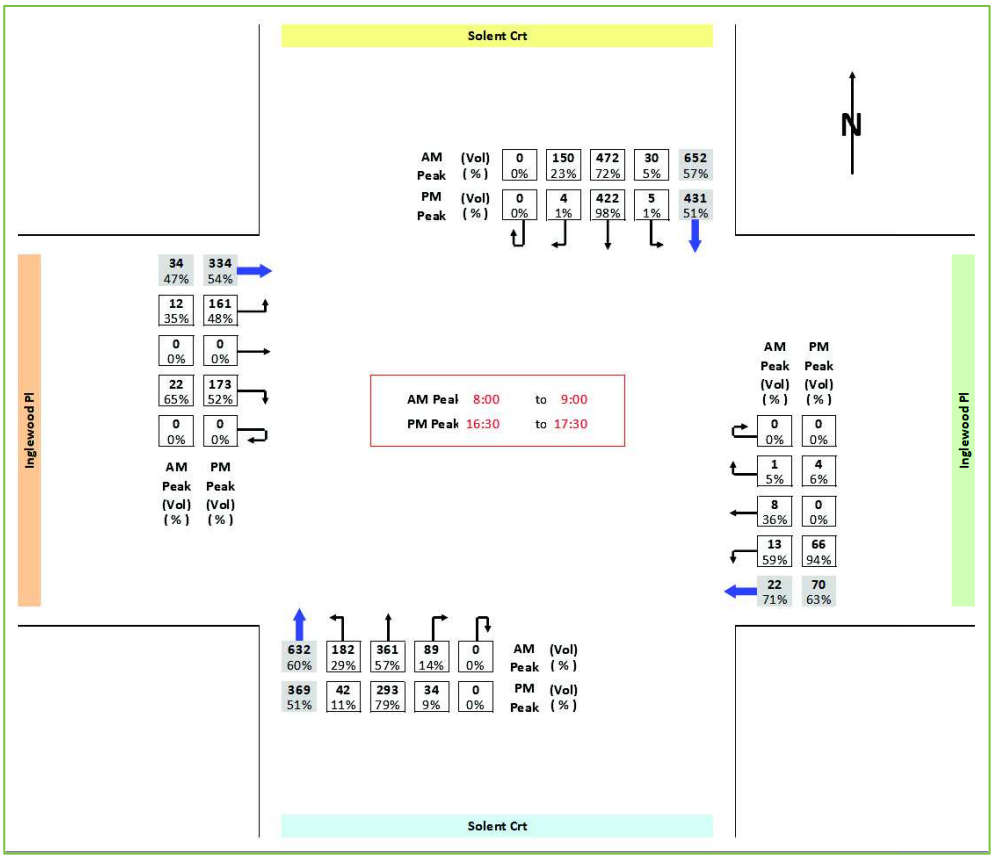

Figure 5: Peak Hour Traffic Survey Results for Solent Circuit and Inglewood Place Intersection

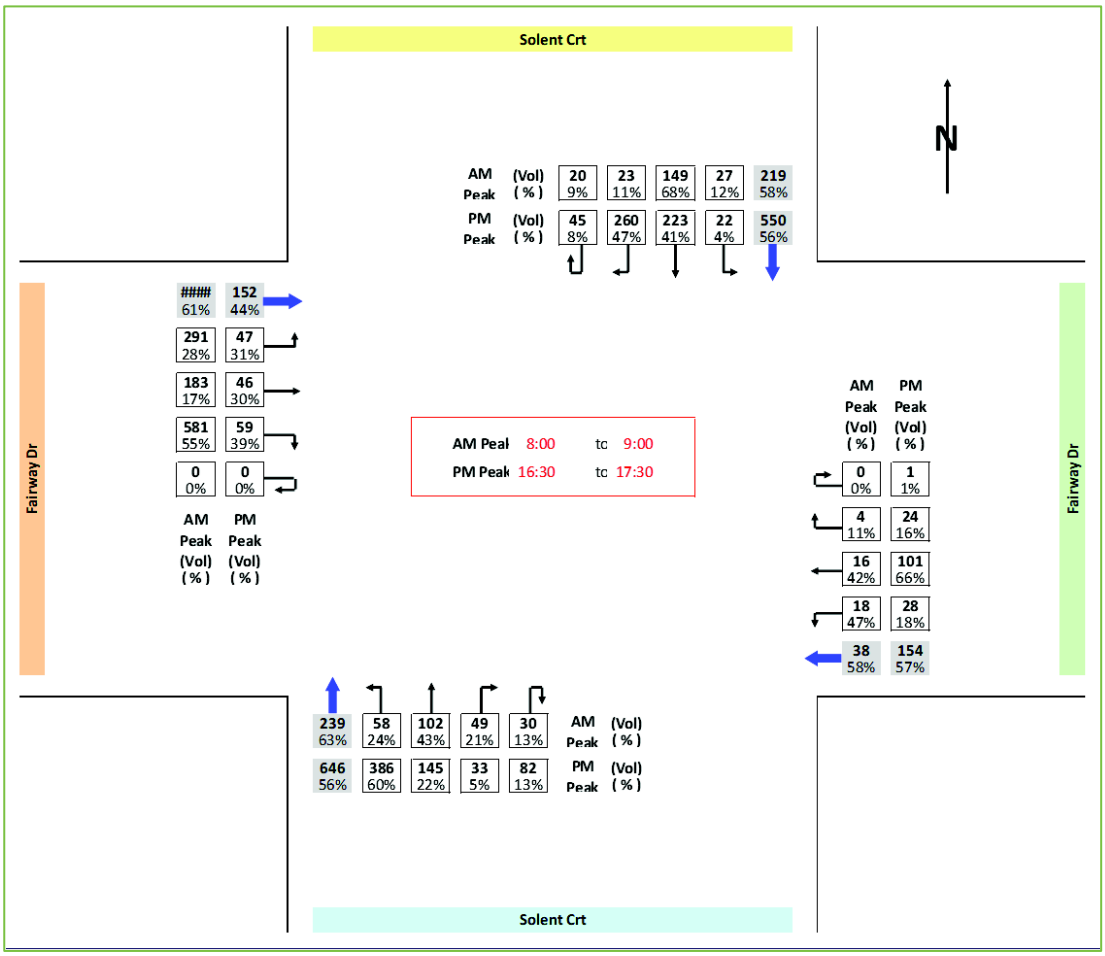

Figure 6: Peak Hour Traffic Survey Results for Solent Circuit and Fairway Drive Intersection

4.2.2 Existing Operation of Major Approach Roads

The existing traffic volumes along Solent Circuit and Norwest Boulevard are summarised in **Table 2**, together with their appropriate Level of Service (LoS).

The concepts of carriageway capacity and Level of Service (LoS) are described in **Appendix C** together with criteria for their assessment. The absence of major traffic movements entering/crossing from major developments along Norwest Boulevard means that the service one-way hourly volumes for uninterrupted traffic included in Table C2 of **Appendix C** could be used; all other streets were assessed based on the service one-way hourly volumes for interrupted traffic included in Table C1 of **Appendix C**.

Location	Lanes	Morning Peak			Evening Peak		
		Eastbound / Northbound Volumes	Westbound / Southbound Volumes	LoS	Eastbound / Northbound Volumes	Westbound / Southbound Volumes	LoS
Norwest Boulevard (West of Solent Circuit)	4DCL	1,055	1,783	A	1,697	1,525	A
Norwest Boulevard (East of Solent Circuit)	4DCL	992	1,454	A	1,520	1,381	A
Solent Circuit (north of Inglewood Place)	4DP	374	652	A	458	431	A
Solent Circuit (north of Norwest Boulevard)	4DP	567	489	A	322	648	A

Note:
4DCL - 4 lanes undivided carriageway with clearway and limited access and intersections
4DP - 4 Lanes divided carriageway with on-street parking

Table 2: Existing Carriageway Level of Service

During the morning and evening peak periods, Norwest Boulevard and Solent Circuit currently operates at a good LoS of 'A' in terms of carriageway capacity.

4.2.3 Operation of Existing Critical Intersections

The concepts of intersection capacity and Level of Service, as defined in the Guidelines published by the RTA (2002), are described in **Appendix D** together with criteria for their assessment. The assessment of the Level of Service of roundabouts and signed controlled intersections is based on the average delay (seconds/vehicle) of the critical movement. The assessment of the Level of Service of traffic signals is based on the evaluation of the average delay (seconds/vehicle) of vehicles on all approaches.

An analysis of the operation of the intersections in the vicinity of the site was carried out using the SIDRA computer modelling program. The results of this analysis are summarised in **Table 3**.

Intersection	Morning Peak		Evening Peak	
	Average Delay (seconds)	Level of Service (LoS)	Average Delay (seconds)	Level of Service (LoS)
Roundabout				
Norwest Boulevard, Reston Grange and Solent Circuit	30.7	C	38.5	C
Solent Circuit and Fairway Drive	17.3	B	14.8	B
Sign Controlled				
Solent Circuit and Inglewood Place	55.6	D	40.0	C

Table 3: Existing Intersection Operation

As identified in **Table 3** the following conclusion can be made from the above analysis for each intersection:

- The Norwest Boulevard, Reston Grange and Solent Circuit intersection is currently operating at a Level of Service C for the morning and evening peak periods.
- The Solent Circuit and Inglewood Place intersection is currently operating at a near capacity Level of Service 'D' during the morning peak period and improving to an LoS 'C' during the evening peak period.
- The Solent Circuit and Fairway Drive roundabout is currently operating at a Level of Service B for the morning and evening peak periods.

5. Traffic Impact of Proposed Development

5.1 Trip Generation and Distribution of Proposed Development

5.1.1 Trip Generation Rates

The trip generation of the proposed development were estimated based on the latest RMS Technical Direction 2013/04a which stipulates the following peak hourly generation rates:

- **Office:**

  Morning Peak hour: 1.6 trips per 100 m^2 GFA; and

  Evening Peak Hour: 1.2 trips per 100 m2 GFA.

- **Showroom:**

The proposed showroom would accommodate home fitouts such as kitchens, bathrooms and bedrooms. The RMS guidelines does not provide trip generation rates for this specific use. For this assessment, the bulky goods retail store traffic generation rates have been applied from the RMS technical direction guidelines of 2.7 vehicles per 100m^2 GFA.

- **Café:**

The RMS (RTA) Guide to Traffic Generating Developments (RMS Guide) and Technical Direction (TDT 2013/04a) do not adequately address trip generation for café use located in office developments. The small cafe premises will service primarily the office building and possibly some bypass traffic. Peak period traffic generation would be negligible.

For this assessment it is expected there will be 70% inbound vehicles and 30% outbound vehicles in the morning peak period. The evening peak period will have a reverse traffic distribution with 30% inbound vehicles and 70% outbound vehicles.

The proposed development will generate 409 and 314 vehicle trips during the morning and evening peak periods, respectively. The traffic generation breakdown is provided in **Table 4**.

Land Use	Morning Peak Hour Traffic Generation (Volumes)		Evening Peak Hour Traffic Generation (Volumes)	
	Arrival	Departure	Arrival	Departure
Office and Commercial (23,895m^2 GFA)	267	115	87	200
Café (330m^2 GFA)	The small cafe premises will service primarily the office building and possibly some bypass traffic. Peak period traffic generation would be negligible.			
Showroom (1,000m^2 GFA)	19	8	8	19
Total Traffic Generation	**286**	**123**	**94**	**219**

Table 4: Trip Generation of Proposed Planning Proposal

5.1.2 Trip Distribution and Assignment

It has been assumed that traffic signals would be in place at the intersection of Solent Circuit / Norwest Boulevard. It has further been assumed that the planned replacement of the roundabout with traffic signals at the Norwest Boulevard / Solent Circuit / Reston Grange intersection would be completed by the time the development of the Site is completed.

The major approach and departure routes for trips currently generated by nearby developments, summarised in **Table 5,** were adopted for the proposed Planning Proposal.

Approach Roads	To / From	Morning Peak		Evening Peak	
		Arrival	Departure	Arrival	Departure
Distribution %					
Norwest Boulevard	West	51%	32%	20%	31%
Windsor Road	North	13%	16%	18%	22%
Windsor Road	South	7%	19%	21%	20%
Fairway Drive	North	11%	26%	5%	7%
Reston Grange	South	18%	7%	36%	20%
	Total	**100%**	**100%**	**100%**	**100%**
Traffic Volumes					
Norwest Boulevard	West	146	39	13	68
Windsor Road	North	37	20	17	48
Windsor Road	South	20	23	20	44
Fairway Drive	North	31	32	5	15
Reston Grange	South	52	9	34	44
	Total	**286**	**123**	**94**	**219**

Table 5: Peak Hour Traffic Generation and Distribution

Based on the traffic distribution percentages, the traffic volumes have been assign on to the road network as shown in **Table 5**. The assignment of trips on to the road network took into account the following:

- The median in Solent Circuit, between Inglewood Place and Fairway Drive, restricts movements to left in and left out from the site access on Solent Circuit.
- The main site access will be from Inglewood Place.

5.2 Traffic Impact of Proposed Development

5.2.1 Impact on Major Approach Roads

The carriageway traffic volumes along Norwest Boulevard, Solent Circuit and other approach roads are summarised in **Table 6** together with their appropriate Level of Service, for traffic conditions including the proposed development of 8 Solent Circuit Norwest.

Location	Lanes	Morning Peak			Evening Peak		
		Eastbound / Northbound Volumes	Westbound / Southbound Volumes	LoS	Eastbound / Northbound Volumes	Westbound / Southbound Volumes	LoS
Uninterrupted Volumes (Refer to Table B2 Appendix C)							
Norwest Boulevard (West of Solent Circuit)	4DCL	1,201	1,823	A	1,612	1,418	A
Norwest Boulevard (East of Solent Circuit)	4DCL	1,035	1,511	A	1,716	1,593	A
Interrupted Volumes (Refer to Table B1 Appendix C)							
Solent Circuit (north of Inglewood Place)	4DP	502	683	A	503	436	A
Solent Circuit (North of Norwest Boulevard)	4DP	822	580	A	411	851	A

Note:

4DCL - 4 lanes undivided carriageway with clearway and limited access and intersections

4DP - 4 Lanes divided carriageway with on-street parking

Table 6: Future Carriageway Level of Service

The section of Norwest Boulevard between Windsor Road and Solent Circuit, and the section of Solent Circuit between Norwest Boulevard and Inglewood would operate at Level of Service 'A' during the morning and evening peak hours.

5.2.2 Impact on Critical Intersections

For this assessment, it has been assumed that traffic signals will be installed at the intersection of Norwest Boulevard, Solent Circuit and Reston Grange.

An analysis of the intersections likely to be impacted by the proposed development was carried out using SIDRA intersection modelling software. The results of this analysis are included in **Appendix E** and summarised in **Table 7**.

Intersections	Morning Peak		Evening Peak	
	Average Delay (seconds)	Level of Service (LoS)	Average Delay (seconds)	Level of Service (LoS)
Traffic Signals				
Norwest Boulevard, Reston Grange and Solent Circuit	29.3	C	27.4	B
Roundabout				
Solent Circuit and Fairway Drive	11.5	A	9.6	A
Sign Controlled				
Solent Circuit and Inglewood Place	>70	F	>70	F

Table 7: Future Intersection Operations with the Proposed Development

The replacement of the roundabout controlling the intersection of Norwest Boulevard with Solent Circuit and Reston Grange with traffic signals would operate at a Level of Service 'C' and 'B' during the morning and evening peak periods, respectively.

The roundabout at the intersection of Fairway Drive with Solent Circuit would continue at a very good Level of Service 'A' for the morning and evening peak periods.

The existing intersection configuration of Solent Circuit and Inglewood Place would operate at maximum capacity with the future traffic volumes of the proposed development resulting in a very poor level of Service 'F' and corresponding extensive delays for vehicles exiting Inglewood Place.

The provision of a roundabout at this intersection would considerably improve the situation as discussed in Section 5.2.3.

5.2.3 Inglewood Place and Solent Circuit Intersection

The proposed intersection configuration of Solent Circuit and Inglewood Place is shown in **Figure 7**.

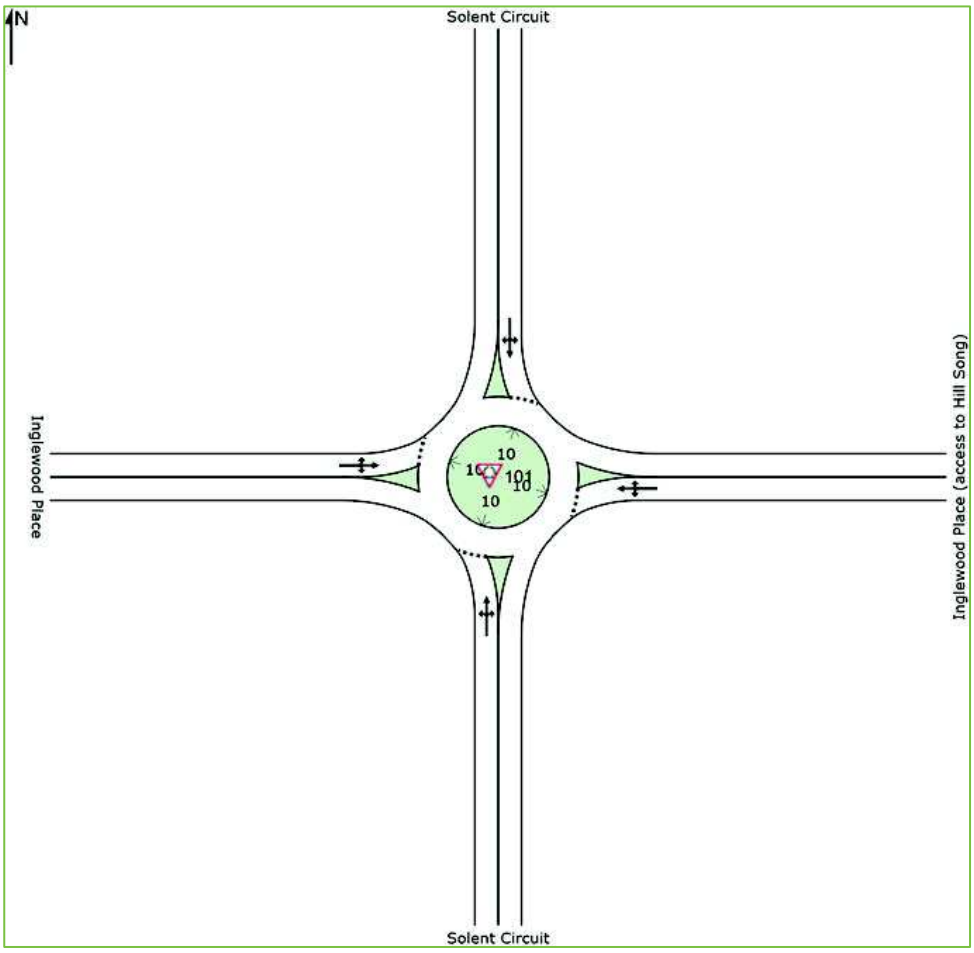

Figure 7: Proposed Intersection Upgrade of Solent Circuit and Inglewood Place

Table 8 gives a summary of the SIDRA results for the future traffic volumes applied to the proposed intersection configuration of Solent Circuit and Inglewood Place.

Intersection	Morning Peak		Evening Peak	
	Average Delay (seconds)	Level of Service (LoS)	Average Delay (seconds)	Level of Service (LoS)
Solent Circuit and Inglewood Place	11.9	A	12.6	A

Table 8: Summary of SIDRA Outputs for the Proposed Intersection Upgrade

The proposed intersection configuration of Solent Circuit and Inglewood Place is operating at an excellent Level of Service (LoS) A for the morning and evening peak periods.

The results indicate that the proposed intersection configuration will have capacity for future traffic demands from the proposed development and background traffic growth.

6. Conclusions

TDG NSW Pty Ltd has reviewed the traffic and parking matters of the proposed office and commercial development at 8 Solent Circuit Norwest. The proposed development consisting of office and commercial use (23,895m^2 GFA), showroom use (1,000m^2 GFA), two small cafés (330m^2 GFA) and a multi-level car park accommodating 999 car parking spaces on-site.

Based on the above assessment, it is concluded that:

- The proposed car parking provision complies with parking requirement of the Hills Council Development Control Plan.
- The proposed car parking supply for the site will be consistent with Council parking requirements. The proposed car parking layout will be designed to comply with Australian Standards and Council Development Control Plan requirements.
- Servicing for the development can be accommodated on-site.
- The provisions of traffic signals at the intersections of Norwest Boulevard with Solent Circuit East and with Reston Grange and Solent Circuit would result in considerably improved conditions at that location.
- The intersection Solent Circuit and Inglewood Place will need to be upgraded to a roundabout to accommodate the future traffic volumes.

7. References

- The Hills Shire Council Development Control Plan (DCP) 2012.
- The Hills Shire Council Local Environmental Plan (LEP) 2014.
- Australian Standards (AS 2890).
- RMS Technical Direction: TDT 2013/04a: Guide to Traffic Generating Developments – Updated Traffic Surveys.
- RMS Guide to Traffic Generating Developments Version 2.2.

Appendix A

Proposed Site Plans

PRELIMINARY

WMK Architecture
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Facsimile 02 9299 0402
wmkarchitecture.com
ABN 25 082 956 929

Issue	Description	Date	Issue	Description	Date

0 2 4 6 8 10m
SCALE 1:100 @ A1

Client
EDEN BRAE HOMES
INVESTMENTS PTY LTD

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
SITE

Drawing No. SK38
Issue
Scale 1 : 1000@A1
Drawing Size A1
Project No. 17075 10/18/17
Drawn By Author
CAD Reference
PROJECT:\00000 PROJECT NAME\DWG\REVIT\FILENAME.RVT

PRELIMINARY

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ABN 25 082 956 929

Issue	Description	Date	Issue	Description	Date

Client
EDEN BRAE HOMES
INVESTMENTS PTY LTD

0 2 4 6 8 10m
SCALE 1:100 @ A1

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
SITE - ANALYSIS

Drawing No. SK40
Issue
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Project No. 17075
10/18/17
Drawn By Author
CAD Reference
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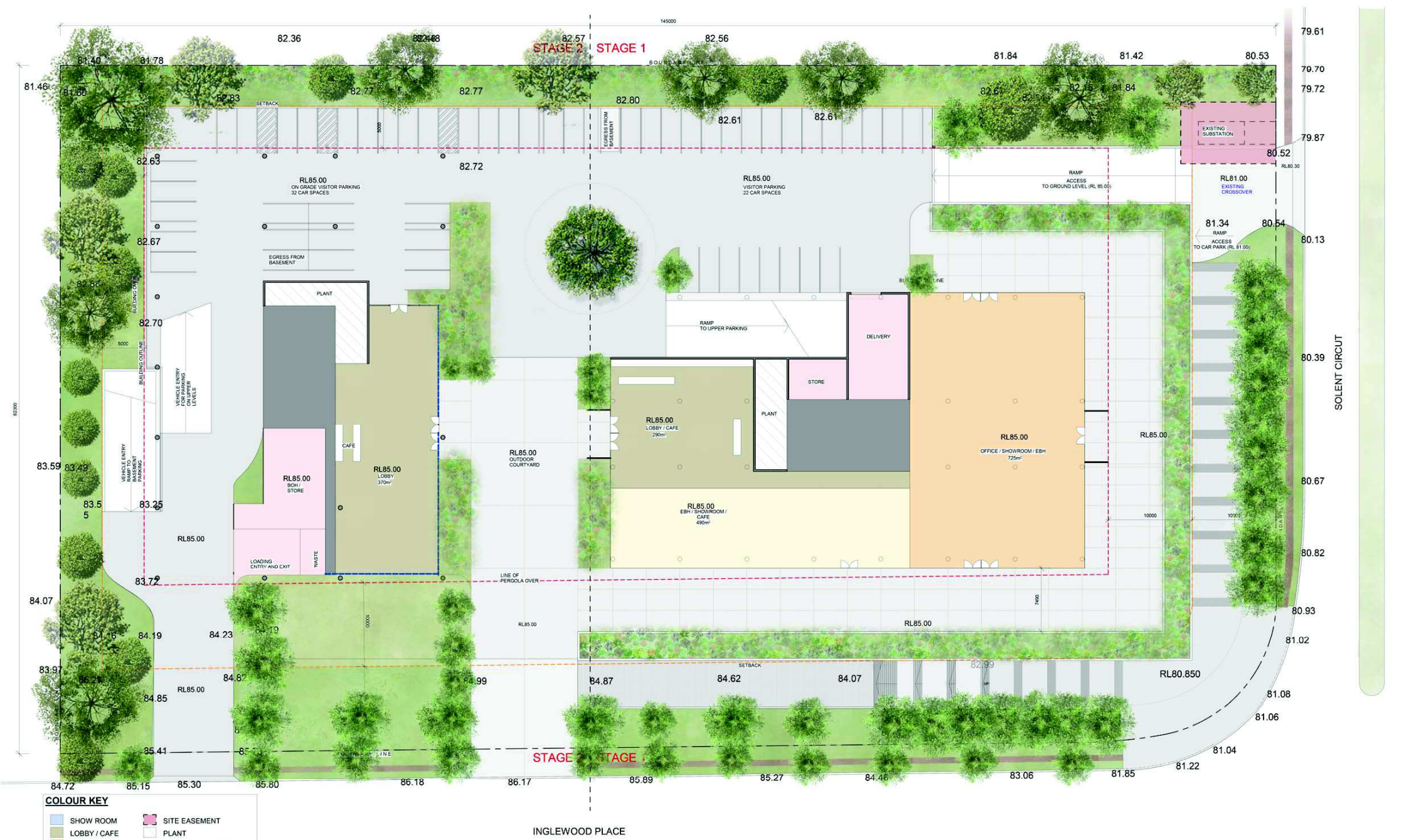

COLOUR KEY

- SHOW ROOM
- LOBBY / CAFE
- OFFICE
- EBH
- CAR PARK
- WASTE & LOADING
- SITE EASEMENT
- PLANT
- EXISTING CROSSOVER
- BUILDING SETBACK
- LANDSCAPE SETBACK

PRELIMINARY

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Issue	Description	Date
A	ISSUED FOR PRE DA	20.10.2017
B	FUTURE DEVELOPMENT ISSUE	17.11.2017
C	FUTURE DEVELOPMENT ISSUE	01.12.2017
D	FUTURE DEVELOPMENT ISSUE	05.12.2017

Client: EDEN BRAE HOMES INVESTMENTS PTY LTD

Project: SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title: GROUND LEVEL- GA

SCALE 1:200 @ A1

Drawing No. SK03 | Issue D
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Project No. 17075 | 12/10/17 | Drawn By Author
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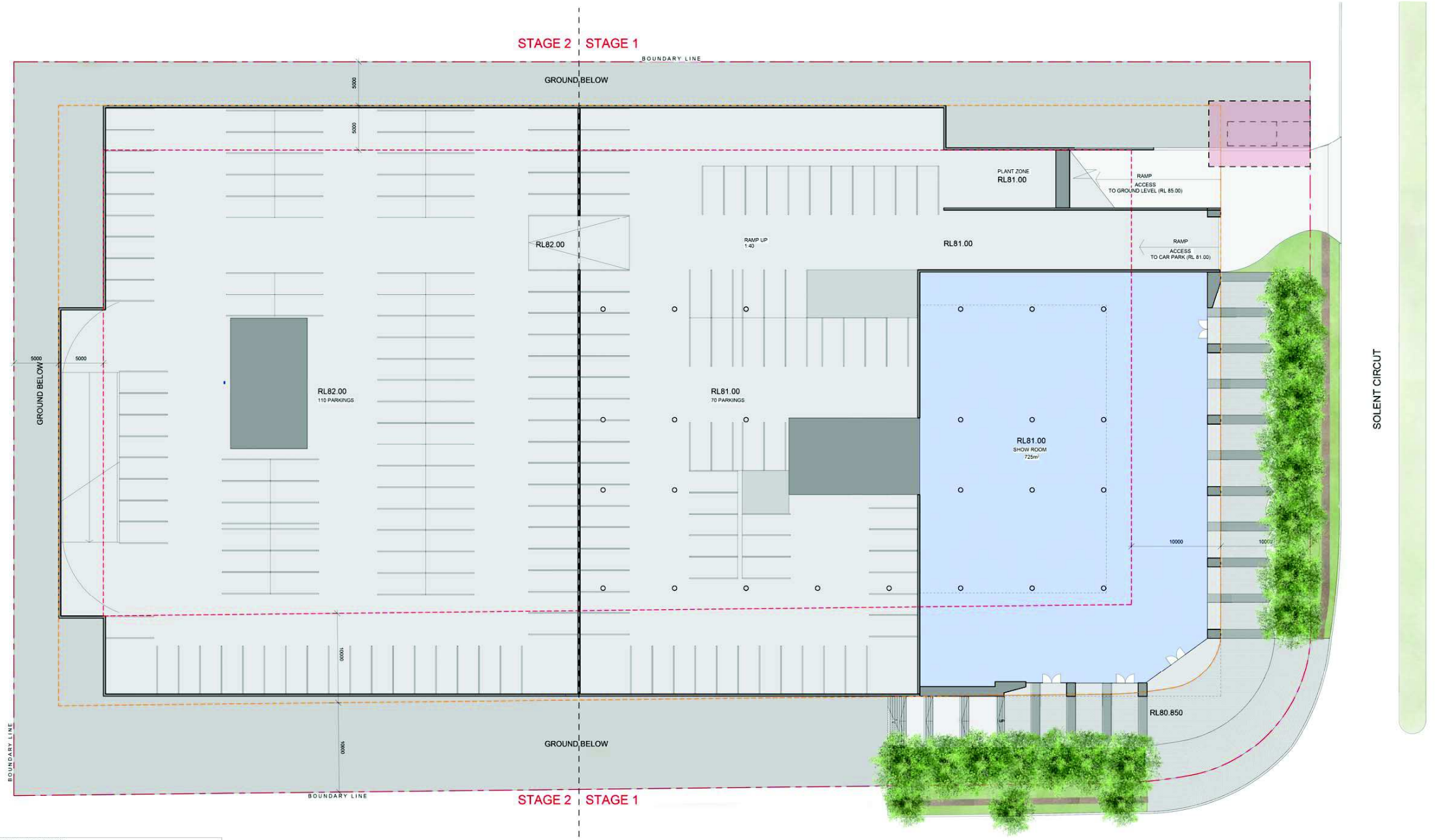

COLOUR KEY

- SHOW ROOM
- LOBBY / CAFE
- OFFICE
- EBH
- CAR PARK
- WASTE & LOADING
- SITE EASEMENT
- PLANT
- EXISTING CROSSOVER
- BUILDING SETBACK
- LANDSCAPE SETBACK

PRELIMINARY

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Issue	Description	Date
A	ISSUED FOR PRE DA	20.10.2017
B	FUTURE DEVELOPMENT ISSUE	17.11.2017
C	FUTURE DEVELOPMENT ISSUE	01.12.2017
D	FUTURE DEVELOPMENT ISSUE	05.12.2017

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SCALE 1:200 @ A1

Client: EDEN BRAE HOMES INVESTMENTS PTY LTD

Project: SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title: BASEMENT 1 - GA

Drawing No. SK04
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10/12/17
Drawn By Author

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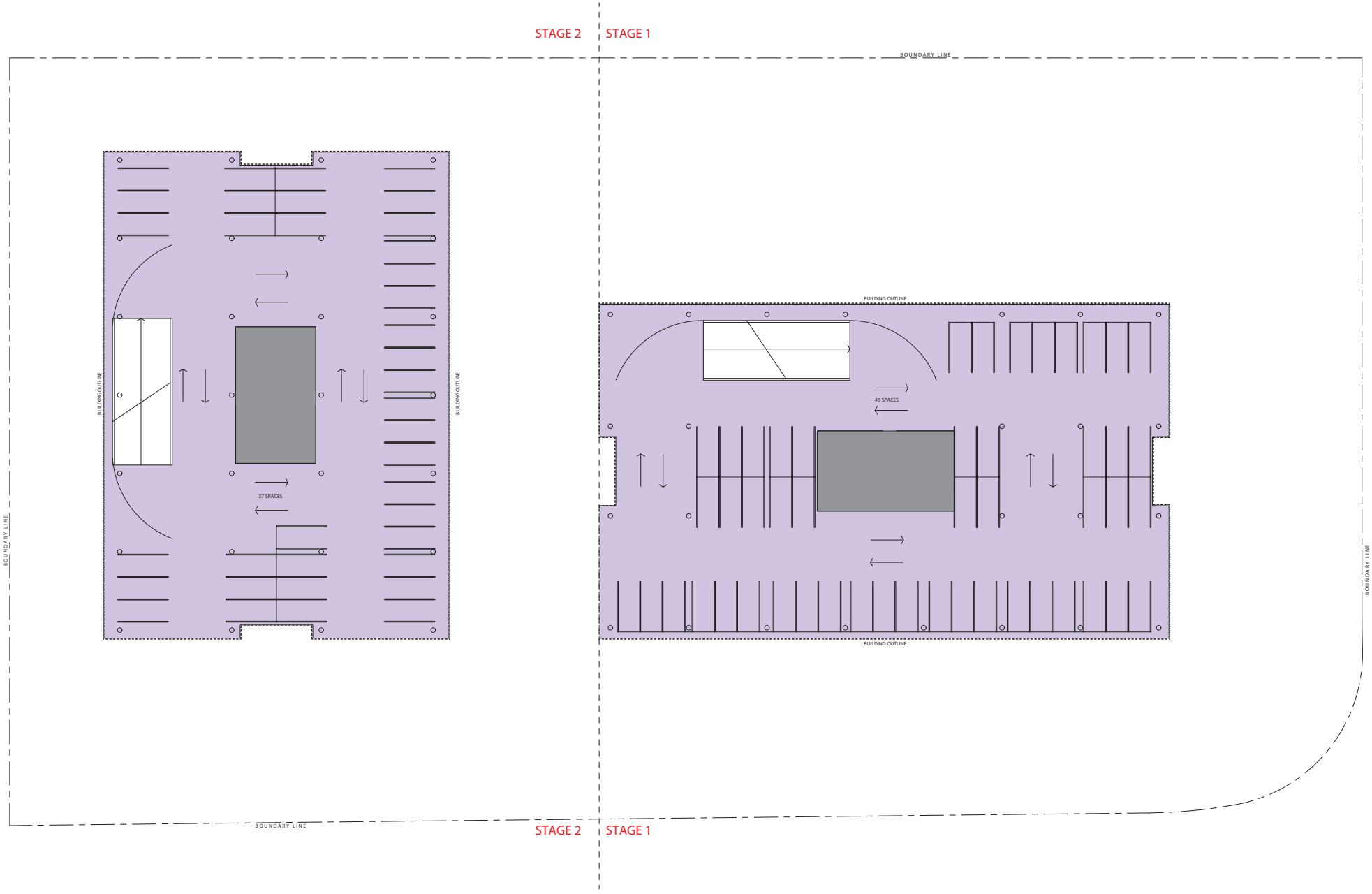

PRELIMINARY

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Issue	Description	Date	Issue	Description	Date

Client
EDEN BRAE HOMES
INVESTMENTS PTY LTD

0 4 8 12 16 20m
SCALE 1:200 @ A1

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
TYPICAL ABOVE GROUND PARKING FLOOR (LEVEL 2-3)

Drawing No. SK36
Issue
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Project No. 17075 10/16/17
Drawn By Author
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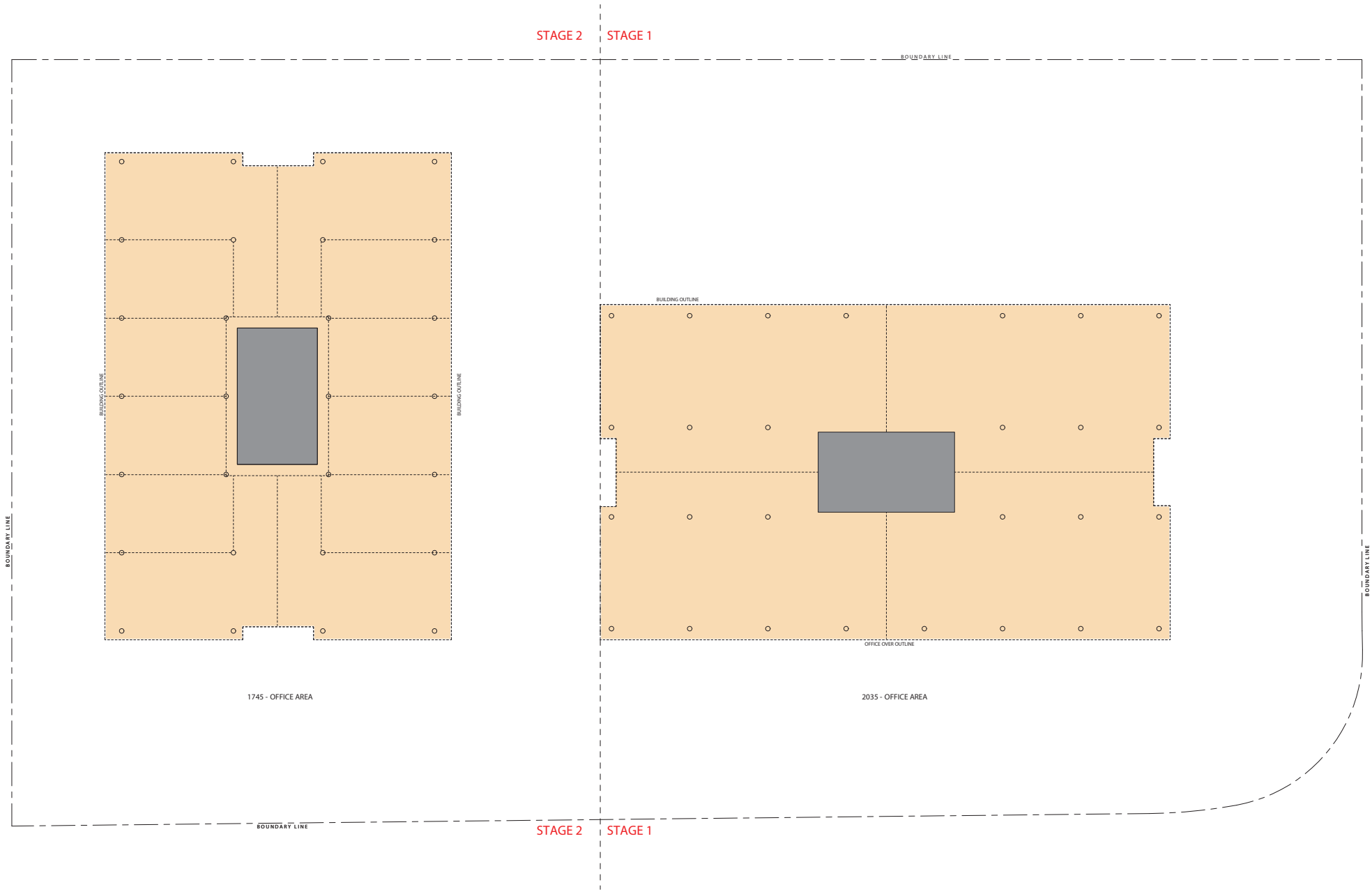

PRELIMINARY

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Issue	Description	Date	Issue	Description	Date

Client
EDEN BRAE HOMES
INVESTMENTS PTY LTD

0 4 8 12 16 20m
SCALE 1:200 @ A1

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
TYPICAL OFFICE FLOOR (LEVEL 4-9)

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Project No. 17075 10/16/17
Drawn By Author
CAD Reference
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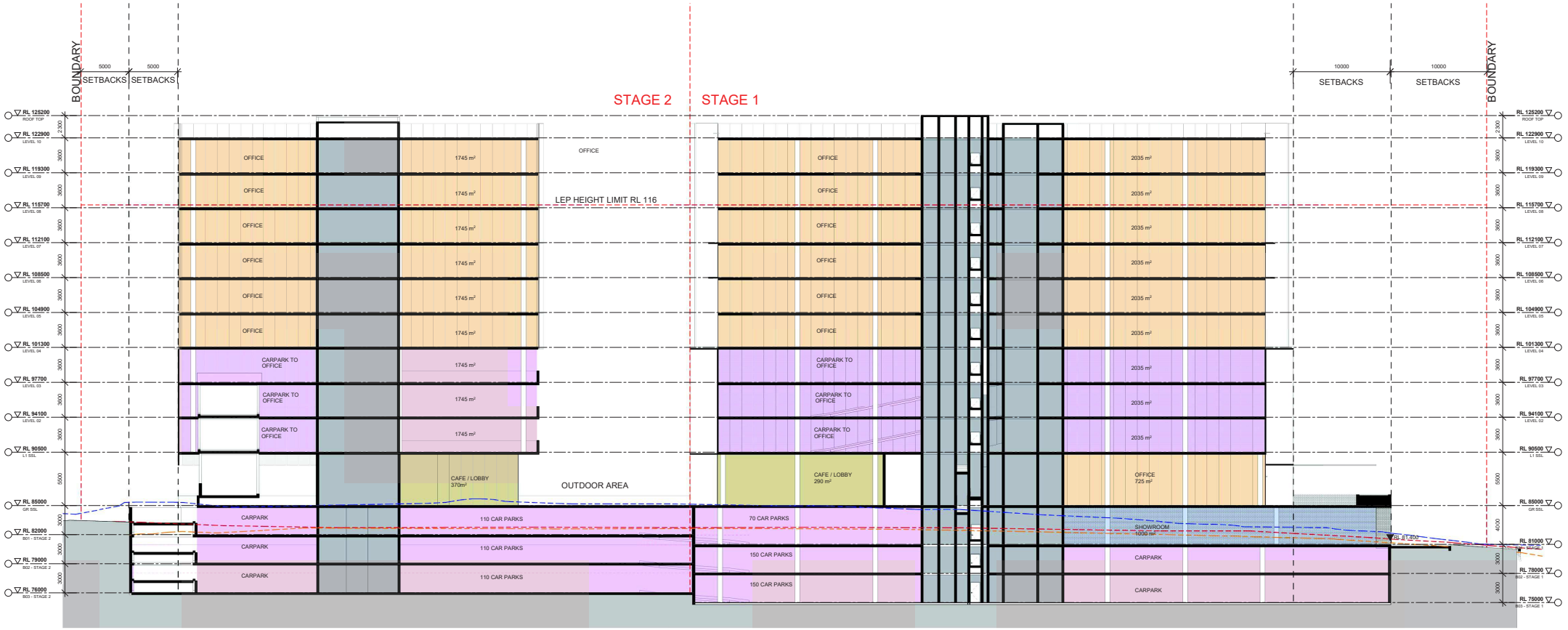

COLOUR KEY

- GROUND LINE - INGLEWOOD
- GROUND LINE - CENTRE
- GROUND LINE - NORTH
- SHOW ROOM
- LOBBY / CAFE
- OFFICE
- CAR PARK
- WASTE & LOADING

GFA (m²) SCHEDULE

	STAGE 1	STAGE 2	TOTAL
LEVEL 9	2035	1745	3780
LEVEL 8	2035	1745	3780
LEVEL 7	2035	1745	3780
LEVEL 6	2035	1745	3780
LEVEL 5	2035	1745	3780
LEVEL 4	2035	1745	3780
LEVEL 3	2035	1745	3780
LEVEL 2	2035	1745	3780
LEVEL 1	2035	1745	3780
GROUND			
- LOBBY	145	185	330
- CAFE	145	185	330
- EBH	490	-	490
- OFFICE	725	-	725
LEVEL B1			
- SHOWROOM	1000	-	1000
TOTAL GFA(m²)	14715	10840	25555
SITE AREA			11750
PERMISSIBLE FSR			1:1
STAGE 1 & 2 COMBINED FSR			2.2:1

NIL GFA AS CAR PARK

CAR PARKING SCHEDULE

	STAGE 1	STAGE 2	TOTAL
LEVEL 3	49	37	86
LEVEL 2	49	37	86
LEVEL 1	40	33	73
GROUND	30	24	54
LEVEL B1	70	110	180
LEVEL B2	150	110	260
LEVEL B3	150	110	260
TOTAL PARKING	538	461	999
CAR PARKING REQUIRED			
-OFFICE (1/25m²)	517	419	936
-LOBBY (0.75/100m²)	2	2	4
-CAFE (12/100m²)	18	22	40
-SHOWROOM (0.75/100m²)	12	-	12
TOTAL REQUIRED PARKING	549	443	992

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Issue	Description	Date	Issue	Description	Date

Client: EDEN BRAE HOMES INVESTMENTS PTY LTD

Project: SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title: SECTION A

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PRELIMINARY

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ABN 25 082 956 929

Issue	Description	Date	Issue	Description	Date
A	FUTURE DEVELOPMENT ISSUE	05.12.2017			

Client
EDEN BRAE HOMES
INVESTMENTS PTY LTD

Project
SOLENT CIRCUIT COMMERCIAL BUILDINGS
8 SOLENT CIRCUIT, BAULKAM HILLS, 2153

Title
VIEW 3

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Drawing No.	SK12
Issue	A
Scale	@A1
Drawing Size	A1
Project No.	17075
	12/04/17
Drawn By	Author

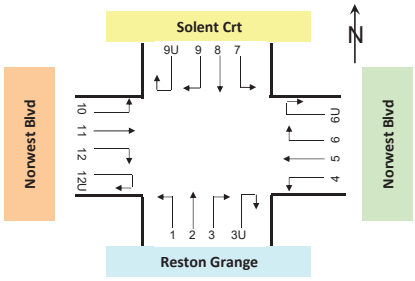
CAD Reference
PROJECT\00000 PROJECT NAME\DWG\REVIT\FILENAME.RVT

Appendix B

Traffic Surveys

Job No.	: N3557
Client	: TDG
Suburb	: Solent Crt
Location	: 1. Solent Crt / Norwest Blvd
Day/Date	: Tue, 12th September 2017
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

Classifications	**Class 1**	**Class 2**
	Lights	Heavies

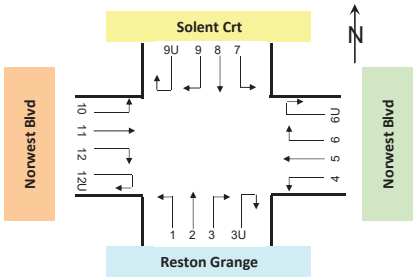


Approach	**Reston Grange**												**Norwest Blvd**											
Direction	**Direction 1 (Left Turn)**			**Direction 2 (Through)**			**Direction 3 (Right Turn)**			**Direction 3U (U Turn)**			**Direction 4 (Left Turn)**			**Direction 5 (Through)**			**Direction 6 (Right Turn)**			**Direction 6U (U Turn)**		
Time Period	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**
7:00 to 7:15	31	1	**32**	13	0	**13**	26	0	**26**	0	0	**0**	19	1	**20**	244	9	**253**	26	1	**27**	0	0	**0**
7:15 to 7:30	38	2	**40**	31	0	**31**	36	0	**36**	0	0	**0**	16	3	**19**	263	11	**274**	20	0	**20**	0	0	**0**
7:30 to 7:45	45	0	**45**	32	0	**32**	35	1	**36**	0	0	**0**	23	2	**25**	360	14	**374**	22	0	**22**	0	0	**0**
7:45 to 8:00	60	0	**60**	62	1	**63**	41	3	**44**	0	1	**1**	16	0	**16**	359	11	**370**	26	0	**26**	0	0	**0**
8:00 to 8:15	53	0	**53**	50	0	**50**	49	2	**51**	0	0	**0**	14	2	**16**	276	7	**283**	25	0	**25**	0	0	**0**
8:15 to 8:30	46	0	**46**	56	0	**56**	38	1	**39**	0	0	**0**	17	3	**20**	296	14	**310**	20	0	**20**	0	0	**0**
8:30 to 8:45	50	0	**50**	72	0	**72**	43	2	**45**	0	0	**0**	19	0	**19**	313	8	**321**	28	0	**28**	0	0	**0**
8:45 to 9:00	79	0	**79**	84	1	**85**	65	2	**67**	0	0	**0**	13	3	**16**	260	14	**274**	29	0	**29**	2	1	**3**
AM Totals	**402**	**3**	**405**	**400**	**2**	**402**	**333**	**11**	**344**	**0**	**1**	**1**	**137**	**14**	**151**	**2,371**	**88**	**2,459**	**196**	**1**	**197**	**2**	**1**	**3**
16:00 to 16:15	40	1	**41**	11	1	**12**	24	1	**25**	0	0	**0**	60	1	**61**	273	10	**283**	17	1	**18**	1	0	**1**
16:15 to 16:30	26	1	**27**	19	0	**19**	43	1	**44**	0	0	**0**	71	1	**72**	237	8	**245**	11	0	**11**	0	0	**0**
16:30 to 16:45	30	1	**31**	11	0	**11**	25	0	**25**	0	0	**0**	89	2	**91**	262	12	**274**	10	1	**11**	1	0	**1**
16:45 to 17:00	36	2	**38**	23	0	**23**	29	0	**29**	0	0	**0**	79	0	**79**	214	10	**224**	9	1	**10**	0	0	**0**
17:00 to 17:15	27	1	**28**	19	0	**19**	30	2	**32**	0	0	**0**	72	1	**73**	224	11	**235**	12	0	**12**	0	0	**0**
17:15 to 17:30	31	0	**31**	16	0	**16**	21	0	**21**	0	0	**0**	94	1	**95**	220	12	**232**	23	0	**23**	3	1	**4**
17:30 to 17:45	25	3	**28**	18	0	**18**	24	1	**25**	0	0	**0**	71	1	**72**	217	12	**229**	21	2	**23**	1	0	**1**
17:45 to 18:00	29	1	**30**	26	0	**26**	36	3	**39**	0	0	**0**	75	1	**76**	223	8	**231**	18	0	**18**	1	0	**1**
PM Totals	**244**	**10**	**254**	**143**	**1**	**144**	**232**	**8**	**240**	**0**	**0**	**0**	**611**	**8**	**619**	**1,870**	**83**	**1,953**	**121**	**5**	**126**	**7**	**1**	**8**

Approach	**Solent Crt**												**Norwest Blvd**											
Direction	**Direction 7 (Left Turn)**			**Direction 8 (Through)**			**Direction 9 (Right Turn)**			**Direction 9U (U Turn)**			**Direction 10 (Left Turn)**			**Direction 11 (Through)**			**Direction 12 (Right Turn)**			**Direction 12U (U Turn)**		
Time Period	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**	**Lights**	**Heavies**	**Total**
7:00 to 7:15	4	2	**6**	22	0	**22**	56	1	**57**	0	0	**0**	41	0	**41**	157	14	**171**	15	3	**18**	0	0	**0**
7:15 to 7:30	14	1	**15**	22	0	**22**	73	3	**76**	1	0	**1**	59	2	**61**	196	14	**210**	16	2	**18**	1	0	**1**
7:30 to 7:45	7	0	**7**	24	0	**24**	73	2	**75**	0	0	**0**	42	2	**44**	181	13	**194**	14	2	**16**	0	0	**0**
7:45 to 8:00	14	0	**14**	24	1	**25**	75	2	**77**	1	0	**1**	45	1	**46**	176	10	**186**	12	1	**13**	0	0	**0**
8:00 to 8:15	12	0	**12**	45	0	**45**	63	2	**65**	0	0	**0**	46	2	**48**	205	8	**213**	18	1	**19**	1	0	**1**
8:15 to 8:30	18	0	**18**	30	0	**30**	69	3	**72**	2	0	**2**	67	3	**70**	170	10	**180**	21	2	**23**	0	0	**0**
8:30 to 8:45	14	0	**14**	26	0	**26**	83	3	**86**	2	0	**2**	58	0	**58**	162	13	**175**	21	2	**23**	0	0	**0**
8:45 to 9:00	29	2	**31**	26	1	**27**	73	2	**75**	3	0	**3**	56	1	**57**	118	15	**133**	17	1	**18**	2	0	**2**
AM Totals	**112**	**5**	**117**	**219**	**2**	**221**	**565**	**18**	**583**	**9**	**0**	**9**	**414**	**11**	**425**	**1,365**	**97**	**1,462**	**134**	**14**	**148**	**4**	**0**	**4**
16:00 to 16:15	27	0	**27**	47	0	**47**	80	2	**82**	1	0	**1**	56	0	**56**	315	12	**327**	36	0	**36**	19	0	**19**
16:15 to 16:30	32	0	**32**	51	0	**51**	81	3	**84**	0	0	**0**	42	0	**42**	313	4	**317**	38	1	**39**	9	0	**9**
16:30 to 16:45	20	1	**21**	57	0	**57**	78	0	**78**	0	0	**0**	55	0	**55**	299	9	**308**	49	0	**49**	9	0	**9**
16:45 to 17:00	30	0	**30**	65	0	**65**	71	2	**73**	0	0	**0**	52	1	**53**	325	8	**333**	37	0	**37**	8	0	**8**
17:00 to 17:15	11	0	**11**	77	0	**77**	69	0	**69**	0	0	**0**	54	1	**55**	284	4	**288**	70	1	**71**	18	0	**18**
17:15 to 17:30	21	1	**22**	77	0	**77**	87	0	**87**	0	0	**0**	56	0	**56**	243	5	**248**	37	0	**37**	5	0	**5**
17:30 to 17:45	19	0	**19**	56	0	**56**	47	1	**48**	0	0	**0**	46	1	**47**	258	4	**262**	34	2	**36**	2	0	**2**
17:45 to 18:00	21	1	**22**	48	0	**48**	64	0	**64**	0	0	**0**	56	1	**57**	295	5	**300**	27	1	**28**	8	0	**8**
PM Totals	**181**	**3**	**184**	**478**	**0**	**478**	**577**	**8**	**585**	**1**	**0**	**1**	**417**	**4**	**421**	**2,332**	**51**	**2,383**	**328**	**5**	**333**	**78**	**0**	**78**

Job No. : N3557
Client : TDG
Suburb : Solent Crt
Location : 1. Solent Crt / Norwest Blvd

Day/Date : Tue, 12th September 2017
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary

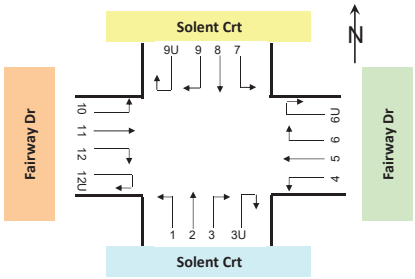


Approach	Reston Grange												Norwest Blvd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	174	3	**177**	138	1	**139**	138	4	**142**	0	1	**1**	74	6	**80**	1,226	45	**1,271**	94	1	**95**	0	0	**0**
7:15 to 8:15	196	2	**198**	175	1	**176**	161	6	**167**	0	1	**1**	69	7	**76**	1,258	43	**1,301**	93	0	**93**	0	0	**0**
7:30 to 8:30	204	0	**204**	200	1	**201**	163	7	**170**	0	1	**1**	70	7	**77**	1,291	46	**1,337**	93	0	**93**	0	0	**0**
7:45 to 8:45	209	0	**209**	240	1	**241**	171	8	**179**	0	1	**1**	66	5	**71**	1,244	40	**1,284**	99	0	**99**	0	0	**0**
8:00 to 9:00	228	0	**228**	262	1	**263**	195	7	**202**	0	0	**0**	63	8	**71**	1,145	43	**1,188**	102	0	**102**	2	1	**3**
AM Totals	**402**	**3**	**405**	**400**	**2**	**402**	**333**	**11**	**344**	**0**	**1**	**1**	**137**	**14**	**151**	**2,371**	**88**	**2,459**	**196**	**1**	**197**	**2**	**1**	**3**
16:00 to 17:00	132	5	**137**	64	1	**65**	121	2	**123**	0	0	**0**	299	4	**303**	986	40	**1,026**	47	3	**50**	2	0	**2**
16:15 to 17:15	119	5	**124**	72	0	**72**	127	3	**130**	0	0	**0**	311	4	**315**	937	41	**978**	42	2	**44**	1	0	**1**
16:30 to 17:30	124	4	**128**	69	0	**69**	105	2	**107**	0	0	**0**	334	4	**338**	920	45	**965**	54	2	**56**	4	1	**5**
16:45 to 17:45	119	6	**125**	76	0	**76**	104	3	**107**	0	0	**0**	316	3	**319**	875	45	**920**	65	3	**68**	4	1	**5**
17:00 to 18:00	112	5	**117**	79	0	**79**	111	6	**117**	0	0	**0**	312	4	**316**	884	43	**927**	74	2	**76**	5	1	**6**
PM Totals	**244**	**10**	**254**	**143**	**1**	**144**	**232**	**8**	**240**	**0**	**0**	**0**	**611**	**8**	**619**	**1,870**	**83**	**1,953**	**121**	**5**	**126**	**7**	**1**	**8**

Approach	Solent Crt												Norwest Blvd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	39	3	**42**	92	1	**93**	277	8	**285**	2	0	**2**	187	5	**192**	710	51	**761**	57	8	**65**	1	0	**1**
7:15 to 8:15	47	1	**48**	115	1	**116**	284	9	**293**	2	0	**2**	192	7	**199**	758	45	**803**	60	6	**66**	2	0	**2**
7:30 to 8:30	51	0	**51**	123	1	**124**	280	9	**289**	3	0	**3**	200	8	**208**	732	41	**773**	65	6	**71**	1	0	**1**
7:45 to 8:45	58	0	**58**	125	1	**126**	290	10	**300**	5	0	**5**	216	6	**222**	713	41	**754**	72	6	**78**	1	0	**1**
8:00 to 9:00	73	2	**75**	127	1	**128**	288	10	**298**	7	0	**7**	227	6	**233**	655	46	**701**	77	6	**83**	3	0	**3**
AM Totals	**112**	**5**	**117**	**219**	**2**	**221**	**565**	**18**	**583**	**9**	**0**	**9**	**414**	**11**	**425**	**1,365**	**97**	**1,462**	**134**	**14**	**148**	**4**	**0**	**4**
16:00 to 17:00	109	1	**110**	220	0	**220**	310	7	**317**	1	0	**1**	205	1	**206**	1,252	33	**1,285**	160	1	**161**	45	0	**45**
16:15 to 17:15	93	1	**94**	250	0	**250**	299	5	**304**	0	0	**0**	203	2	**205**	1,221	25	**1,246**	194	2	**196**	44	0	**44**
16:30 to 17:30	82	2	**84**	276	0	**276**	305	2	**307**	0	0	**0**	217	2	**219**	1,151	26	**1,177**	193	1	**194**	40	0	**40**
16:45 to 17:45	81	1	**82**	275	0	**275**	274	3	**277**	0	0	**0**	208	3	**211**	1,110	21	**1,131**	178	3	**181**	33	0	**33**
17:00 to 18:00	72	2	**74**	258	0	**258**	267	1	**268**	0	0	**0**	212	3	**215**	1,080	18	**1,098**	168	4	**172**	33	0	**33**
PM Totals	**181**	**3**	**184**	**478**	**0**	**478**	**577**	**8**	**585**	**1**	**0**	**1**	**417**	**4**	**421**	**2,332**	**51**	**2,383**	**328**	**5**	**333**	**78**	**0**	**78**

Job No.	: N3557
Client	: TDG
Suburb	: Solent Crt
Location	: 2. Solent Crt / Fairway Dr
Day/Date	: Tue, 12th September 2017
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

	Class 1	Class 2
Classifications	Lights	Heavies

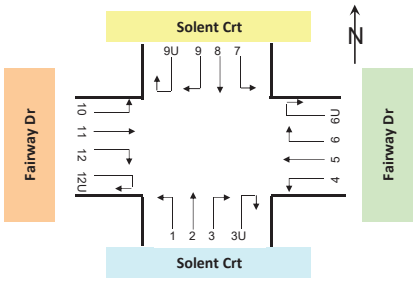


Approach	Solent Crt												Fairway Dr											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	9	0	**9**	11	0	**11**	0	0	**0**	3	1	**4**	1	0	**1**	5	0	**5**	1	0	**1**	0	0	**0**
7:15 to 7:30	7	0	**7**	20	1	**21**	0	0	**0**	2	0	**2**	4	0	**4**	1	0	**1**	0	0	**0**	0	0	**0**
7:30 to 7:45	11	0	**11**	15	0	**15**	1	1	**2**	0	0	**0**	3	0	**3**	3	0	**3**	0	0	**0**	0	0	**0**
7:45 to 8:00	18	0	**18**	21	0	**21**	5	0	**5**	11	1	**12**	6	0	**6**	3	0	**3**	0	0	**0**	0	0	**0**
8:00 to 8:15	11	1	**12**	22	0	**22**	9	0	**9**	1	0	**1**	7	0	**7**	6	0	**6**	2	0	**2**	0	0	**0**
8:15 to 8:30	14	1	**15**	22	0	**22**	15	0	**15**	12	0	**12**	4	0	**4**	4	0	**4**	0	0	**0**	0	0	**0**
8:30 to 8:45	11	0	**11**	22	1	**23**	17	0	**17**	4	1	**5**	5	0	**5**	2	1	**3**	1	0	**1**	0	0	**0**
8:45 to 9:00	20	0	**20**	34	1	**35**	8	0	**8**	12	0	**12**	2	0	**2**	3	0	**3**	1	0	**1**	0	0	**0**
AM Totals	**101**	**2**	**103**	**167**	**3**	**170**	**55**	**1**	**56**	**45**	**3**	**48**	**32**	**0**	**32**	**27**	**1**	**28**	**5**	**0**	**5**	**0**	**0**	**0**
16:00 to 16:15	71	0	**71**	37	2	**39**	8	0	**8**	20	0	**20**	4	0	**4**	23	0	**23**	4	0	**4**	0	0	**0**
16:15 to 16:30	65	0	**65**	30	1	**31**	4	0	**4**	9	0	**9**	10	0	**10**	20	0	**20**	4	0	**4**	0	0	**0**
16:30 to 16:45	74	0	**74**	39	0	**39**	6	0	**6**	23	0	**23**	7	0	**7**	14	0	**14**	4	0	**4**	1	0	**1**
16:45 to 17:00	83	1	**84**	31	0	**31**	8	0	**8**	18	0	**18**	6	0	**6**	18	0	**18**	4	0	**4**	0	0	**0**
17:00 to 17:15	126	1	**127**	43	0	**43**	8	0	**8**	23	0	**23**	8	0	**8**	38	0	**38**	10	0	**10**	0	0	**0**
17:15 to 17:30	101	0	**101**	32	0	**32**	11	0	**11**	18	0	**18**	7	0	**7**	31	0	**31**	6	0	**6**	0	0	**0**
17:30 to 17:45	88	1	**89**	38	0	**38**	4	0	**4**	7	0	**7**	4	0	**4**	18	0	**18**	3	0	**3**	0	0	**0**
17:45 to 18:00	70	0	**70**	37	0	**37**	3	0	**3**	20	0	**20**	6	0	**6**	16	0	**16**	2	0	**2**	0	0	**0**
PM Totals	**678**	**3**	**681**	**287**	**3**	**290**	**52**	**0**	**52**	**138**	**0**	**138**	**52**	**0**	**52**	**178**	**0**	**178**	**37**	**0**	**37**	**1**	**0**	**1**

Approach	Solent Crt												Fairway Dr											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	2	0	**2**	18	1	**19**	3	0	**3**	6	2	**8**	30	0	**30**	10	0	**10**	76	1	**77**	0	0	**0**
7:15 to 7:30	0	0	**0**	32	1	**33**	8	0	**8**	9	0	**9**	23	0	**23**	13	0	**13**	119	3	**122**	0	0	**0**
7:30 to 7:45	2	0	**2**	22	0	**22**	2	1	**3**	5	0	**5**	54	0	**54**	13	0	**13**	111	2	**113**	0	1	**1**
7:45 to 8:00	1	0	**1**	29	0	**29**	6	0	**6**	7	0	**7**	61	1	**62**	26	0	**26**	132	0	**132**	0	0	**0**
8:00 to 8:15	7	0	**7**	30	1	**31**	2	0	**2**	4	0	**4**	81	1	**82**	42	1	**43**	148	1	**149**	0	0	**0**
8:15 to 8:30	8	0	**8**	40	3	**43**	7	0	**7**	4	0	**4**	76	1	**77**	47	0	**47**	144	2	**146**	0	0	**0**
8:30 to 8:45	9	0	**9**	36	1	**37**	7	0	**7**	5	0	**5**	66	0	**66**	60	0	**60**	149	0	**149**	0	0	**0**
8:45 to 9:00	3	0	**3**	35	3	**38**	7	0	**7**	7	0	**7**	66	0	**66**	33	0	**33**	137	0	**137**	0	0	**0**
AM Totals	**32**	**0**	**32**	**242**	**10**	**252**	**42**	**1**	**43**	**47**	**2**	**49**	**457**	**3**	**460**	**244**	**1**	**245**	**1,016**	**9**	**1,025**	**0**	**1**	**1**
16:00 to 16:15	5	0	**5**	54	1	**55**	40	0	**40**	13	0	**13**	6	0	**6**	13	0	**13**	19	1	**20**	0	1	**1**
16:15 to 16:30	2	0	**2**	45	1	**46**	35	1	**36**	11	0	**11**	12	0	**12**	10	0	**10**	24	1	**25**	0	0	**0**
16:30 to 16:45	7	0	**7**	54	0	**54**	52	0	**52**	13	0	**13**	11	0	**11**	6	0	**6**	15	0	**15**	0	0	**0**
16:45 to 17:00	3	0	**3**	58	0	**58**	52	1	**53**	11	0	**11**	13	0	**13**	11	0	**11**	17	1	**18**	0	0	**0**
17:00 to 17:15	5	0	**5**	67	0	**67**	91	0	**91**	10	0	**10**	12	0	**12**	12	0	**12**	14	0	**14**	0	0	**0**
17:15 to 17:30	7	0	**7**	44	0	**44**	64	0	**64**	11	0	**11**	11	0	**11**	17	0	**17**	12	0	**12**	0	0	**0**
17:30 to 17:45	3	0	**3**	38	0	**38**	58	0	**58**	12	0	**12**	5	0	**5**	16	0	**16**	23	0	**23**	0	0	**0**
17:45 to 18:00	7	0	**7**	46	0	**46**	51	0	**51**	7	0	**7**	16	0	**16**	19	0	**19**	31	0	**31**	0	0	**0**
PM Totals	**39**	**0**	**39**	**406**	**2**	**408**	**443**	**2**	**445**	**88**	**0**	**88**	**86**	**0**	**86**	**104**	**0**	**104**	**155**	**3**	**158**	**0**	**1**	**1**

Job No. : N3557
Client : TDG
Suburb : Solent Crt
Location : 2. Solent Crt / Fairway Dr

Day/Date : Tue, 12th September 2017
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary

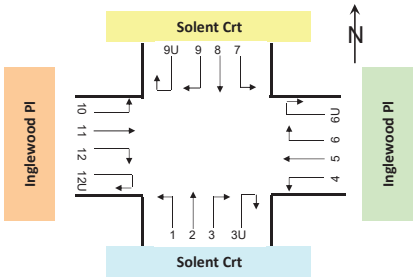


Approach	Solent Crt												Fairway Dr											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	45	0	**45**	67	1	**68**	6	1	**7**	16	2	**18**	14	0	**14**	12	0	**12**	1	0	**1**	0	0	**0**
7:15 to 8:15	47	1	**48**	78	1	**79**	15	1	**16**	14	1	**15**	20	0	**20**	13	0	**13**	2	0	**2**	0	0	**0**
7:30 to 8:30	54	2	**56**	80	0	**80**	30	1	**31**	24	1	**25**	20	0	**20**	16	0	**16**	2	0	**2**	0	0	**0**
7:45 to 8:45	54	2	**56**	87	1	**88**	46	0	**46**	28	2	**30**	22	0	**22**	15	1	**16**	3	0	**3**	0	0	**0**
8:00 to 9:00	56	2	**58**	100	2	**102**	49	0	**49**	29	1	**30**	18	0	**18**	15	1	**16**	4	0	**4**	0	0	**0**
AM Totals	**101**	**2**	**103**	**167**	**3**	**170**	**55**	**1**	**56**	**45**	**3**	**48**	**32**	**0**	**32**	**27**	**1**	**28**	**5**	**0**	**5**	**0**	**0**	**0**
16:00 to 17:00	293	1	**294**	137	3	**140**	26	0	**26**	70	0	**70**	27	0	**27**	75	0	**75**	16	0	**16**	1	0	**1**
16:15 to 17:15	348	2	**350**	143	1	**144**	26	0	**26**	73	0	**73**	31	0	**31**	90	0	**90**	22	0	**22**	1	0	**1**
16:30 to 17:30	384	2	**386**	145	0	**145**	33	0	**33**	82	0	**82**	28	0	**28**	101	0	**101**	24	0	**24**	1	0	**1**
16:45 to 17:45	398	3	**401**	144	0	**144**	31	0	**31**	66	0	**66**	25	0	**25**	105	0	**105**	23	0	**23**	0	0	**0**
17:00 to 18:00	385	2	**387**	150	0	**150**	26	0	**26**	68	0	**68**	25	0	**25**	103	0	**103**	21	0	**21**	0	0	**0**
PM Totals	**678**	**3**	**681**	**287**	**3**	**290**	**52**	**0**	**52**	**138**	**0**	**138**	**52**	**0**	**52**	**178**	**0**	**178**	**37**	**0**	**37**	**1**	**0**	**1**

Approach	Solent Crt												Fairway Dr											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	5	0	**5**	101	2	**103**	19	1	**20**	27	2	**29**	168	1	**169**	62	0	**62**	438	6	**444**	0	1	**1**
7:15 to 8:15	10	0	**10**	113	2	**115**	18	1	**19**	25	0	**25**	219	2	**221**	94	1	**95**	510	6	**516**	0	1	**1**
7:30 to 8:30	18	0	**18**	121	4	**125**	17	1	**18**	20	0	**20**	272	3	**275**	128	1	**129**	535	5	**540**	0	1	**1**
7:45 to 8:45	25	0	**25**	135	5	**140**	22	0	**22**	20	0	**20**	284	3	**287**	175	1	**176**	573	3	**576**	0	0	**0**
8:00 to 9:00	27	0	**27**	141	8	**149**	23	0	**23**	20	0	**20**	289	2	**291**	182	1	**183**	578	3	**581**	0	0	**0**
AM Totals	**32**	**0**	**32**	**242**	**10**	**252**	**42**	**1**	**43**	**47**	**2**	**49**	**457**	**3**	**460**	**244**	**1**	**245**	**1,016**	**9**	**1,025**	**0**	**1**	**1**
16:00 to 17:00	17	0	**17**	211	2	**213**	179	2	**181**	48	0	**48**	42	0	**42**	40	0	**40**	75	3	**78**	0	1	**1**
16:15 to 17:15	17	0	**17**	224	1	**225**	230	2	**232**	45	0	**45**	48	0	**48**	39	0	**39**	70	2	**72**	0	0	**0**
16:30 to 17:30	22	0	**22**	223	0	**223**	259	1	**260**	45	0	**45**	47	0	**47**	46	0	**46**	58	1	**59**	0	0	**0**
16:45 to 17:45	18	0	**18**	207	0	**207**	265	1	**266**	44	0	**44**	41	0	**41**	56	0	**56**	66	1	**67**	0	0	**0**
17:00 to 18:00	22	0	**22**	195	0	**195**	264	0	**264**	40	0	**40**	44	0	**44**	64	0	**64**	80	0	**80**	0	0	**0**
PM Totals	**39**	**0**	**39**	**406**	**2**	**408**	**443**	**2**	**445**	**88**	**0**	**88**	**86**	**0**	**86**	**104**	**0**	**104**	**155**	**3**	**158**	**0**	**1**	**1**

Job No.	: N3557
Client	: TDG
Suburb	: Solent Crt
Location	: 3. Solent Crt / Inglewood Pl
Day/Date	: Tue, 12th September 2017
Weather	: Fine
Description	: Classified Intersection Count
	: 15 mins Data

Classifications	**Class 1**	**Class 2**
	Lights	Heavies

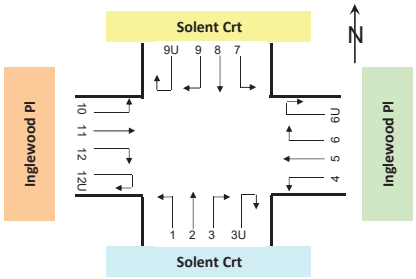


Approach	Solent Crt												Inglewood Pl											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	24	1	**25**	44	1	**45**	5	0	**5**	0	0	**0**	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**
7:15 to 7:30	37	0	**37**	55	1	**56**	6	0	**6**	0	0	**0**	2	0	**2**	0	0	**0**	0	0	**0**	0	0	**0**
7:30 to 7:45	41	1	**42**	56	1	**57**	6	0	**6**	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**
7:45 to 8:00	41	1	**42**	93	1	**94**	5	0	**5**	0	0	**0**	3	1	**4**	1	0	**1**	0	0	**0**	0	0	**0**
8:00 to 8:15	37	1	**38**	70	1	**71**	13	0	**13**	0	0	**0**	2	0	**2**	1	0	**1**	1	0	**1**	0	0	**0**
8:15 to 8:30	38	1	**39**	87	2	**89**	29	0	**29**	0	0	**0**	4	0	**4**	2	0	**2**	0	0	**0**	0	0	**0**
8:30 to 8:45	54	0	**54**	95	0	**95**	25	0	**25**	0	0	**0**	3	0	**3**	3	0	**3**	0	0	**0**	0	0	**0**
8:45 to 9:00	51	0	**51**	103	3	**106**	22	0	**22**	0	0	**0**	4	0	**4**	2	0	**2**	0	0	**0**	0	0	**0**
AM Totals	**323**	**5**	**328**	**603**	**10**	**613**	**111**	**0**	**111**	**0**	**0**	**0**	**19**	**1**	**20**	**9**	**0**	**9**	**2**	**0**	**2**	**0**	**0**	**0**
16:00 to 16:15	13	1	**14**	64	1	**65**	6	0	**6**	0	0	**0**	8	0	**8**	0	0	**0**	1	0	**1**	0	0	**0**
16:15 to 16:30	5	0	**5**	61	0	**61**	8	0	**8**	0	0	**0**	18	0	**18**	0	0	**0**	1	0	**1**	0	0	**0**
16:30 to 16:45	7	1	**8**	63	0	**63**	6	0	**6**	0	0	**0**	13	0	**13**	0	0	**0**	0	0	**0**	0	0	**0**
16:45 to 17:00	8	0	**8**	75	1	**76**	10	0	**10**	0	0	**0**	17	0	**17**	0	0	**0**	1	0	**1**	0	0	**0**
17:00 to 17:15	12	1	**13**	80	1	**81**	6	0	**6**	0	0	**0**	18	0	**18**	0	0	**0**	3	0	**3**	0	0	**0**
17:15 to 17:30	13	0	**13**	73	0	**73**	12	0	**12**	0	0	**0**	18	0	**18**	0	0	**0**	0	0	**0**	0	0	**0**
17:30 to 17:45	10	1	**11**	68	1	**69**	8	0	**8**	0	0	**0**	8	0	**8**	0	0	**0**	1	0	**1**	0	0	**0**
17:45 to 18:00	10	1	**11**	77	0	**77**	16	0	**16**	0	0	**0**	5	0	**5**	0	0	**0**	0	0	**0**	0	0	**0**
PM Totals	**78**	**5**	**83**	**561**	**4**	**565**	**72**	**0**	**72**	**0**	**0**	**0**	**105**	**0**	**105**	**0**	**0**	**0**	**7**	**0**	**7**	**0**	**0**	**0**

Approach	Solent Crt												Inglewood Pl											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 7:15	2	0	**2**	77	3	**80**	16	0	**16**	0	0	**0**	1	1	**2**	0	0	**0**	5	0	**5**	0	0	**0**
7:15 to 7:30	0	0	**0**	95	4	**99**	26	0	**26**	0	0	**0**	2	0	**2**	0	0	**0**	9	0	**9**	0	0	**0**
7:30 to 7:45	1	0	**1**	95	2	**97**	26	1	**27**	0	0	**0**	2	0	**2**	0	0	**0**	10	0	**10**	0	0	**0**
7:45 to 8:00	4	0	**4**	102	1	**103**	36	0	**36**	0	0	**0**	4	1	**5**	0	0	**0**	3	1	**4**	0	0	**0**
8:00 to 8:15	9	0	**9**	115	2	**117**	45	0	**45**	0	0	**0**	3	0	**3**	0	0	**0**	6	0	**6**	0	0	**0**
8:15 to 8:30	8	0	**8**	109	2	**111**	43	0	**43**	0	0	**0**	5	0	**5**	0	0	**0**	3	0	**3**	0	0	**0**
8:30 to 8:45	5	0	**5**	119	3	**122**	31	0	**31**	0	0	**0**	2	0	**2**	0	0	**0**	2	0	**2**	0	0	**0**
8:45 to 9:00	8	0	**8**	121	1	**122**	31	0	**31**	0	0	**0**	2	0	**2**	0	0	**0**	7	4	**11**	0	0	**0**
AM Totals	**37**	**0**	**37**	**833**	**18**	**851**	**254**	**1**	**255**	**0**	**0**	**0**	**21**	**2**	**23**	**0**	**0**	**0**	**45**	**5**	**50**	**0**	**0**	**0**
16:00 to 16:15	1	0	**1**	102	1	**103**	5	1	**6**	0	0	**0**	45	2	**47**	0	0	**0**	52	1	**53**	0	0	**0**
16:15 to 16:30	1	0	**1**	91	3	**94**	5	0	**5**	0	0	**0**	26	1	**27**	0	0	**0**	44	0	**44**	0	0	**0**
16:30 to 16:45	2	0	**2**	105	0	**105**	0	0	**0**	0	0	**0**	34	0	**34**	0	0	**0**	51	1	**52**	0	0	**0**
16:45 to 17:00	0	0	**0**	101	1	**102**	1	0	**1**	0	0	**0**	34	0	**34**	0	0	**0**	49	1	**50**	0	0	**0**
17:00 to 17:15	1	0	**1**	114	0	**114**	2	0	**2**	0	0	**0**	51	0	**51**	0	0	**0**	31	0	**31**	0	0	**0**
17:15 to 17:30	2	0	**2**	101	0	**101**	1	0	**1**	0	0	**0**	42	0	**42**	0	0	**0**	39	1	**40**	0	0	**0**
17:30 to 17:45	2	0	**2**	78	1	**79**	3	0	**3**	0	0	**0**	34	0	**34**	0	0	**0**	36	0	**36**	0	0	**0**
17:45 to 18:00	0	0	**0**	116	0	**116**	1	0	**1**	0	0	**0**	25	0	**25**	0	0	**0**	20	1	**21**	0	0	**0**
PM Totals	**9**	**0**	**9**	**808**	**6**	**814**	**18**	**1**	**19**	**0**	**0**	**0**	**291**	**3**	**294**	**0**	**0**	**0**	**322**	**5**	**327**	**0**	**0**	**0**

Job No. : N3557
Client : TDG
Suburb : Solent Crt
Location : 3. Solent Crt / Inglewood Pl

Day/Date : Tue, 12th September 2017
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



Approach	Solent Crt												Inglewood Pl											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	143	3	**146**	248	4	**252**	22	0	**22**	0	0	**0**	6	1	**7**	1	0	**1**	1	0	**1**	0	0	**0**
7:15 to 8:15	156	3	**159**	274	4	**278**	30	0	**30**	0	0	**0**	8	1	**9**	2	0	**2**	1	0	**1**	0	0	**0**
7:30 to 8:30	157	4	**161**	306	5	**311**	53	0	**53**	0	0	**0**	10	1	**11**	4	0	**4**	1	0	**1**	0	0	**0**
7:45 to 8:45	170	3	**173**	345	4	**349**	72	0	**72**	0	0	**0**	12	1	**13**	7	0	**7**	1	0	**1**	0	0	**0**
8:00 to 9:00	180	2	**182**	355	6	**361**	89	0	**89**	0	0	**0**	13	0	**13**	8	0	**8**	1	0	**1**	0	0	**0**
AM Totals	**323**	**5**	**328**	**603**	**10**	**613**	**111**	**0**	**111**	**0**	**0**	**0**	**19**	**1**	**20**	**9**	**0**	**9**	**2**	**0**	**2**	**0**	**0**	**0**
16:00 to 17:00	33	2	**35**	263	2	**265**	30	0	**30**	0	0	**0**	56	0	**56**	0	0	**0**	3	0	**3**	0	0	**0**
16:15 to 17:15	32	2	**34**	279	2	**281**	30	0	**30**	0	0	**0**	66	0	**66**	0	0	**0**	5	0	**5**	0	0	**0**
16:30 to 17:30	40	2	**42**	291	2	**293**	34	0	**34**	0	0	**0**	66	0	**66**	0	0	**0**	4	0	**4**	0	0	**0**
16:45 to 17:45	43	2	**45**	296	3	**299**	36	0	**36**	0	0	**0**	61	0	**61**	0	0	**0**	5	0	**5**	0	0	**0**
17:00 to 18:00	45	3	**48**	298	2	**300**	42	0	**42**	0	0	**0**	49	0	**49**	0	0	**0**	4	0	**4**	0	0	**0**
PM Totals	**78**	**5**	**83**	**561**	**4**	**565**	**72**	**0**	**72**	**0**	**0**	**0**	**105**	**0**	**105**	**0**	**0**	**0**	**7**	**0**	**7**	**0**	**0**	**0**

Approach	Solent Crt												Inglewood Pl											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:00 to 8:00	7	0	**7**	369	10	**379**	104	1	**105**	0	0	**0**	9	2	**11**	0	0	**0**	27	1	**28**	0	0	**0**
7:15 to 8:15	14	0	**14**	407	9	**416**	133	1	**134**	0	0	**0**	11	1	**12**	0	0	**0**	28	1	**29**	0	0	**0**
7:30 to 8:30	22	0	**22**	421	7	**428**	150	1	**151**	0	0	**0**	14	1	**15**	0	0	**0**	22	1	**23**	0	0	**0**
7:45 to 8:45	26	0	**26**	445	8	**453**	155	0	**155**	0	0	**0**	14	1	**15**	0	0	**0**	14	1	**15**	0	0	**0**
8:00 to 9:00	30	0	**30**	464	8	**472**	150	0	**150**	0	0	**0**	12	0	**12**	0	0	**0**	18	4	**22**	0	0	**0**
AM Totals	**37**	**0**	**37**	**833**	**18**	**851**	**254**	**1**	**255**	**0**	**0**	**0**	**21**	**2**	**23**	**0**	**0**	**0**	**45**	**5**	**50**	**0**	**0**	**0**
16:00 to 17:00	4	0	**4**	399	5	**404**	11	1	**12**	0	0	**0**	139	3	**142**	0	0	**0**	196	3	**199**	0	0	**0**
16:15 to 17:15	4	0	**4**	411	4	**415**	8	0	**8**	0	0	**0**	145	1	**146**	0	0	**0**	175	2	**177**	0	0	**0**
16:30 to 17:30	5	0	**5**	421	1	**422**	4	0	**4**	0	0	**0**	161	0	**161**	0	0	**0**	170	3	**173**	0	0	**0**
16:45 to 17:45	5	0	**5**	394	2	**396**	7	0	**7**	0	0	**0**	161	0	**161**	0	0	**0**	155	2	**157**	0	0	**0**
17:00 to 18:00	5	0	**5**	409	1	**410**	7	0	**7**	0	0	**0**	152	0	**152**	0	0	**0**	126	2	**128**	0	0	**0**
PM Totals	**9**	**0**	**9**	**808**	**6**	**814**	**18**	**1**	**19**	**0**	**0**	**0**	**291**	**3**	**294**	**0**	**0**	**0**	**322**	**5**	**327**	**0**	**0**	**0**

Appendix C

Concept of Carriageway Capacity and Level of Service

The capacity of major streets within an urban area can be based on an assessment of their operating Level of Service.

Level of Service is defined by NAASRA (1988) as a "qualitative measure of the effects of a number of features, which include speed and travel time, traffic interruptions, freedom to manoeuvre, safety, driving comfort and convenience, and operating costs. Levels of service are designated from A to F from best (free flow conditions) to worst (forced flow with stop start operation, long queues and delays) as follows:

***LEVELS OF SERVICE**

A - Free flow (almost no delays);
B - Stable flow (slight delays);
C - Stable flow (acceptable delays);
D - Approaching unstable flow (tolerable delays);
E - Unstable flow (congestion; intolerable delays); and
F - Forced flow (jammed).

A service volume, as defined by Austroads, is the maximum number of vehicles that can pass over a given section of roadway in one direction during one hour while operating conditions are maintained at a specified Level of Service. It is suggested that ideally arterial and sub-arterial roads should not exceed service volumes at Level of Service C. At this level, whilst most drivers are restricted in their freedom to manoeuvre, operating speeds are still reasonable and acceptable delays experienced. However, in urban situations, arterial and sub-arterial roads operating at Level of Service D are still considered adequate. Traffic Volumes along urban roads with interrupted and uninterrupted flow conditions are included in Table B1 and B2 respectively.

DESCRIPTION	LEVEL OF SERVICE					
	A	B	C	D	E	F
2 Lane Undivided	540	630	710	810	900	F
4 Lane Undivided	900	1050	1200	1350	1500	O
4 Lane Undivided with Clearways	1080	1260	1440	1620	1800	R
4 Lane Divided with Clearways	1140	1330	1520	1710	1900	C
4 Lane Divided with Clearways, limited access and limited intersections	1610	1870	2140	2410	2670	E
6 Lane Undivided	1440	1680	1920	2160	2400	D
6 Lane Divided with Clearway	1740	2030	2320	2610	2900	

Table B1: Level of Service Interrupted Flow Conditions along Urban Roads (One Way Hourly Volumes)

DESCRIPTION	LEVEL OF SERVICE					
	A	B	C	D	E	F
4 Lane Undivided (13m)	1260	1470	1680	1890	2100	F
4 Lane Undivided with Clearways	1510	1760	2010	2270	2520	O
4 Lane Divided with Clearways	1600	1860	2130	2400	2660	R
4 Lane Divided with Clearways, limited access and limited intersections	2250	2620	3000	3380	3740	C
6 Lane Undivided	2020	2350	2690	3020	3360	E
6 Lane Divided with Clearway	2440	2840	3250	3660	4060	D
6 Lane Divided with Clearways, limited access and limited intersections	3375	3930	4500	5070	5610	

* 40% higher than base volumes in Table B1

Table B2: Level of Service Uninterrupted Flow Conditions along Urban Roads (One Way Hourly Volumes)

Appendix D

Guidelines for Evaluation of Intersection Capacity

The RTA has included in the "Guide to Traffic Generating Developments" (Dec 1993, Issue 2) a section on the assessment of intersections. The assessment of the Level of Service of an intersection is based on the evaluation of the following Measures of Effectiveness:

(a) Average delay (seconds/veh) (all forms of control)
(b) Delay to critical movement (seconds/veh) (all forms of control)
(c) Degree of saturation (traffic signals and roundabouts)
(d) Cycle length (traffic signals)

INTANAL was used to calculate the relevant intersection parameters. INTANAL is software which allows comparisons between different forms of intersection control and different forms of intersection configurations to be readily evaluated. That is at each intersection the priority control, roundabout and signal control options will be examined to determine the most efficient form of control.

The best indicator of the Level of Service at an intersection is the average delay experienced by vehicles at that intersection. For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (with Stop and Give Way signs or operating under the T-junction rule) the critical movement for Level of Service assessment should be that with the highest average delay.

With traffic signals, delays per approach tend to be equalised, subject to any over-riding requirements of signal co-ordination as well as to variations within individual movements. With roundabouts and priority - control intersections, the critical criterion for assessment is the movement with the highest delay per vehicle. With this type of control the volume balance might be such that some movements suffer high levels of delay while other movements have minimal delay. An overall average delay for the intersection of 25 seconds might not be satisfactory if the average delay on one movement is 60 seconds.

The average delay for Level of Service E should be no more than 70 seconds. The accepted maximum practical cycle length for traffic signals under saturated conditions is 120 - 140 seconds. Under these conditions 120 seconds is near maximum for two and three phase intersections and 140 seconds near maximum for more complex phase designs. Drivers and pedestrians expect cycle lengths of these magnitudes and their inherent delays in peak hours. A cycle length of 140 seconds for an intersection which is almost saturated has an average vehicle delay of about 70 seconds, although this can vary. If the average vehicle delay is more than 70 seconds, the intersection is assumed to be at Level of Service F.

Table C1 sets out average delays for different levels of service. There is no consistent correlation between definitions of levels of service for road links as defined elsewhere in this section, and the ranges set out in Table C1. In assigning a Level of Service, the average delay to the motoring public needs to be considered keeping in mind the location of the intersection. For example,

drivers in inner-urban areas of Sydney have a higher tolerance of delay than drivers in country areas. Table C1 provides a recommended baseline for assessment.

Level of Service	Average Delay per Vehicle (seconds/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 - 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, required other control mode

Table C1: Level of Service Criteria for Intersections

The figures in Table C1 are intended as a guide only. Any particular assessment should take into account site-specific factors including maximum queue lengths (and their effect on lane blocking), the influence of nearby intersections and the sensitivity of the location to delays. In many situations, a comparison of the current and future average delay provides a better appreciation of the impact of a proposal, and not simply the change in the Level of Service.

The intersection degree of saturation (DS) can also be used to measure the performance of isolated intersections. At intersections controlled by traffic signals, both queue length and delays increase rapidly as DS approaches 1.0. An upper limit of 0.9 is appropriate. When DS exceeds 0.8 - 0.85, overflow queues start to become a problem. Satisfactory intersection operation is generally achieved with a DS of about 0.7 - 0.8. (Note that these figures are based on isolated signalised intersections with cycle lengths of 120 seconds. In co-ordinated signal systems DS might be actively maximised at key intersections). Although in some situations additional traffic does not alter the Level of Service, particularly where the Level of Service is E or F, additional capacity may still be required. This is particularly appropriate for service level F, where small increases in flow can cause disproportionately greater increases in delay. In this situation, it is advisable to consider means of control to maintain the existing level of absolute delay. Suggested criteria for the evaluation of the capacity of signalised intersections based on the Degree of Saturation are summarised in Table C2.

Level of Service	Optimum Cycle Length (Seconds) (Co)	Volume/Saturation Y	Intersection Degree Of Saturation X
A/B - Very good operation	< 90	< 0.70	< 0.80
C - Satisfactory	90-120	0.70-0.80	0.80-0.85
D - Poor but manageable	120-140	0.80-0.85	0.85-0.90
E/F - Bad, extra capacity required	>140	>0.85	> 0.90

Table C2: Criteria for Evaluating Capacity Of Signalised Intersections*

** Source: Roads & Traffic Authority (2002)*

Appendix E

SIDRA Results

MOVEMENT SUMMARY

Site: 1 [AM Base - Solent Circuit / Fairway Drive]

14925 Base Model
Roundabout

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: Solent Circuit											
10	L2	58	3.4	0.175	4.3	LOS A	1.1	7.6	0.23	0.52	53.1
11	T1	102	2.0	0.175	4.5	LOS A	1.1	7.6	0.23	0.52	54.4
12	R2	49	0.0	0.175	8.9	LOS A	1.1	7.6	0.23	0.52	54.3
12u	U	30	3.3	0.175	11.0	LOS A	1.1	7.6	0.23	0.52	55.1
Approach		239	2.1	0.175	6.2	LOS A	1.1	7.6	0.23	0.52	54.1
East: Fairway Drive											
1	L2	18	0.0	0.058	7.8	LOS A	0.4	2.6	0.74	0.70	51.7
2	T1	16	6.3	0.058	8.3	LOS A	0.4	2.6	0.74	0.70	52.7
3	R2	4	0.0	0.058	12.4	LOS A	0.4	2.6	0.74	0.70	52.8
3u	U	1	0.0	0.058	14.5	LOS A	0.4	2.6	0.74	0.70	53.7
Approach		39	2.6	0.058	8.7	LOS A	0.4	2.6	0.74	0.70	52.3
North: Solent Circuit											
4	L2	141	0.0	0.393	10.7	LOS A	3.0	21.5	0.93	0.95	49.5
5	T1	31	25.8	0.393	12.2	LOS A	3.0	21.5	0.93	0.95	50.0
6	R2	20	0.0	0.393	15.3	LOS B	3.0	21.5	0.93	0.95	50.5
6u	U	20	0.0	0.393	17.3	LOS B	3.0	21.5	0.93	0.95	51.3
Approach		212	3.8	0.393	12.0	LOS A	3.0	21.5	0.93	0.95	49.9
West: Fairway Drive											
7	L2	291	0.7	0.845	9.3	LOS A	15.1	105.9	0.90	0.77	49.7
8	T1	183	0.5	0.845	9.5	LOS A	15.1	105.9	0.90	0.77	50.7
9	R2	581	0.5	0.845	13.9	LOS A	15.1	105.9	0.90	0.77	50.6
9u	U	1	0.0	0.845	15.9	LOS B	15.1	105.9	0.90	0.77	51.4
Approach		1056	0.6	0.845	11.9	LOS A	15.1	105.9	0.90	0.77	50.4
All Vehicles		1546	1.3	0.845	10.9	LOS A	15.1	105.9	0.79	0.75	50.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [AM Base - Solent Circuit / Inglewood Place]

14925 Base Model
Giveway / Yield (Two-Way)

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: Solent Circuit											
1	L2	192	1.1	0.104	5.6	LOS A	0.0	0.0	0.00	0.58	45.7
2	T1	380	1.7	0.315	1.6	LOS A	1.6	11.1	0.32	0.15	54.0
3	R2	94	0.0	0.315	9.4	LOS A	1.6	11.1	0.32	0.15	53.0
Approach		665	1.3	0.315	3.8	NA	1.6	11.1	0.23	0.27	51.6
East: Inglewood Place (access to carpark)											
4	L2	14	0.0	0.091	7.5	LOS A	0.3	2.1	0.71	0.80	39.5
5	T1	8	0.0	0.091	34.5	LOS C	0.3	2.1	0.71	0.80	42.1
6	R2	1	0.0	0.091	31.7	LOS C	0.3	2.1	0.71	0.80	42.8
Approach		23	0.0	0.091	18.4	LOS B	0.3	2.1	0.71	0.80	40.7
North: Solent Circuit											
7	L2	32	0.0	0.239	5.6	LOS A	0.0	0.0	0.00	0.04	57.6
8	T1	497	1.7	0.239	0.5	LOS A	1.2	8.5	0.08	0.11	57.3
9	R2	158	0.0	0.239	9.0	LOS A	1.2	8.5	0.58	0.56	47.9
Approach		686	1.2	0.239	2.7	NA	1.2	8.5	0.19	0.21	54.5
West: Inglewood Place											
10	L2	13	0.0	0.017	5.5	LOS A	0.0	0.2	0.00	0.57	47.9
11	T1	1	0.0	0.017	29.1	LOS C	0.0	0.2	0.00	0.57	50.7
12	R2	23	18.2	0.279	55.6	LOS D	0.9	7.2	0.93	1.00	17.4
Approach		37	11.4	0.279	37.7	LOS C	0.9	7.2	0.59	0.84	25.0
All Vehicles		1412	1.5	0.315	4.4	NA	1.6	11.1	0.23	0.27	51.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 1 [AM Base - Norwest Boulevard / Solent Circuit (West)]

14925 Base Model
Roundabout

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: Reston Grange											
1	L2	209	0.0	0.639	12.5	LOS A	4.9	34.6	0.95	1.08	49.9
2	T1	241	0.4	0.639	13.3	LOS A	4.9	34.6	0.93	1.08	50.1
3	R2	179	4.5	0.639	21.3	LOS B	4.1	29.9	0.91	1.08	47.5
3u	U	1	100.0	0.639	30.7	LOS C	4.1	29.9	0.91	1.08	47.4
Approach		630	1.6	0.639	15.3	LOS B	4.9	34.6	0.93	1.08	49.2
East: Norwest Boulevard											
4	L2	71	7.0	0.756	9.3	LOS A	8.6	61.9	0.87	0.98	52.1
5	T1	1284	3.1	0.756	9.6	LOS A	8.6	61.9	0.88	1.01	53.2
6	R2	99	0.0	0.756	16.1	LOS B	8.3	59.5	0.89	1.04	52.9
6u	U	1	0.0	0.756	18.5	LOS B	8.3	59.5	0.89	1.04	54.3
Approach		1455	3.1	0.756	10.1	LOS A	8.6	61.9	0.88	1.01	53.2
North: Solent Circuit											
7	L2	59	1.7	0.350	8.6	LOS A	1.9	14.1	0.80	0.88	52.5
8	T1	135	7.4	0.350	8.8	LOS A	1.9	14.1	0.80	0.88	54.2
9	R2	290	0.0	0.384	13.1	LOS A	2.4	16.8	0.81	0.93	51.6
9u	U	5	0.0	0.384	15.5	LOS B	2.4	16.8	0.81	0.93	52.9
Approach		489	2.2	0.384	11.4	LOS A	2.4	16.8	0.81	0.91	52.4
West: Norwest Boulevard											
10	L2	222	2.7	0.586	7.4	LOS A	5.1	36.9	0.80	0.81	52.9
11	T1	754	5.4	0.586	8.0	LOS A	5.1	36.9	0.81	0.87	54.0
12	R2	78	7.7	0.586	14.5	LOS A	4.9	36.1	0.81	0.91	53.8
12u	U	1	0.0	0.586	16.6	LOS B	4.9	36.1	0.81	0.91	55.5
Approach		1055	5.0	0.586	8.4	LOS A	5.1	36.9	0.81	0.86	53.8
All Vehicles		3629	3.3	0.756	10.7	LOS A	8.6	61.9	0.86	0.97	52.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 1 [PM Base - Solent Circuit / Fairway Drive]

14925 Base Model
Roundabout

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: Solent Circuit											
10	L2	386	0.5	0.671	9.9	LOS A	7.4	52.0	0.84	0.91	50.2
11	T1	145	0.0	0.671	10.1	LOS A	7.4	52.0	0.84	0.91	51.3
12	R2	33	0.0	0.671	14.5	LOS A	7.4	52.0	0.84	0.91	51.2
12u	U	82	0.0	0.671	16.5	LOS B	7.4	52.0	0.84	0.91	52.0
Approach		646	0.3	0.671	11.0	LOS A	7.4	52.0	0.84	0.91	50.7
East: Fairway Drive											
1	L2	28	0.0	0.204	8.1	LOS A	1.3	8.9	0.73	0.76	51.5
2	T1	101	0.0	0.204	8.4	LOS A	1.3	8.9	0.73	0.76	52.7
3	R2	24	0.0	0.204	12.8	LOS A	1.3	8.9	0.73	0.76	52.6
3u	U	1	0.0	0.204	14.8	LOS B	1.3	8.9	0.73	0.76	53.4
Approach		154	0.0	0.204	9.1	LOS A	1.3	8.9	0.73	0.76	52.4
North: Solent Circuit											
4	L2	22	0.0	0.468	5.5	LOS A	3.5	24.8	0.55	0.65	51.6
5	T1	223	0.0	0.468	5.7	LOS A	3.5	24.8	0.55	0.65	52.7
6	R2	260	0.4	0.468	10.1	LOS A	3.5	24.8	0.55	0.65	52.6
6u	U	45	0.0	0.468	12.2	LOS A	3.5	24.8	0.55	0.65	53.4
Approach		550	0.2	0.468	8.3	LOS A	3.5	24.8	0.55	0.65	52.6
West: Fairway Drive											
7	L2	47	0.0	0.152	5.7	LOS A	0.9	6.3	0.53	0.64	52.3
8	T1	46	0.0	0.152	5.9	LOS A	0.9	6.3	0.53	0.64	53.5
9	R2	59	1.7	0.152	10.3	LOS A	0.9	6.3	0.53	0.64	53.3
9u	U	1	0.0	0.152	12.3	LOS A	0.9	6.3	0.53	0.64	54.2
Approach		153	0.7	0.152	7.6	LOS A	0.9	6.3	0.53	0.64	53.0
All Vehicles		1503	0.3	0.671	9.5	LOS A	7.4	52.0	0.69	0.77	51.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [PM Base - Solent Circuit / Inglewood Place]

14925 Base Model
Giveway / Yield (Two-Way)

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: Solent Circuit											
1	L2	44	4.8	0.038	5.6	LOS A	0.0	0.0	0.00	0.37	48.1
2	T1	308	0.7	0.186	0.5	LOS A	0.5	3.2	0.14	0.10	56.9
3	R2	36	0.0	0.186	8.0	LOS A	0.5	3.2	0.15	0.07	55.2
Approach		388	1.1	0.186	1.8	NA	0.5	3.2	0.13	0.13	55.8
East: Inglewood Place (access to carpark)											
4	L2	69	0.0	0.088	6.5	LOS A	0.3	2.2	0.36	0.60	48.5
5	T1	1	0.0	0.088	15.3	LOS B	0.3	2.2	0.36	0.60	50.5
6	R2	4	0.0	0.088	23.1	LOS B	0.3	2.2	0.36	0.60	50.5
Approach		75	0.0	0.088	7.5	LOS A	0.3	2.2	0.36	0.60	48.6
North: Solent Circuit											
7	L2	5	0.0	0.118	5.5	LOS A	0.0	0.0	0.00	0.01	57.9
8	T1	444	0.2	0.118	0.0	LOS A	0.0	0.3	0.01	0.01	59.6
9	R2	4	0.0	0.118	7.3	LOS A	0.0	0.3	0.02	0.01	56.9
Approach		454	0.2	0.118	0.2	NA	0.0	0.3	0.01	0.01	59.6
West: Inglewood Place											
10	L2	169	0.0	0.133	5.6	LOS A	0.5	3.7	0.09	0.55	49.5
11	T1	1	0.0	0.133	16.0	LOS B	0.5	3.7	0.09	0.55	52.1
12	R2	182	1.7	0.772	40.0	LOS C	5.2	36.8	0.93	1.29	21.7
Approach		353	0.9	0.772	23.4	LOS B	5.2	36.8	0.52	0.93	32.4
All Vehicles		1269	0.7	0.772	7.5	NA	5.2	36.8	0.21	0.34	46.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 1 [PM Base - Norwest Boulevard / Solent Circuit (West)]

14925 Base Model
Roundabout

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: Reston Grange											
1	L2	137	3.6	0.313	8.1	LOS A	1.9	13.6	0.87	0.89	52.7
2	T1	65	1.5	0.313	8.3	LOS A	1.9	13.6	0.87	0.90	53.4
3	R2	123	1.6	0.313	15.3	LOS B	1.7	11.9	0.85	0.95	50.6
3u	U	1	0.0	0.313	17.7	LOS B	1.7	11.9	0.85	0.95	51.9
Approach		326	2.5	0.313	10.9	LOS A	1.9	13.6	0.86	0.91	52.0
East: Norwest Boulevard											
4	L2	303	1.3	0.852	13.9	LOS A	11.6	83.2	0.98	1.25	49.0
5	T1	1026	3.9	0.852	15.4	LOS B	11.6	83.2	0.98	1.26	49.4
6	R2	50	6.0	0.852	22.6	LOS B	10.8	78.3	0.98	1.27	48.7
6u	U	2	0.0	0.852	24.7	LOS B	10.8	78.3	0.98	1.27	50.1
Approach		1381	3.4	0.852	15.3	LOS B	11.6	83.2	0.98	1.26	49.3
North: Solent Circuit											
7	L2	110	0.9	0.599	13.0	LOS A	4.6	32.0	0.95	1.08	49.7
8	T1	220	0.0	0.599	12.9	LOS A	4.6	32.0	0.95	1.08	51.2
9	R2	317	2.2	0.846	36.2	LOS C	7.8	55.8	0.97	1.31	39.5
9u	U	1	0.0	0.846	38.5	LOS C	7.8	55.8	0.97	1.31	40.3
Approach		648	1.2	0.846	24.3	LOS B	7.8	55.8	0.96	1.19	44.4
West: Norwest Boulevard											
10	L2	207	0.5	0.710	6.0	LOS A	8.3	59.0	0.76	0.63	53.0
11	T1	1285	2.6	0.710	6.4	LOS A	8.4	59.8	0.77	0.68	54.1
12	R2	161	0.6	0.710	12.7	LOS A	8.4	59.8	0.79	0.73	53.9
12u	U	45	0.0	0.710	15.1	LOS B	8.4	59.8	0.79	0.73	55.4
Approach		1698	2.1	0.710	7.2	LOS A	8.4	59.8	0.77	0.68	54.0
All Vehicles		4053	2.4	0.852	13.0	LOS A	11.6	83.2	0.88	0.98	50.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 1 [AM Planning Proposal - Solent Circuit / Fairway Drive]

14925 Planning Proposal
Roundabout

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: Solent Circuit											
10	L2	86	2.3	0.194	4.3	LOS A	1.2	8.7	0.24	0.51	53.3
11	T1	102	2.0	0.194	4.5	LOS A	1.2	8.7	0.24	0.51	54.5
12	R2	49	0.0	0.194	8.9	LOS A	1.2	8.7	0.24	0.51	54.5
12u	U	30	3.3	0.194	11.0	LOS A	1.2	8.7	0.24	0.51	55.2
Approach		267	1.9	0.194	6.0	LOS A	1.2	8.7	0.24	0.51	54.2
East: Fairway Drive											
1	L2	18	0.0	0.061	8.1	LOS A	0.4	2.8	0.77	0.71	51.5
2	T1	16	6.3	0.061	8.5	LOS A	0.4	2.8	0.77	0.71	52.6
3	R2	4	0.0	0.061	12.7	LOS A	0.4	2.8	0.77	0.71	52.6
3u	U	1	0.0	0.061	14.7	LOS B	0.4	2.8	0.77	0.71	53.5
Approach		39	2.6	0.061	8.9	LOS A	0.4	2.8	0.77	0.71	52.1
North: Solent Circuit											
4	L2	141	0.0	0.416	11.5	LOS A	3.3	23.7	0.96	0.98	49.0
5	T1	31	25.8	0.416	13.2	LOS A	3.3	23.7	0.96	0.98	49.4
6	R2	20	0.0	0.416	16.1	LOS B	3.3	23.7	0.96	0.98	49.9
6u	U	20	0.0	0.416	18.2	LOS B	3.3	23.7	0.96	0.98	50.7
Approach		212	3.8	0.416	12.8	LOS A	3.3	23.7	0.96	0.98	49.3
West: Fairway Drive											
7	L2	291	0.7	0.865	10.0	LOS A	16.9	119.1	0.94	0.79	49.1
8	T1	183	0.5	0.865	10.3	LOS A	16.9	119.1	0.94	0.79	50.2
9	R2	608	0.5	0.865	14.7	LOS B	16.9	119.1	0.94	0.79	50.1
9u	U	1	0.0	0.865	16.7	LOS B	16.9	119.1	0.94	0.79	50.9
Approach		1083	0.6	0.865	12.7	LOS A	16.9	119.1	0.94	0.79	49.8
All Vehicles		1601	1.2	0.865	11.5	LOS A	16.9	119.1	0.82	0.76	50.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [AM Planning Proposal - Solent Circuit / Inglewood Place]

14925 Planning Proposal
Giveway / Yield (Two-Way)

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: Solent Circuit											
1	L2	311	0.7	0.168	5.6	LOS A	0.0	0.0	0.00	0.58	45.8
2	T1	515	1.2	0.387	1.6	LOS A	1.9	13.7	0.28	0.12	54.5
3	R2	94	0.0	0.387	10.1	LOS A	1.9	13.7	0.28	0.12	53.3
Approach		919	0.9	0.387	3.8	NA	1.9	13.7	0.19	0.27	51.5
East: Inglewood Place (access to carpark)											
4	L2	14	0.0	0.157	8.0	LOS A	0.5	3.3	0.83	0.89	33.5
5	T1	8	0.0	0.157	61.1	LOS E	0.5	3.3	0.83	0.89	36.2
6	R2	1	0.0	0.157	45.7	LOS D	0.5	3.3	0.83	0.89	37.2
Approach		23	0.0	0.157	29.0	LOS C	0.5	3.3	0.83	0.89	34.7
North: Solent Circuit											
7	L2	32	0.0	0.275	5.6	LOS A	0.0	0.0	0.00	0.04	57.6
8	T1	497	1.7	0.275	0.0	LOS A	0.0	0.0	0.00	0.04	59.2
9	R2	186	0.0	0.338	12.6	LOS A	1.5	10.8	0.71	0.93	42.9
Approach		715	1.2	0.338	3.5	NA	1.5	10.8	0.18	0.27	53.1
West: Inglewood Place											
10	L2	13	0.0	0.022	5.5	LOS A	0.0	0.3	0.00	0.57	46.4
11	T1	1	0.0	0.022	47.1	LOS D	0.0	0.3	0.00	0.57	49.4
12	R2	107	3.9	1.878	872.6	LOS F	37.5	271.3	1.00	2.62	1.5
Approach		121	3.5	1.878	774.9	LOS F	37.5	271.3	0.89	2.38	1.8
All Vehicles		1778	1.2	1.878	56.5	NA	37.5	271.3	0.24	0.42	19.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 1 [AM Planning Proposal - Norwest Boulevard / Solent Circuit (West)]

14925 Planning Proposal
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Practical Cycle Time)

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: Reston Grange											
1	L2	209	0.0	0.210	11.9	LOS A	3.1	21.4	0.55	0.70	49.6
2	T1	293	0.3	0.856	35.9	LOS C	11.1	77.9	0.97	1.00	37.9
3	R2	179	4.5	0.448	32.3	LOS C	5.5	40.0	0.92	0.79	38.9
Approach		681	1.3	0.856	27.6	LOS B	11.1	77.9	0.83	0.86	41.2
East: Norwest Boulevard (East)											
4	L2	71	7.0	0.052	7.6	LOS A	0.5	3.9	0.31	0.62	52.4
5	T1	1284	3.1	0.839	32.7	LOS C	16.6	119.5	0.99	1.00	39.1
6	R2	150	0.0	0.583	38.5	LOS C	5.1	35.9	0.99	0.80	36.6
Approach		1505	3.0	0.839	32.1	LOS C	16.6	119.5	0.96	0.96	39.3
North: Solent Circuit											
7	L2	97	1.0	0.093	9.0	LOS A	1.0	7.0	0.40	0.65	51.6
8	T1	143	7.0	0.776	38.2	LOS C	5.4	40.0	1.00	0.91	37.1
9	R2	324	0.0	0.872	48.2	LOS D	6.6	45.9	1.00	1.01	33.4
Approach		564	2.0	0.872	38.9	LOS C	6.6	45.9	0.90	0.93	36.5
West: Norwest Boulevard (West)											
10	L2	350	1.7	0.180	5.6	LOS A	0.0	0.0	0.00	0.53	54.9
11	T1	754	5.4	0.587	27.5	LOS B	8.0	58.4	0.95	0.79	41.5
12	R2	78	7.7	0.488	41.3	LOS C	2.8	20.5	0.99	0.76	35.5
Approach		1182	4.5	0.587	21.9	LOS B	8.0	58.4	0.67	0.71	44.2
All Vehicles		3932	3.0	0.872	29.3	LOS C	16.6	119.5	0.84	0.86	40.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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	29.3	LOS C	0.1	0.1	0.92	0.92
P2	East Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P3	North Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
All Pedestrians		158	29.3	LOS C			0.92	0.92

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: 1 [PM Planning Proposal - Solent Circuit / Fairway Drive]

14925 Planning Proposal
Roundabout

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: Solent Circuit											
10	L2	399	0.5	0.684	10.1	LOS A	7.8	54.7	0.85	0.92	50.0
11	T1	145	0.0	0.684	10.4	LOS A	7.8	54.7	0.85	0.92	51.1
12	R2	33	0.0	0.684	14.7	LOS B	7.8	54.7	0.85	0.92	51.0
12u	U	82	0.0	0.684	16.7	LOS B	7.8	54.7	0.85	0.92	51.8
Approach		659	0.3	0.684	11.2	LOS A	7.8	54.7	0.85	0.92	50.5
East: Fairway Drive											
1	L2	28	0.0	0.205	8.2	LOS A	1.3	8.9	0.73	0.76	51.5
2	T1	101	0.0	0.205	8.4	LOS A	1.3	8.9	0.73	0.76	52.6
3	R2	24	0.0	0.205	12.8	LOS A	1.3	8.9	0.73	0.76	52.6
3u	U	1	0.0	0.205	14.8	LOS B	1.3	8.9	0.73	0.76	53.4
Approach		154	0.0	0.205	9.1	LOS A	1.3	8.9	0.73	0.76	52.4
North: Solent Circuit											
4	L2	22	0.0	0.470	5.5	LOS A	3.5	24.9	0.56	0.65	51.6
5	T1	223	0.0	0.470	5.8	LOS A	3.5	24.9	0.56	0.65	52.7
6	R2	260	0.4	0.470	10.2	LOS A	3.5	24.9	0.56	0.65	52.6
6u	U	45	0.0	0.470	12.2	LOS A	3.5	24.9	0.56	0.65	53.4
Approach		550	0.2	0.470	8.4	LOS A	3.5	24.9	0.56	0.65	52.6
West: Fairway Drive											
7	L2	47	0.0	0.156	5.7	LOS A	0.9	6.5	0.53	0.64	52.2
8	T1	46	0.0	0.156	5.9	LOS A	0.9	6.5	0.53	0.64	53.4
9	R2	63	1.6	0.156	10.3	LOS A	0.9	6.5	0.53	0.64	53.2
9u	U	1	0.0	0.156	12.3	LOS A	0.9	6.5	0.53	0.64	54.2
Approach		157	0.6	0.156	7.7	LOS A	0.9	6.5	0.53	0.64	53.0
All Vehicles		1520	0.3	0.684	9.6	LOS A	7.8	54.7	0.70	0.78	51.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [PM Planning Proposal - Solent Circuit / Inglewood Place]

14925 Planning Proposal
Giveway / Yield (Two-Way)

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: Solent Circuit											
1	L2	84	2.5	0.046	5.6	LOS A	0.0	0.0	0.00	0.58	45.4
2	T1	348	0.6	0.219	0.5	LOS A	0.5	3.3	0.13	0.06	57.6
3	R2	36	0.0	0.219	8.1	LOS A	0.5	3.3	0.13	0.06	55.5
Approach		468	0.9	0.219	2.0	NA	0.5	3.3	0.11	0.15	55.2
East: Inglewood Place (access to carpark)											
4	L2	69	0.0	0.091	6.5	LOS A	0.3	2.3	0.37	0.61	48.3
5	T1	1	0.0	0.091	17.7	LOS B	0.3	2.3	0.37	0.61	50.3
6	R2	4	0.0	0.091	25.4	LOS B	0.3	2.3	0.37	0.61	50.4
Approach		75	0.0	0.091	7.7	LOS A	0.3	2.3	0.37	0.61	48.4
North: Solent Circuit											
7	L2	5	0.0	0.120	5.5	LOS A	0.0	0.0	0.00	0.01	57.9
8	T1	444	0.2	0.120	0.1	LOS A	0.1	0.7	0.02	0.02	59.4
9	R2	8	0.0	0.120	7.8	LOS A	0.1	0.7	0.05	0.02	56.6
Approach		458	0.2	0.120	0.3	NA	0.1	0.7	0.02	0.02	59.3
West: Inglewood Place											
10	L2	169	0.0	0.131	5.5	LOS A	0.0	0.1	0.00	0.58	49.8
11	T1	1	0.0	0.131	18.1	LOS B	0.0	0.1	0.00	0.58	52.3
12	R2	368	0.9	1.778	728.9	LOS F	109.4	771.5	1.00	5.48	1.9
Approach		539	0.6	1.778	500.1	LOS F	109.4	771.5	0.68	3.93	3.1
All Vehicles		1540	0.5	1.778	176.1	NA	109.4	771.5	0.30	1.45	8.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 1 [PM Planning Proposeal - Norwest Boulevard / Solent Circuit (West)]

14925 Planning Proposal
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Practical Cycle Time)

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: Reston Grange											
1	L2	137	3.6	0.162	10.9	LOS A	1.8	13.0	0.50	0.68	50.2
2	T1	94	1.1	0.650	36.7	LOS C	4.0	28.5	1.00	0.82	37.3
3	R2	123	1.6	0.650	42.5	LOS C	4.0	28.5	1.00	0.82	35.4
Approach		354	2.3	0.650	28.7	LOS C	4.0	28.5	0.81	0.77	40.6
East: Norwest Boulevard (East)											
4	L2	303	1.3	0.244	9.7	LOS A	3.6	25.8	0.47	0.68	51.0
5	T1	1016	3.0	0.721	27.1	LOS B	12.6	90.5	0.95	0.85	41.6
6	R2	82	3.7	0.421	39.7	LOS C	2.8	20.3	0.98	0.76	36.1
Approach		1401	2.6	0.721	24.1	LOS B	12.6	90.5	0.85	0.81	43.0
North: Solent Circuit											
7	L2	190	0.5	0.183	10.8	LOS A	2.6	17.9	0.49	0.68	50.3
8	T1	258	0.0	0.848	35.5	LOS C	9.6	67.5	0.96	0.98	38.1
9	R2	376	1.9	0.479	32.5	LOS C	5.8	41.4	0.92	0.80	38.9
Approach		824	1.0	0.848	28.4	LOS B	9.6	67.5	0.84	0.83	40.8
West: Norwest Boulevard (West)											
10	L2	222	0.5	0.113	5.6	LOS A	0.0	0.0	0.00	0.53	54.9
11	T1	1285	2.6	0.819	31.6	LOS C	15.7	112.0	1.00	0.98	39.6
12	R2	161	0.6	0.821	45.1	LOS D	6.2	43.7	1.00	0.95	34.3
Approach		1668	2.1	0.821	29.4	LOS C	15.7	112.0	0.87	0.92	40.5
All Vehicles		4247	2.1	0.848	27.4	LOS B	15.7	112.0	0.85	0.85	41.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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	29.3	LOS C	0.1	0.1	0.92	0.92
P2	East Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P3	North Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
All Pedestrians		158	29.3	LOS C			0.92	0.92

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: 101 [AM Planning Proposal Roundabout - Solent Circuit and Inglewood Place]

14925 Planning Proposal
Roundabout

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: Solent Circuit											
1	L2	311	0.7	0.783	7.2	LOS A	11.5	80.9	0.84	0.70	38.3
2	T1	515	1.2	0.783	7.3	LOS A	11.5	80.9	0.84	0.70	41.2
3	R2	94	0.0	0.783	10.5	LOS A	11.5	80.9	0.84	0.70	42.9
Approach		919	0.9	0.783	7.6	LOS A	11.5	80.9	0.84	0.70	40.5
East: Inglewood Place (access to Hill Song)											
4	L2	14	0.0	0.038	8.6	LOS A	0.2	1.6	0.76	0.69	41.4
5	T1	8	0.0	0.038	8.6	LOS A	0.2	1.6	0.76	0.69	43.6
6	R2	1	0.0	0.038	11.9	LOS A	0.2	1.6	0.76	0.69	43.9
Approach		23	0.0	0.038	8.8	LOS A	0.2	1.6	0.76	0.69	42.4
North: Solent Circuit											
7	L2	32	0.0	0.619	5.4	LOS A	5.6	39.7	0.64	0.62	44.1
8	T1	497	1.7	0.619	5.5	LOS A	5.6	39.7	0.64	0.62	41.8
9	R2	186	0.0	0.619	8.7	LOS A	5.6	39.7	0.64	0.62	43.0
Approach		715	1.2	0.619	6.3	LOS A	5.6	39.7	0.64	0.62	42.3
West: Inglewood Place											
10	L2	13	0.0	0.178	7.3	LOS A	1.1	8.2	0.75	0.79	39.8
11	T1	1	0.0	0.178	7.4	LOS A	1.1	8.2	0.75	0.79	42.6
12	R2	107	3.9	0.178	10.8	LOS A	1.1	8.2	0.75	0.79	37.0
Approach		121	3.5	0.178	10.4	LOS A	1.1	8.2	0.75	0.79	37.4
All Vehicles		1778	1.2	0.783	7.3	LOS A	11.5	80.9	0.76	0.68	41.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.
Roundabout Capacity Model: SIDRA Standard.
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 SUMMARY

Site: 101 [PM Planning Proposal Roundabout - Solent Circuit and Inglewood Place]

14925 Planning Proposal
Roundabout

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: Solent Circuit											
1	L2	84	2.5	0.296	3.6	LOS A	2.1	14.6	0.10	0.43	42.3
2	T1	348	0.6	0.296	3.7	LOS A	2.1	14.6	0.10	0.43	45.1
3	R2	36	0.0	0.296	7.0	LOS A	2.1	14.6	0.10	0.43	46.0
Approach		468	0.9	0.296	3.9	LOS A	2.1	14.6	0.10	0.43	44.8
East: Inglewood Place (access to Hill Song)											
4	L2	69	0.0	0.122	9.2	LOS A	0.7	5.2	0.78	0.78	40.9
5	T1	1	0.0	0.122	9.3	LOS A	0.7	5.2	0.78	0.78	43.1
6	R2	4	0.0	0.122	12.6	LOS A	0.7	5.2	0.78	0.78	43.5
Approach		75	0.0	0.122	9.4	LOS A	0.7	5.2	0.78	0.78	41.1
North: Solent Circuit											
7	L2	5	0.0	0.515	7.2	LOS A	4.1	29.0	0.76	0.77	44.0
8	T1	444	0.2	0.515	7.2	LOS A	4.1	29.0	0.76	0.77	41.7
9	R2	8	0.0	0.515	10.5	LOS A	4.1	29.0	0.76	0.77	42.8
Approach		458	0.2	0.515	7.3	LOS A	4.1	29.0	0.76	0.77	41.7
West: Inglewood Place											
10	L2	169	0.0	0.560	7.6	LOS A	4.6	32.3	0.71	0.81	40.1
11	T1	1	0.0	0.560	7.6	LOS A	4.6	32.3	0.71	0.81	42.9
12	R2	368	0.9	0.560	10.9	LOS A	4.6	32.3	0.71	0.81	37.6
Approach		539	0.6	0.560	9.9	LOS A	4.6	32.3	0.71	0.81	38.6
All Vehicles		1540	0.5	0.560	7.3	LOS A	4.6	32.3	0.54	0.68	41.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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.
Roundabout Capacity Model: SIDRA Standard.
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.

12 December 2017

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Eden Brae Homes
c/- Mr P Lee
Calibre Consulting (NSW) Pty Limited
Po Box 8300
BAULKHAM HILLS BC NSW 2153

Dear Sir

Planning Proposal - 8 Solent Circuit, Baulkham Hills to Amend FSR from 1:1 to 2.2:1 and Building Height from RL 116m to 126m

I refer to the application to Norwest Association Limited (Ref: PP1701) in respect to the Planning Proposal for the above site and advise that Norwest Association Limited has no objection to lodgement of the Planning Proposal with The Hills Shire Council subject to the following matters being considered in the application:

1) The proposed development to be in accordance with the Norwest Master Scheme in respect to landscaping setbacks and landscape screening of the car parking areas and neighbouring properties.

2) Particular attention to be given to:

- The potential for job generation and benefits to be derived from the proposed amendments;
- An architectural design statement presenting a montage of the proposal and relationship to adjoining business premises;
- An assessment of the impact on view lines to and from Bella Vista Farm Park; and
- Incorporation of measures to encourage sustainable transport outcomes including pedestrian connectivity.

Yours faithfully

ALAN ZAMMIT AM
Chair
Norwest Association Limited